

A U T H O R W A R E
S T A R™
Windows On-Line Manual

C O N T E N T S

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Acknowledgements



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Introduction

Welcome to Authorware Star.

Star allows developers of computer-based training to create sophisticated custom applications that use interactive multimedia. It's an object-oriented authoring tool that doesn't require scripts or a programming language. Instead it allows you to create a visual representation of logic; it's a way of organizing and viewing how the application will respond to an end user's interactions. The power of object-oriented authoring is that everything is modular; icons can be easily updated and reused. You can create levels of hierarchy with maps that let you see at a glance the overall design of the application.

- [Authorware Star and Authorware Professional](#)
- [Using the Star documentation](#)
- [What's in this book?](#)
- [Installation](#)
- [What's new in version 2.0?](#)
- [The stages of authoring](#)

Authorware Star and Authorware Professional

Feature	Authorware Star	Authorware Professional	Benefit
Number of icons	Limited	16,000	You can create larger applications with Authorware Professional.
Media Manager (linked content libraries)	No	Yes	Authorware Professional's Media Manager feature lets you store content externally in Authorware Professional library files. This lets you reduce file size considerably. By storing contents in one place, it's easy to update graphics, movies, or sounds that you use multiple times.
RunAPW application	No	Yes	With Authorware Professional, you can create independent applications or files that run using RunAPW, a separate application provided with Authorware Professional. Files that run with RunAPW take up less disk space than those packaged as independent applications.
Jump Out system variables	No	Yes	Authorware Professional includes system functions that allow you to jump out of an Authorware application to another Windows application (including another Authorware application), returning to Authorware when the other application is through.
Computer Managed Instruction (CMI) variables	No	Yes	CMI variables give you complete ability to monitor the user's progress through the application.
Gaffer application	No	Yes	Lets you convert Macromedia Director files for use on Windows computers.
User manuals	<i>Users Guide</i>	<i>Users Guide, Tutorial, Functions & Variables, Cross-Platform Development</i>	Additional documentation provides details on features specific to Authorware Professional as well as additional information on features common to both Authorware Professional and Authorware Star.

You can open Authorware Star files with Authorware Professional. You can also open many Authorware Professional files with Authorware Star, although you will not be able to use Authorware Star to open Authorware Professional files that use the advanced features listed in the preceding table.

Using the Star documentation

If you have specific questions or want to know more about how a feature works and what its options are, this user's guide is the best resource.

The release notes, ASWNOTES.TXT, contain last minute additions and corrections that became available after the user's guide was completed. These are installed in your Authorware Star Program Manager group.

You should be familiar with basic Microsoft Windows operations before using this software.

What's in this book?

This reference manual has five chapters and an index:

Chapter 1, "Star Basics," is a conceptual orientation to Star. It includes an explanation of how icons are used, moved, and titled on the flowline.

Chapter 2, "Interactivity," explains more advanced concepts, focusing on the use of decision, interaction, and calculation icons. This chapter helps you think about designing applications and understand the connection between the flowline and the application you create. It includes an introduction to the use of functions and variables.

Chapter 3, "Procedures & Examples," provides detailed instructions on setting up each response type interaction and creating animations and user-movable objects.

Chapter 4, "Icon Reference," provides short explanations of each icon, options dialog boxes for each icon, and the graphics toolbox.

Chapter 5, "Menu Reference," explains each menu command in the order in which it appears.

Throughout this manual, functions, variables, and expressions appear in `Courier` type.

Installation

Among the files included with Authorware Star 2.0 are the following:

- The Authorware Star program (ASW2.EXE)
- Star movie and video driver files, which have the .VDR file extension
- Star graphic, movie, and sound import filters, which have file extensions .IMP, .IMM, and .IMS

Note: *The installer puts the driver and import filter files in the same directory as the ASW2.EXE application. They must be in the root level of that directory, not in subdirectories of that directory.*

- [Microsoft Windows](#)
- [Hardware setup](#)
- [Installing Star](#)

Microsoft Windows

Star works with Microsoft Windows version 3.0 or 3.1.

In order to run Star, you must run Windows in either standard or enhanced mode. *Star will not run in real mode.* If you are running Windows in enhanced mode, we recommend that you set up a permanent swap area to enhance performance. For more information, refer to the documentation that comes with Microsoft Windows.

Before installing Star, all Windows files must be installed on your computer using the Windows Setup procedure.

Hardware setup

You and your end users will need the following:

- A 25-MHz or faster personal computer with an Intel 80386 processor or better for authoring; a 33-MHz or faster machine with an Intel 80486 is recommended. End users can use a 16-MHz or faster computer with an Intel 80386 processor or better.
- At least 4 megabytes of RAM; 8 megabytes is recommended. The amount of RAM an end user needs will vary depending on the size of the application.
- A hard disk.
- A mouse.
- Microsoft Multimedia Extensions (included with Windows 3.1).
- A VGA monitor with 16 or more colors.
- A video source (such as a laser disc player) if you wish to use video
- A sound card if you want to play sounds.

Installing Star

- 1. Insert the Star Disk 1 into a disk drive.**
- 2. From the Windows Program Manager, choose Run from the File menu.**
- 3. In the Run dialog box type a:install (or if you are using a drive other than a:, substitute the appropriate letter, as in b:install).**
- 4. Follow the instructions that appear on the screen.**

When you install the Authoring System component, the Authorware Star application appears in a Program Group called Authorware Star, along with a Release Notes file. Double-click Release Notes to read late-breaking information on Authorware Star for Windows.

An APW.INI file is installed in your Windows directory. The APW.INI file includes information on the default color palette settings, the default font mapping, the sound driver for your system, the video setup, and locations of Star models.

What's new in version 2.0

If you've used a previous version of Authorware Star, you'll want to experiment with the many new features included in version 2.0, most of which were added in response to customer requests.

- Dialog box and icon improvements
- Response type options
- Enhanced text and graphics capability
- Multimedia

Dialog box and icon improvements

The File Setup dialog box contains many new options such as new Presentation window sizes, menu bar overlay selection, background color selection, chroma key color selection, color palette selection, search path specification, and file statistics such as the number of icons and custom variables, memory usage, and available memory.

You can now erase several displays with one erase icon.

The Get Info dialog box allows you to view information about an icon and preview its contents without opening it. You can also preview an icon's contents by clicking the icon with the right mouse button.

The Find/Change and Find Again commands in the Edit menu provide search and replace options for text objects and icon titles.

Response type options

A new response type, clickable object, lets users respond to an interaction by clicking a specified object on the screen.

For conditional responses, a new auto-match option lets you specify that the response should be matched without any response from the user. You can set the response to be automatically matched as soon as an expression becomes true or changes from false to true.

For movable object responses, the Match Any Object option lets the user match the response by moving any object on the screen into the target area.

For click/touch and clickable object responses, you can allow users to match the response by just moving the cursor into the hotspot without clicking.

In the Time Limit Options dialog box, a new set of options allows you to determine what happens if the time limit is interrupted by a perpetual interaction.

In the Decision Options dialog box, the Reset Paths on Entry option resets the paths each time a decision icon is encountered.

Enhanced text and graphics capability

The Text menu contains submenus that let you quickly and easily choose text options.

You can now put text in scrolling fields.

You can select Color, Line, Mode, and Fill options from commands in the Attributes menu.

The Opaque mode now works slightly differently and displays bitmapped graphics much faster. A new mode, Matted, behaves as Opaque did in previous versions.

Using the Layer option in the Effects dialog box, you can control layering of display and animation layers.

When you run a file, Star no longer stops at empty interaction icons and waits for you to fill in the display.

Multimedia

You can now load digital movies, such as those created with Macromedia Director, Microsoft Video for Windows (including Indeo/DVI support), QuickTime for Windows, and Autodesk Animator.

Video hardware information is stored externally and is selected in the Video Setup dialog box. Video drivers are shipped with your Star package and must be stored in the same directory as Star.

The stages of authoring

Authoring an application generally requires the following stages.

- Needs analysis
- Delivery requirements
- Media integration
- Interactivity
- Fine-tuning
- Distribution

Needs analysis

Before you start using Star, determine what your application should be designed to do. Who is the end user of this application? What objectives must they meet? It's a good idea to storyboard the contents and even design a few sample screens before you get started.

Delivery requirements

Next, think about how you'll physically deliver the application so that you create a working design up front. What kind of computers do end users have?

- Size and color capability of monitors
- Available RAM and hard disk space
- Any other hardware requirements, including sound cards, CD-ROM drives, or video players.

It's important that you design for the least capable system your application will run on. For example, if you're creating an educational kiosk and most schools have 16-color monitors and no sound cards, it would be a mistake to create applications that use 256-color graphics and sound.

Media integration

The next stage includes gathering your content. Star excels at integrating media, whether you have sound files or digital movies. Although you can create content in Star's toolbox, we encourage you to import graphics from your favorite applications.

In this stage, you'll drag icons out onto the flowline and put content into them. As you become more comfortable with Star, you may frequently switch between designing on the flowline and running the application.

Be sure that your computer and all end users' computers have the equipment needed to play sound and video if you'll be using them.

Interactivity

Next, design interactions. What information is on screen? How can the user respond—by clicking the mouse or pressing a particular key on the keyboard, or by typing a correct entry or dragging a movable object on screen? When the user gives the right answer, what kind of feedback appears on screen? What path does the application follow next?

Interactivity is the heart of Star. You'll discover many ways to design your applications and learn to build them so that the logic can be reused in models. Become familiar with system variables and functions, the many kinds of changing information that Star tracks as a user interacts with an application. Take user text input and animate an object on screen in response to that input. Hide help buttons when a help section isn't available. You can also create your own variables and functions and write conditions that Star evaluates to decide what to do next.

Fine-tuning

When you think your application works the way you want it to, test it, just as software companies test applications: on real users. Run the files and make adjustments to the content and to the interactions. Change the time Star waits before going on to the next icon. You may change the files to optimize performance on slower computer models. It's important to allow ample time for this stage: designing interactions is considerably more complicated than creating a linear presentation.

Distribution

Finally, when you're ready to distribute your application, **package** it. A package is a stand-alone Star application that doesn't include authoring menus and commands. If you're developing commercial applications, make sure your distribution is in accordance with the license agreement. The packaged file doesn't contain all the information needed to change the application; so archive the original Star file for use in creating the next version.

Chapter 1 Star Basics

When you create an application, you begin by dragging icons on the flowline and by creating text and graphics objects. This chapter introduces you to the icon palette, and to titling, grouping, and moving icons. It also includes a short procedure to familiarize you with Authorware Star.

- [Object authoring](#)
- [Try this](#)
- [Icon palette](#)

Object authoring

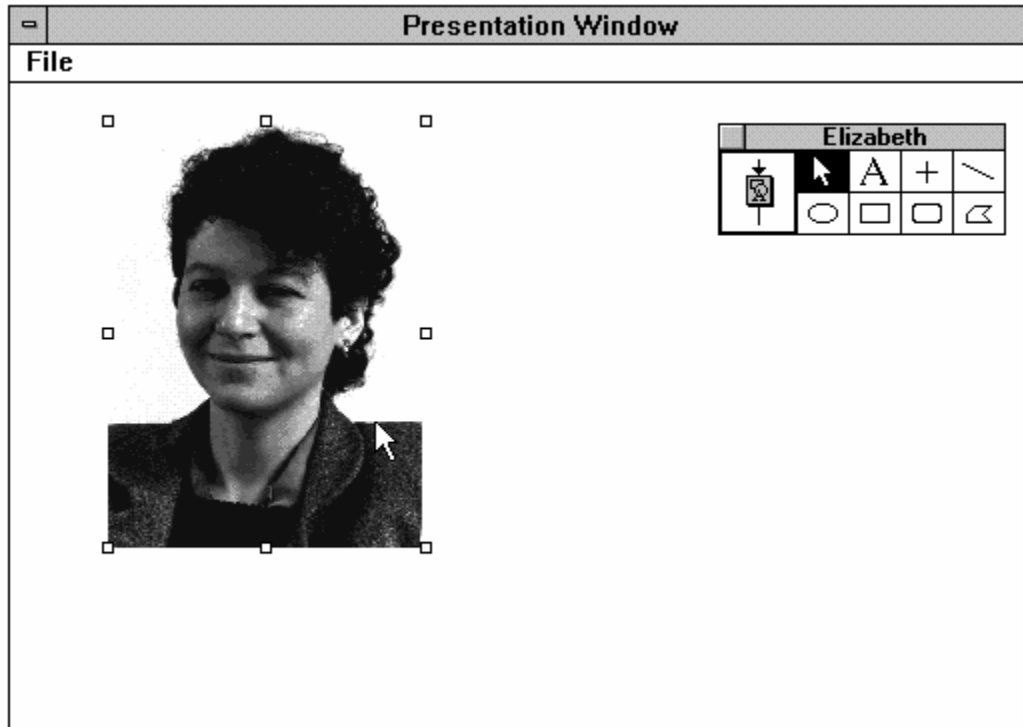
Object authoring is Authorware Star's unique way of graphically representing the logic of your application. Traditionally, programming languages use command lines to execute code. In Star, objects rather than commands make up the basic structures. Icons represent *objects* that can be displayed or moved on screen.

You create a program in Star by dragging *icons* onto a *flowline*. Each icon represents a set of instructions that Star performs when you run the file. The flowline represents the sequence (or flow) of the instructions represented by the icons. The order in which you place icons on the flowline, from top to bottom, corresponds to the order of events that takes place when an end user runs the application.

Different icons accept different kinds of data and provide a different sets of functions. Depending on the icon, "opening" it allows you to insert content, such as text and graphics, or choose options settings.

- The display, movie, sound, and video icons all display content on the screen. Interaction icons include a display inside them. What's referred to as an object is really the contents of an icon, which are displayed on screen and moved as one thing.
- Animation and erase icons, on the other hand, affect icons that display content. For example, using the animation options, you can make a picture of a boat move across the screen.
- Wait icons are a simple way to control the timing of what's displayed. Decision, interaction, and calculation icons control the branching and navigation of your application.
- Map icons are groups of other icons. Each map can be opened to display a new flowline in its own window.

To open an icon and edit its contents, double-click it. Opening a display icon brings up the Presentation window and graphics toolbox for inserting graphics and text.



If the type of icon you're opening uses the Presentation window, Star clears the Presentation window and shows the contents of the icon you opened. For animation and erase icons, it opens the Presentation window with the contents that were last displayed in it. Some icons, such as wait and calculation icons, don't need the Presentation window, so it isn't shown when you open them; instead they bring up a corresponding options dialog box or window.

Try this

Here's a short procedure to introduce you to using Star.

1. Double-click the Star application icon.

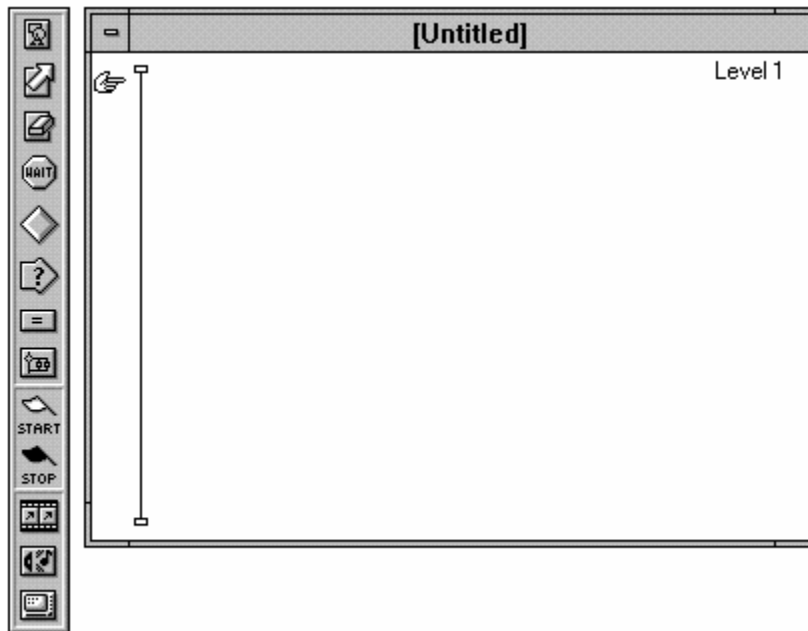
When you install Star, the Star application is put in the Star program group of the Windows Program Manager.

2. After the About Star screen is shown, Star prompts you to open a file. Click the New button to create a new file.

You can make the About Star screen disappear at any time by clicking it.

3. Take a look around the main window.

The icons in the palette on the left are the key to designing your applications. The flowline, the main line in the Design window, is how you tell Star what to do next. It's a workspace that you create flowcharts in, flowcharts that represent the path that an end user will follow through your application. Star proceeds through the flowline from top to bottom.

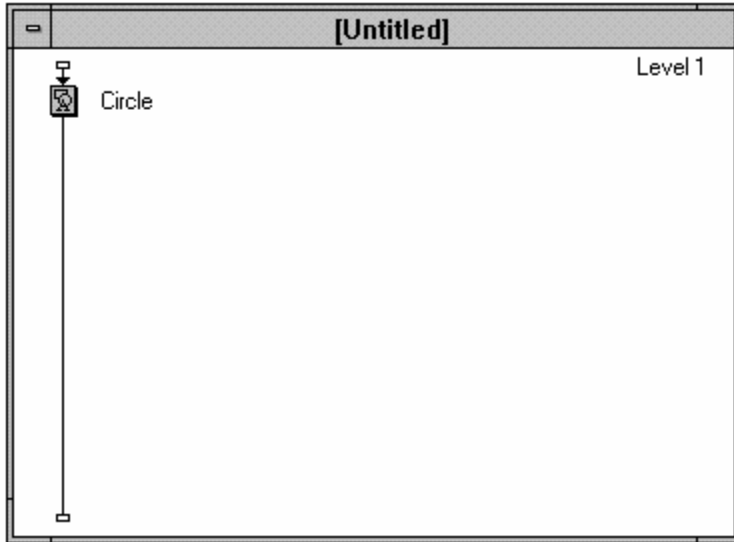


4. Click and drag the first icon, a display icon, onto the main window, onto the flowline.

The icon palette is like a well: you can drag an infinite supply of icons from the palette onto the flowline. Display icons represent text and graphics. In this example application, you're going to present a circle on the screen and have Star erase it when a user clicks the mouse.

5. Click the word Untitled that appears to the right of the display icon. Now type Circle.

Labeling icons helps you tell them apart when you have many of them in a single application.

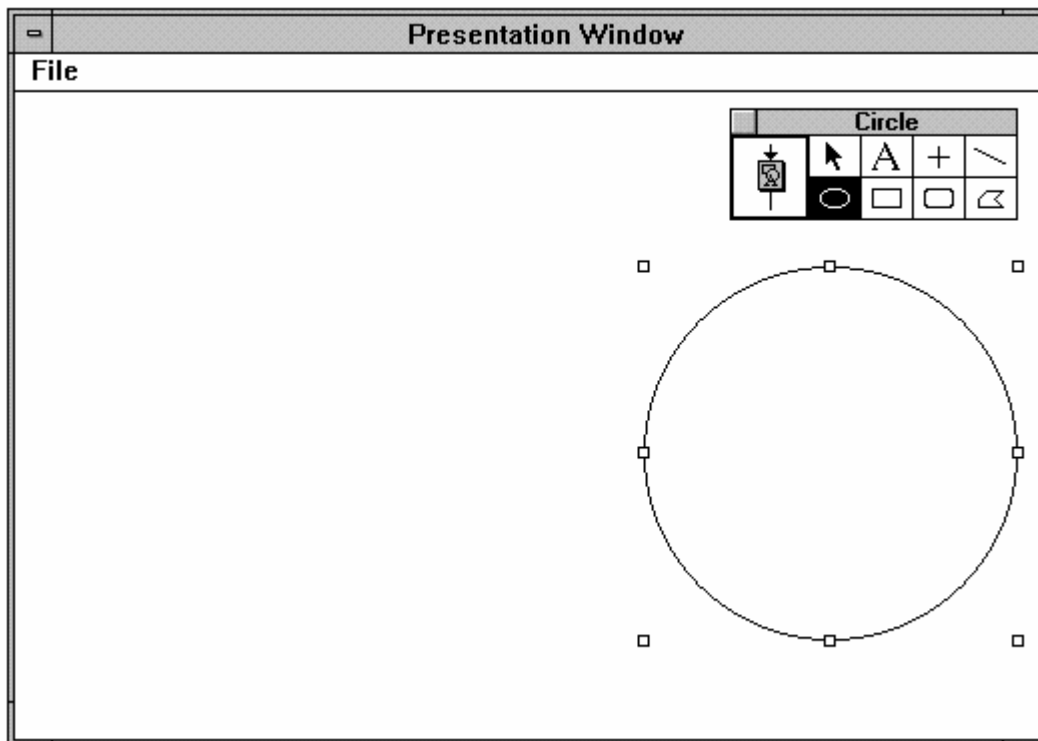


6. Double-click the display icon in the flowline.

This opens up the Presentation window and the graphics toolbox. The Presentation window shows you what's contained inside the icon, which is what the user will view on screen. In this case, the icon is still empty. Notice that the toolbox has a title, "Circle," the same title as the icon.

7. Select the oval tool and draw a circle on the screen.

You can draw a perfect circle by pressing the Shift key while you drag the cursor across the Presentation window.



8. Once you've drawn the circle, click the close box in the upper left corner of the toolbox.

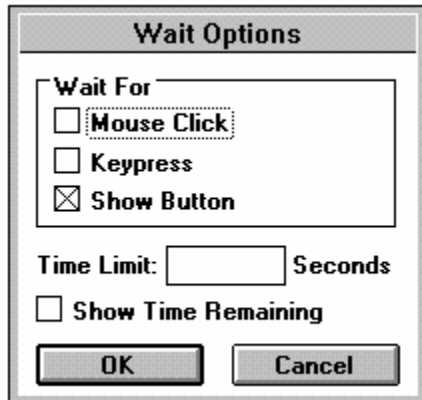
This returns you to the Design window.

9. Now drag a wait icon onto the flowline right below the Circle display icon.

The wait icon creates pauses between icons. In this case, when you run the application, Star will pause after it presents the circle.

10. Double-click the wait icon to open the Wait Options dialog box.

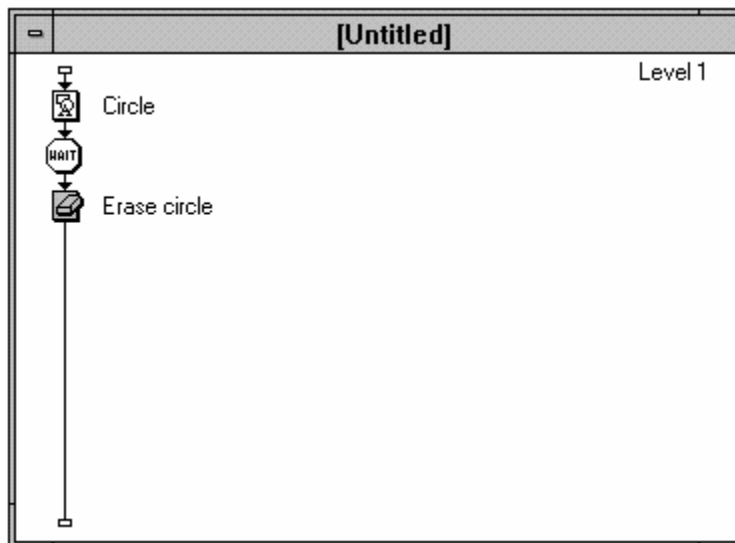
You can have your application pause for a specific amount of time. Or you can have it wait for the user to click the mouse, press any key on the keyboard, or click a button on the screen. In this case, have the user click a button on screen or press a key, the default selection.



11. Click OK.

12. Now drag an erase icon onto the flowline and title it Erase circle.

The erase icon is the third icon from the top, with the eraser on it. Star also has automatic erasing features built into the interaction and decision icons.

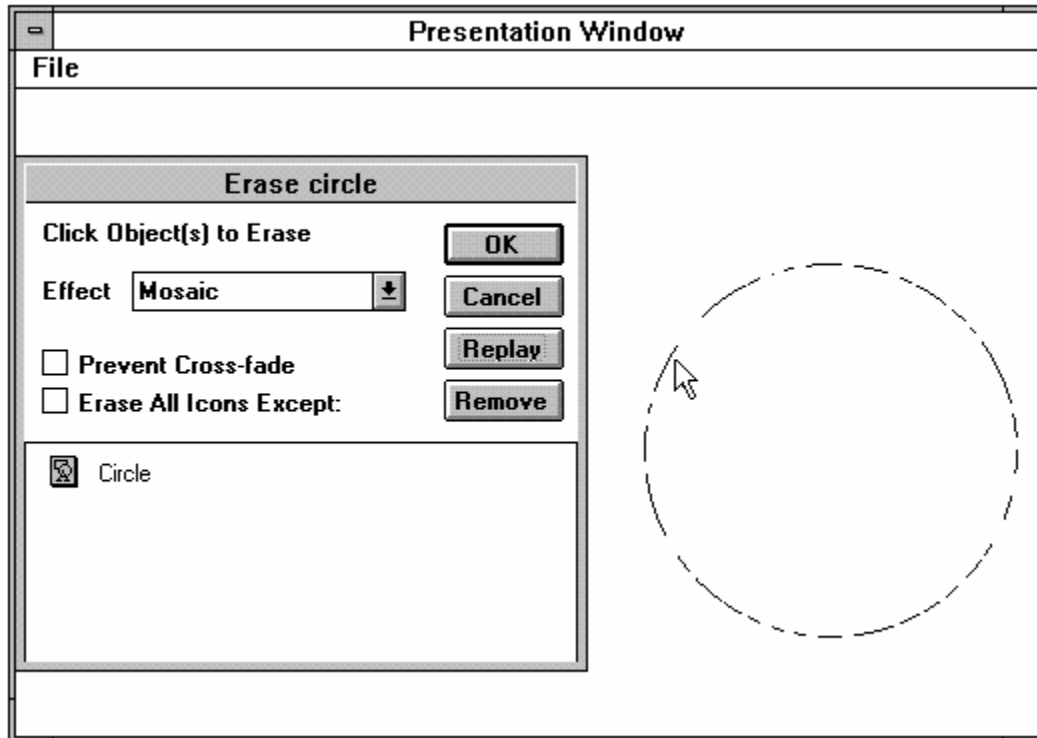


13. Double-click the erase icon.

The Erase Options dialog box appears, prompting you to select an object to erase.

14. Choose Mosaic from the Effect drop-down list. Then select the circle by clicking it on the screen.

Select the drop-down list by clicking the down arrow button to the right of the Effect field. The erase effect is previewed by showing the circle erase from the screen with a Mosaic effect.



15. Click OK and return to the flowline.

At this point, you've created three commands for Star: put an object on screen, wait for the user to click a button, and then after the mouse click, erase the circle. The "Circle" display icon appears at the bottom of the Erase Options dialog box.

16. Select the Save command from the File menu, name the file INTRO.ASW, and choose a directory location for the file.

It's a good idea to name your file when you create it. Star files have the extension .ASW.

Remember to save changes to your file regularly.

17. Choose Run from the Try It menu.

Running a file lets you see it as an end user would. As you become proficient with Star, you'll often switch back and forth between designing the icons on the flowline and running the file to preview it.

The circle appears on screen.

18. Click the Continue button.

The circle is erased.

You've just finished authoring your first application.

Icon palette

Icons are described in the order they appear in the icon palette:



Display icons place graphics and text on the screen.



Animation icons move the object(s) of a preceding display, interaction, or movie icon from one point to another or along a path in a given amount of time or at a specified speed.



Erase icons erase objects from the screen.



Wait icons stop the running of a file until the user presses a key or clicks the mouse, or until a specified amount of time elapses.



Decision icons are branching icons that determine which path to follow.



Interaction icons are branching icons that present text and graphics. Based on the user's response, Star determines which path to follow.



Calculation icons calculate and evaluate expressions, and execute system functions or custom code.



Map icons organize and modularize the file. Each map icon provides its own flowline on which you can place other icons, including additional map icons.



Start and stop flags allow you to run and edit particular segments of your application as you create it. These flags can be placed above, below, or between icons to specify a start and/or stop point. Because there is only one start flag and one stop flag, they are removed from the icon palette when in use. Clicking either flag's position in the icon palette removes it from its current position and returns it to the icon palette.



Movie icons let you present movies created with animation applications in a variety of formats (such as QuickTime for Windows, Microsoft Video for Windows, and Director Player for Windows).



Sound icons play digitized sounds—such as recorded speech, music, or sound effects—in your

applications.



Video icons play video sequences and still frames from video sources.

- Using icons on the flowline
- Icon Reference

Using icons on the flowline

To place icons in the Design window, drag them from the palette onto the flowline.

- Titling icons
- Moving icons
- Cutting, copying, and pasting icons
- Grouping icons
- Opening and editing icons
- Previewing icons

Titling icons

When you drag an icon onto the flowline, Star names that icon "Untitled." Title icons by clicking the icon to select it and typing. Icon titles don't need to be unique. To select and title a number of icons, title the first one and then press Enter. Star automatically moves down the flowline and selects the next icon.

***Note:** Wait icons are not named "Untitled" when they are dragged onto the flowline. You can, however, name them.*

Moving icons

To move an icon already on the flowline, just drag it to the desired place. You can drag one icon at a time. When you release, the icon snaps into place and the flowlines are redrawn. If you want to move several icons, you need to group them into a map icon, drag the map to the new location, and ungroup them.

Cutting, copying, and pasting icons

The Edit menu contains standard cut, copy, and paste commands.

Cut and paste rules for decision and interaction icons are slightly different. You can't cut a decision icon or interaction icon without also cutting all the icons attached to it.

Grouping icons

To select more than one icon, press the Shift key while clicking multiple icons in the flowline or drag the pointer to draw a box around the icons you want to select. To group these icons together into a single map icon, choose Group from the Edit menu. Double-click the map icon to open it as another window with its own flowline.

Opening and editing icons

To open an icon and edit its contents, just double-click it. Opening a display icon brings up the Presentation window and graphics toolbox for inserting graphics and text. The Effects command in the Attributes menu provides more options for changing the display's presentation.

Previewing icons

Click a display, interaction, movie, or sound icon with the right mouse button to preview the icon's contents. Click an erase icon with the right mouse button to show the first display in the erase list. Click an animation icon with the right mouse button to show the display it animates. Click again to make it disappear.

Chapter 2 Interactivity

This chapter introduces the interaction icon, decision icon, and calculation icon, which allow you to create complex structures. It includes an overview of user response types as well as branching, judging user responses, automatic erasing, and the use of functions and variables.

- Branching
- Interactions
- Decisions
- Using data

Branching

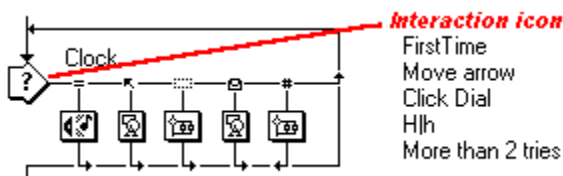
In [Chapter 1](#), you learned how to add icons to the flowline. In a linear presentation, icons are presented in the order they appear on the flowline. However, you may not want the objects in your application to appear in the same sequence each time the program is run. When you add decision or interaction icons to your program, you create multiple paths. A given path may or may not be followed when the program is run, based on user input or on information collected while the program is running. Because of their use in varying program structure, decision and interaction icons are known as **branching** icons.

You can attach other icons to decision and interaction icons. During execution, Star branches to certain attached icons based on options you select.

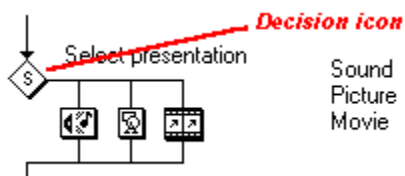
When Star branches to a particular icon, it presents the icon just as it would if the icon were on the flowline. If the attached icon is a display icon, its contents are placed on the screen. If the attached icon is a map icon, Star follows the flowline contained in the map structure.

Interaction and decision icons are used for different purposes:

- **Interaction icons.** When Star encounters an interaction icon in your application, it presents users with a situation they must respond to. The response might be clicking a button, typing an answer to a question, or moving an object on the screen. When the user responds to the interaction display, Star notes the response. It then moves through the icons attached to the interaction to see if the user's response matches any of the responses linked to the icons. If the response matches, Star branches to the attached icon.



- **Decision icons.** When Star encounters a decision icon in your application, it decides which of the icons attached to the decision icon it should branch to. When you set up the decision, you select options that determine what Star should do. For example, you might set up the decision so that Star sequentially selects attached icons one by one.



Decision and interaction icon branching can be based on values of **variables**. A variable represents a value that can change each time a program is run or as the program progresses. For example, a variable could represent the last word a user typed or the number of times a user has reviewed a specific display.

Since you use interaction and decision icons for different purposes, it's important to understand their differences:

- The interaction icon can display text and graphics to the user while the decision icon has no display capabilities.
- The decision icon branches automatically based on variables, while the interaction icon branches after

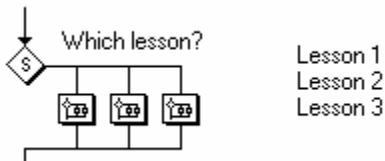
it matches the user's response.

As an example, let's say you've designed an application that contains three different tests. One way you might set this up is by creating the three tests, and then placing the logic in three separate map icons on the main flowline. Your flowline might look like this:



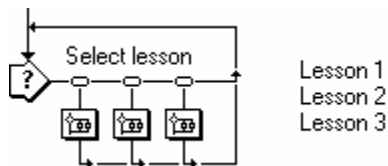
This design is fine if you want to present all three tests to the user one after another, and you want them presented to every user in exactly the same way. But suppose you want to control how the tests are presented. You can get this control by using a decision or interaction icon.

In the illustration below, a decision icon on the flowline has three map icons attached to it.



When Star encounters the decision icon, it does just that—makes a *decision* about which of the icons attached to the decision it should branch to. When you set up the decision structure, you determine how this decision will be made. You could set up the decision so that the user is presented with each of the three tests sequentially, much like when the icons were on the main flowline. But you could also have Star select one of the three tests to present to the user based on the value of a variable that represents the user's skill level.

What if you wanted to allow the user to determine which test would be presented? To do this, you could attach the map icons to an interaction icon. The user presses a button to choose which lesson is presented.



When Star encounters the interaction icon, it opens the icon just like it opens a display icon and displays the contents. You might, for instance, display objects for users to click or buttons for them to press or give them instructions on what to do. Based on what the user does, Star decides which path it should take in the interaction. It does this using a matching process: when you attach an icon to an interaction, you select a response type and specify how users can match that response type; when a user's response matches, Star branches down that path to that icon. For example, if an icon's response type was set to text and the user typed text that matched the text associated with that icon, Star would branch to that attached icon.

You could set up the three tests in a variety of ways. For example:

- Each test could be represented by a pushbutton on the screen, as above. When the user presses a button, Star branches to the corresponding map icon.
- Each test could be a command in a pull-down menu.

- Each test could be represented by a clickable object, where users click the graphic corresponding to the test they want to take.

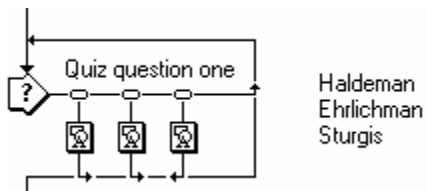
Interactions

The interaction icon, each response type, and all associated options dialog boxes are described in detail in Chapter 4, "[Icon Reference](#)."

Interactions are often used when you want to test a user's knowledge of a subject. As an example, let's say you want to design an application that tests the user's knowledge of the 1970s Watergate break-in in Washington D.C. Such a test might follow a tutorial section of the application which presents the history of some of the key figures in this U.S. government scandal.

Two of the key Watergate figures, Robert Haldeman and John Ehrlichman, became Eagle Scouts as youths. (An Eagle Scout is the highest rank of the Boy Scouts of America.) To test the user's knowledge, you could ask which of three Watergate figures was *not* an Eagle Scout.

An easy way to create such a multiple choice test would be to set up an interaction that uses three pushbutton responses.



The icon title for each pushbutton response is displayed onscreen as the button text.

The interaction icon contains the text of the question ("Which of the following . . ."). When the user presses any of three pushbuttons, additional text is displayed. The name you give to each attached display icon will correspond to the text in the button.

Each attached display icon contains text that will appear as a result of the user pushing each button, such as "No, Ehrlichman *was* an Eagle Scout (and he did not drink alcohol)" or "Correct, Frank Sturgis, one of the men convicted of breaking into the Democratic suite at Watergate, was *not* an Eagle Scout."

You configure the pushbuttons by double-clicking the pushbutton response symbol, which opens the Pushbutton Options dialog box. Position the pushbutton by dragging the button in the Presentation window.

Pushbutton Options	
Title: <input type="text" value="Haldeman"/>	<input type="checkbox"/> Perpetual
Optional Key(s): <input type="text"/>	Button Type <input checked="" type="radio"/> Standard <input type="radio"/> Outlined
Active If TRUE: <input type="text"/>	<input type="button" value="Position & Size..."/>
If Inactive: <input checked="" type="radio"/> Dim <input type="radio"/> Hide	Erase Feedback After Next Entry <input type="button" value="v"/>
<input type="button" value="Response Type..."/>	<input type="button" value="OK"/> Not Judged <input type="button" value="v"/>
<input type="button" value="OK - Edit Display"/>	<input type="button" value="Cancel"/> Try Again <input type="button" value="v"/>

In the Pushbutton Options dialog box, you set the branching and erasing options for the response. For each incorrect response, the branching option is set to Try Again. For the correct response, the branching option is set to Exit Interaction.

Branching options appear as arrows at the bottom of responses in the flowline. You can easily change the branching by Control-clicking the branching arrows (clicking them while pressing the Control key).

You would probably add additional responses to this interaction:

- You could use a tries limit so that the user only gets one or two attempts at answering the question.
- You could use a time limit to keep the user from spending too much time on this one question.
- You might set up a help button or pull-down menu.

You could have also set up this exercise using different response types in place of the three pushbutton responses:

- Using clickable object responses, where the user clicks one of the three men's pictures.
- Using text responses, in which the user must type the correct name. This is more challenging because the user would have to remember the correct answer without seeing possibilities.
- Using a keypress for a, b, or c.

- Attaching responses to an interaction
- Response types
- Erasing, judging, and branching responses
- Perpetual responses

Attaching responses to an interaction

While a display icon is the most obvious type of icon for presenting information, you can attach any type of icon to an interaction icon; attached decision and interaction icons must first be inserted in a map.

- Animation, movie, and sound icons let you provide distinct sensory information.
- Attaching a map as the response icon enables you to attach a series of icons as one response.
- If you don't need to display anything to users when they respond in a certain way, attach a map icon and leave it empty. You might do this, for example, if you wanted to include a Quit pushbutton that allows the user to exit the interaction.

When you set up an interaction, you anticipate what the user might do and then present appropriate information. Some responses are easy to anticipate—to match a pushbutton response, for instance, the user clicks the button. But you may also want to anticipate a user clicking some other part of the screen or typing a wrong answer. The more responses you anticipate, the more individualized feedback you can give.

Response types

To create an interaction, drag an interaction icon onto the flowline. Then position other icons to the right of it. When you attach the first icon to the interaction, Star asks you to choose a response type. The Response Type dialog box appears.

Each additional icon you attach to this interaction icon will default to the same response type.

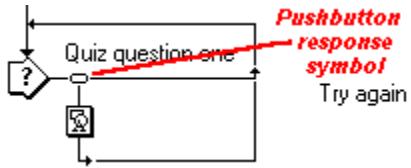
Detailed explanations for how to set up each type of response are included in Chapter 3, "Procedures & Examples."

- Pushbutton responses
- Click/touch responses
- Clickable object responses
- Movable object responses
- Pull-down menu responses
- Conditional responses
- Text responses
- Keypress responses
- Tries limit responses
- Time limit responses

Pushbutton responses

A pushbutton appears on screen and can be selected by a mouse click or optionally by pressing the Enter key. The title of the response icon is also the title of the button. Pushbuttons are commonly used for exiting, menu screens, and help.

The pushbutton response symbol looks like a small pushbutton:



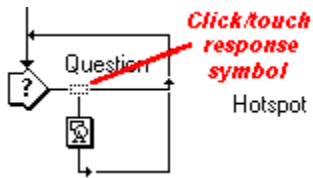
- Setting up pushbutton responses
- Pushbutton Options dialog box

Click/touch responses

A click/touch response is used to specify a "hotspot" in the interaction display. A hotspot is an area on the screen a user can activate by clicking, double-clicking, or moving the cursor over the hotspot. You select options that determine how the response can be matched.

The click/touch response symbol is a small outline rectangle representing a hotspot area:

When you attach a click/touch response to an interaction, Star inserts a hotspot in the interaction icon's display. The hotspot is labeled with the response icon's title. Since hotspots don't appear during file presentation, you must be editing with the toolbox or paused at the interaction display in order to see them.



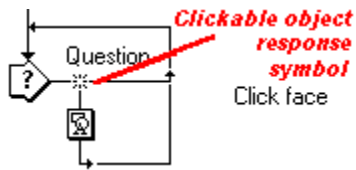
- Setting up click/touch responses
- Click/Touch Options dialog box

Clickable object responses

Clickable objects, like click/touch areas, are also hotspots that the user can click. To create a clickable object, you select an object displayed on screen at the time of the interaction. If the object is contained in a display icon that contains other objects, they are all selected for the response; so you probably want to put a clickable object in its own display icon.

Unlike click/touch areas, though, they are actually objects that you have previously displayed on screen. They are especially useful if you would like to create an irregularly shaped hotspot.

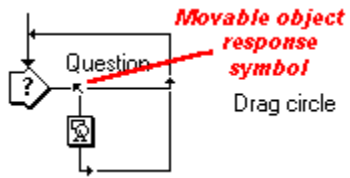
The clickable object response symbol looks like this:



- Setting up clickable object responses
- Clickable Object Options dialog box

Movable object responses

Movable objects require the user to drag an object to a target area. For example, you might create an application in which the names of states are dragged onto a map. Each name would need to be a separate icon from the map.

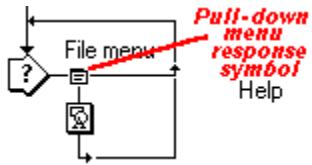


- Setting up movable responses
- Movable Object Options dialog box

Pull-down menu responses

Attaching pull-down menu responses to an interaction creates pull-down menus at the top of the screen.

The response symbol for pull-down menus looks like this:



Pull-down menus are an easy way of providing the user with access to options without cluttering the screen with buttons or other objects. You'll often want to make pull-down menus perpetual, so they are available to the user throughout your application. Pull-down menus may include keyboard shortcuts.

Users match pull-down menu responses by choosing them from the menu. When the user selects a command, Star branches to the attached icon—every command in the menu has its own attached icon. All packaged files include a File menu with a Quit command by default.

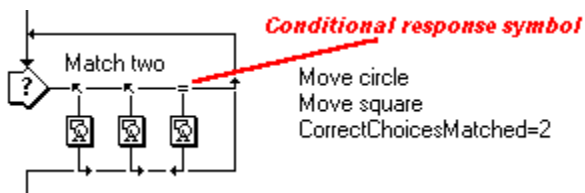
- Setting up pull-down menu responses
- Pull-down Menu Options dialog box

Conditional responses

A conditional response is used to specify a condition that can be matched in one of several ways, depending on whether it is set up for automatic matching:

- If auto-matching is not selected, Star waits for the user to respond to the interaction (with a keypress or pushbutton, for instance); when the condition is true, it then matches the conditional response and branches to the attached icon.
- If auto-matching is selected, and the condition is true, Star immediately matches the conditional response and branches to the attached icon without waiting for a user response.

Its response type symbol is an equal sign:



Conditional responses are useful when you want Star to branch to an attached icon only if a certain condition is true.

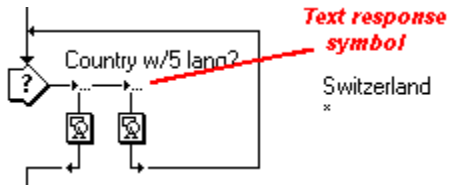
- [Setting up conditional responses](#)
- [Conditional Options dialog box](#)

Text responses

Text responses are useful when you want the user to respond to an interaction by typing characters or words. When you set up a text response, Star creates a text entry field in which the user can type.

Users match a text response by typing characters that match the response icon's title (or a variation of the title). Provide response icons to cover any response the user might make, so that Star responds no matter what users type. Star branches to the icon that matches the text the user typed.

The symbol for a text response looks like this:



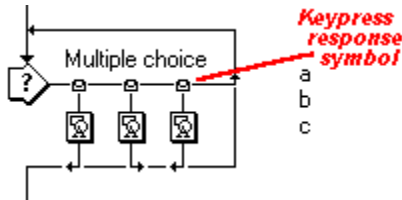
Text responses have a wide range of uses beyond the obvious question and answer format. You can store responses in variables and manipulate them. For example, you might include a text interaction that prompts the user for his or her name. You could store the name in a variable. Later you can use the name for displaying in the file, creating individual user records, as part of a sign-on feature, or for saving to an external file along with the user's performance.

- Setting up text interactions
- Text Response Options dialog box

Keypress responses

With a keypress response, Star branches to the icon attached to the keypress response as soon as the user presses the specified key.

The response symbol for a keypress looks like this:



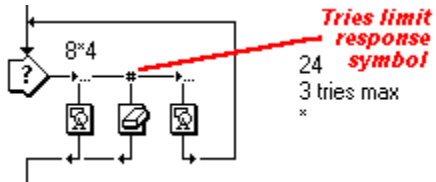
Keypress responses are often used to give the user function key commands that can be carried out at the press of a key. Keypress responses are also frequently used in multiple-choice interactions when you want the user to select a single choice.

Tip: If you want the user to press certain keys as responses, you can also use text responses: limit the response length to one character and activate Auto-Entry. As soon as the user types any character, Star will try to match the response.

- Keypress Options dialog box

Tries limit responses

With tries limit responses, you specify how many times the user can respond to the interaction before Star branches to the tries limit response icon. You can use tries limits for giving hints or limiting the number of responses a user can make. The response symbol for a tries limit response looks like this:

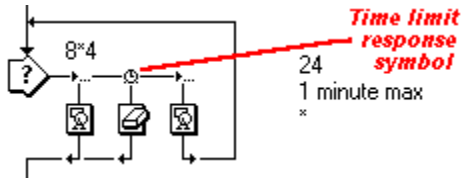


Tries limit responses can be used for giving the user hints based on the number of unsuccessful responses entered. Tries limits can also be used to allow the user a maximum number of entries.

- Tries Limit Options dialog box

Time limit responses

The time limit response allows you to control the amount of time the user is allowed to spend responding to the interaction. As soon as the specified time elapses, Star branches to the icon attached to the time limit response. The response symbol for a time limit looks like this:



You can set a time limit response with a short time limit to cause an immediate branch without waiting for the user to respond.

- Time Limit Options dialog box

Erasing, judging, and branching responses

After the user responds to an interaction, one of the response types should be matched. (If it doesn't match, nothing will happen and the interaction will remain on screen forever.) When the user clicks the pushbutton, for example, the icon attached to the pushbutton is presented on screen. The attached icon might be a display that says "Absolutely correct" or a sound that plays triumphant music.

Then what?

- Erasing responses
- Judging responses
- Branching

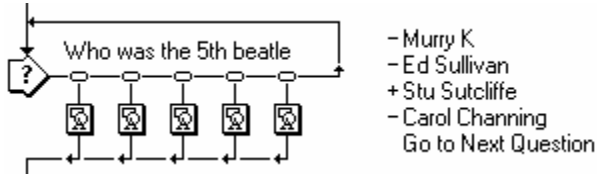
Erasing responses

Although you can erase a display from the screen using an erase icon, interactions also have erase options. Each attached icon has an erase setting that you choose in the options dialog box for it. In addition, the whole interaction has an erase setting that supersedes the erase settings for the icons contained in it. The default setting for erasing is After Next Entry. But you can have an object stay on screen after it's been matched by selecting Don't Erase. Or you may want the object to erase Before Next Entry. Try out the different erase settings and experiment with special erase effects.

Judging responses

In each response's options dialog box is a pop-up menu that lets you evaluate a user's response as Correct, Wrong, or Not Judged. Not Judged is the default. Setting up judging is not the same as setting the branching; it doesn't directly control what path Star follows next. Judging user responses is tracked by system variables and is appropriate for test questions.

When you set up a response to be judged as Correct or Wrong, it is indicated in the flowline by a + (Correct) or - (Wrong) symbol next to the response title.

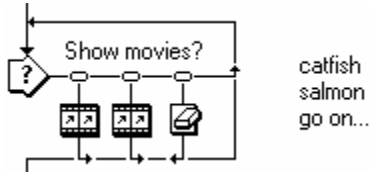


In this example Stu Sutcliffe is the correct answer.

Tip: As a shortcut, you can also designate responses as Correct, Wrong, and Not Judged right on the flowline by Control-clicking to the left of the response title.

Branching

Branching describes the path that Star follows next. You select branching for each interaction icon. Branching is shown in the flowline as arrows below attached icons.



When a user matches a response by clicking the mouse or typing a word, you may want Star to exit the interaction because a right response was matched. Alternately, if the user gave a different response, you might want to let them try again. However once you set up the options for an icon's response, additional icons added to the right of that icon default to that icon's response options, including the response type and branching. Icons added to the leftmost position in the interaction default to pushbutton responses with Try Again branching.

In some cases, you'll choose Continue branching, so that rather than returning to the beginning of the interaction, Star continues along the flowline looking for additional matches. Perpetual responses, described in the following section, allow return branching.

You can change an icon's branching by Control-clicking the branching arrow on the flowline.

Perpetual responses

Many interaction response types contain a perpetual option. Choosing the perpetual option causes the response to remain active after Star exits the interaction. The response remains ready to be matched—even when the user is responding to another interaction. If the user later matches the response, Star immediately leaps back to the icon attached to the perpetual response.

Using the perpetual setting with an icon allows users to return to a main file menu or to try several alternate paths. You might also use a perpetual setting to allow users to interrupt what they're doing to get information, perhaps in a glossary, or to review their performance and then return to their previous activity.

- Types of perpetual responses
- Perpetual interactions

Types of perpetual responses

Through response options dialog boxes, you can set the first six response types to perpetual:

- Pushbutton
- Click/touch
- Clickable object
- Movable object
- Pull-down menu
- Conditional.

Note: Perpetual pushbutton and pull-down menu responses are obvious to the user, since they remain clearly visible as options. Perpetual click/touch, clickable object, and movable object responses, on the other hand, may not be obvious. With these response types, be sure to remind the user that an area or object can be clicked or an object moved.

Response types that can be set to perpetual also have an Active If TRUE field and an exit branching option called "Return." Active If TRUE lets you make the perpetual response active only when a specific condition is true.

Pushbutton Options

Title: Perpetual

Optional Key(s):

Active If TRUE:

If Inactive: Dim Hide

Response Type... OK

OK - Edit Movie Cancel

Button Type
 Standard Outlined

Position & Size...

Erase Feedback
Before Next Entry

Not Judged

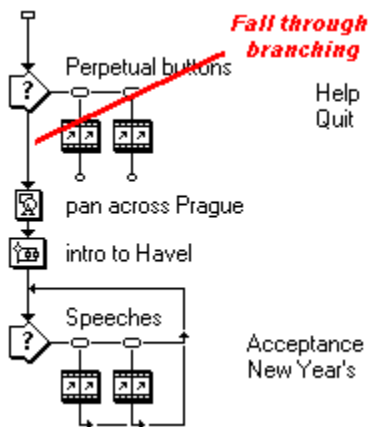
Try Again

Try Again
Continue
Exit Interaction
Return

Additional options for perpetual

Perpetual interactions

Interactions that have only perpetual responses attached to them are called perpetual interactions. Unlike regular interactions (those that have one or more responses *not* set to be perpetually active), perpetual interactions do not wait for a user response. Star does not stop when it encounters the interaction. Instead, Star activates the perpetual responses and then proceeds to the next icon on the flowline. This exit branching is often called "fall through" branching. Branching lines for "fall through" branching look like this:



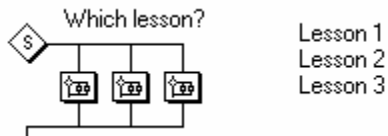
The most common use of a perpetual interaction is one containing only pull-down menu responses. You might set up all your file's menus at the top of the flowline as a series of perpetual interactions.

Decisions

Use decision icons when you want Star to control branching without requiring any response from the user.

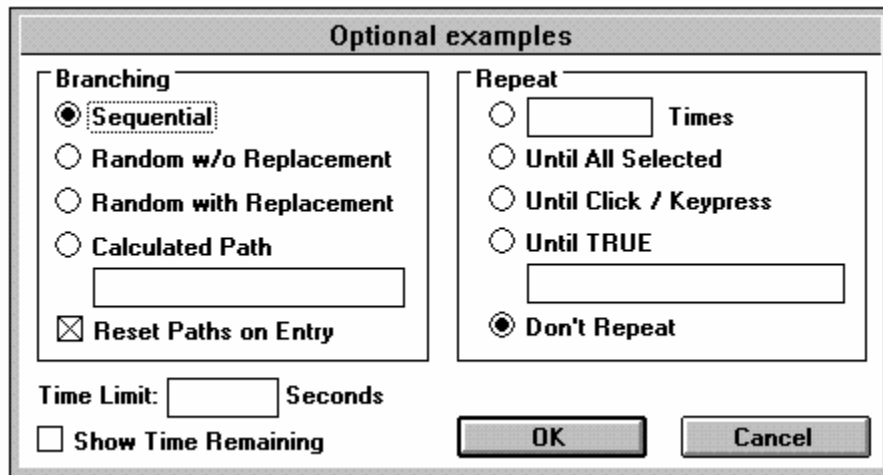
You might use a decision icon to cycle through the display of several introductory animations a specified number of times. Or you might want to change the display based on the date or a user's skill level.

Attach icons to a decision icon by dragging them to the right of the decision icon.



Star decides which attached icon to branch to, based on information in the Decision Options dialog box.

[Click part of the illustration of the dialog box for more information.](#)



The Decision Options dialog box

The Decision Options dialog box lets you control the application's structure—what path the application will follow. You determine how Star will decide which attached icon to branch to and how many times the attached icons will be repeated.

There are options for branching through the attached icons sequentially, randomly, or based on a calculation involving variables.

Variables represent data that can vary each time a program is run or during the course of the program. Variables are discussed in the "[Using data](#)" section of this chapter.

The repeat options allow you to control whether the program will return to the decision icon after branching to an attached icon. If the decision icon is repeated, all the branching options of the attached icons will be reconsidered.

Each icon you attach to a decision icon has options you set separately. Double-click an attached icon to display its options.

The decision icon and its options dialog box are described in detail in Chapter 4, "[Icon Reference](#)."

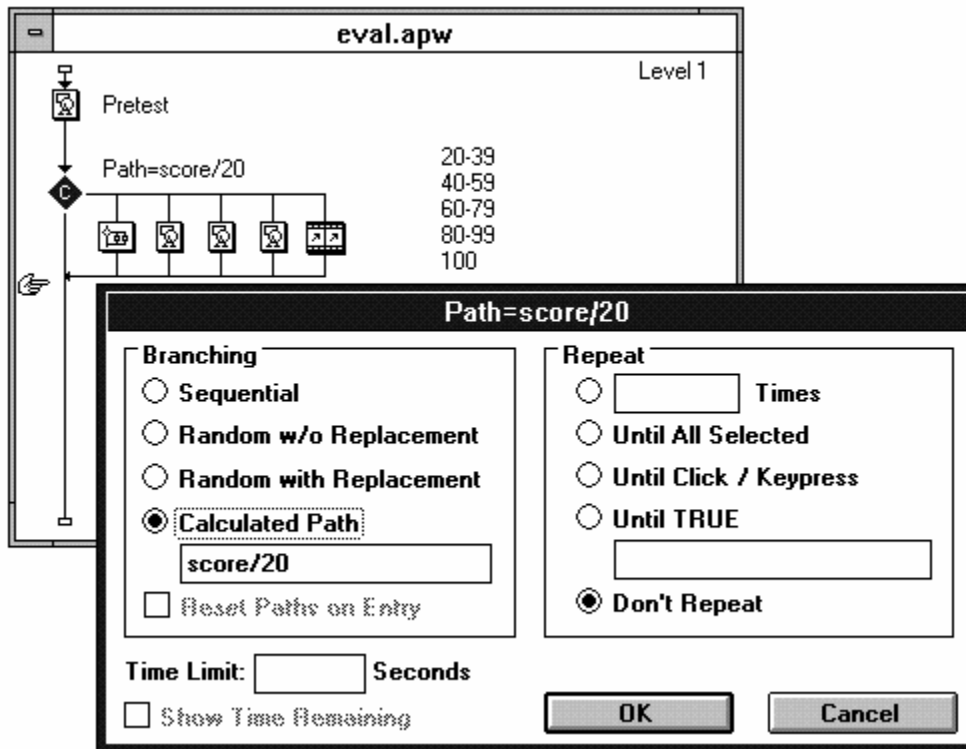
Tip: *Star provides options that let you automatically erase displays contained in attached display, map, and calculation icons. Because this automatic erasure works with map icons attached to a decision, it's a convenient way of making sure that all display items in a complex or lengthy set of interactions are erased before the next set is displayed. Just attach the map icon, double-click it, and select one of the options from the Erase Displayed Objects pop-up menu. The decision will erase all text and graphics presented by any icon in the attached map. To open the icon you double-clicked, click the OK - Edit Map button.*

Setting up decision structures:

- Example 1
- Example 2
- Example 3
- Example 4

Setting up decision structures

Example 1: If you were creating a tutorial on how to use a computer banking system, you might want to create a custom variable tracking the user's expertise to determine which topic should be selected. The value of the custom variable at the time Star encounters the decision would determine which attached icon is branched to. A decision's attached icons are internally numbered from left to right, starting with 1. So if the variable's value is 1, the first attached icon would be presented, and if the variable equals 2, the second icon would be presented.



Only the whole number or integer portion of the value is used. If the value is less than 1 or larger than the number of attached icons, Star bypasses all attached icons and moves to the next icon on the main flowline, regardless of how you have set the repeat options.

You can also use a logical variable or conditional expression when you want something to happen only if a condition is true. Star calculates the value of the variable or expression; a value of true equals 1 (the first icon is branched to) and false equals 0 (the decision icon is bypassed). Four examples of decisions using the Calculated Path field follow.

Setting up decision structures

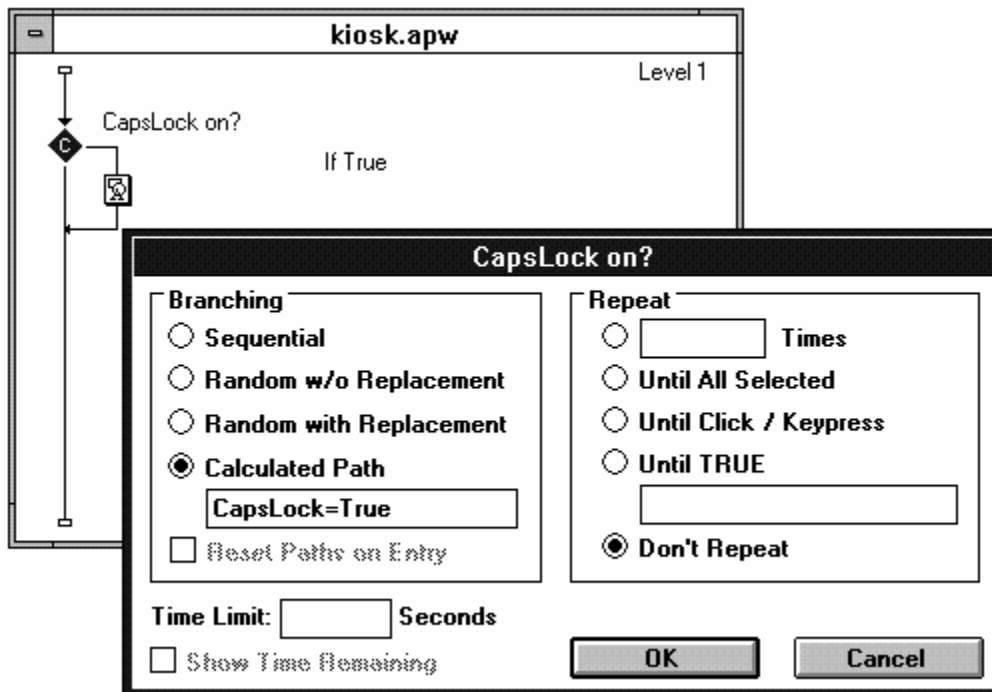
Example 2: A user is taking a pretest. Depending on her score, she'll begin learning at a different lesson. You can perform a calculation to determine which path should be taken. Suppose you insert a calculation such as `score/20` in the Calculated Path branching field to determine which of five paths should be taken. Since there are only five icons, a score of more than 100 or less than 20 would be thrown out. Branching would take place as follows:

Her score	Score/20=	Icon branched to
120	6	0... (bypass)
100	5	5
85	4.25	4
80	4	4
20	1	1
15	0.75	0... (bypass)

Setting up decision structures

Example 3: You can type a conditional expression when you want something to happen only if a condition is true. Suppose you have text interactions in your file that are case-sensitive, and you want to make sure at the beginning of the application that the Caps Lock is not on. A logical system variable called `CapsLock` is true or false, depending on the current status of the Caps Lock key.

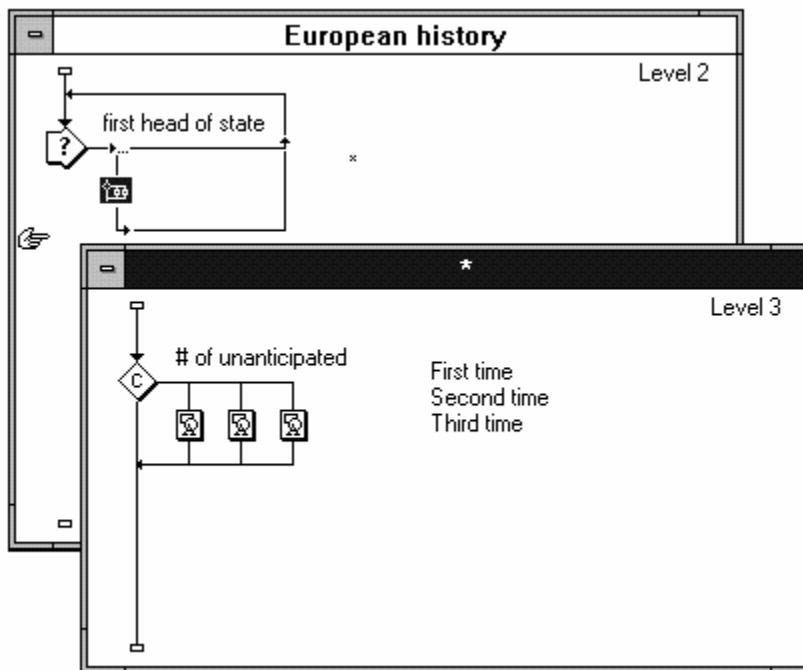
You could insert this variable into the Calculated Path field. A value of true is interpreted as a 1, and the attached display icon would be presented. A value of false would bypass the decision.



Setting up decision structures

Example 4: The Calculated Path option is useful for providing specific help based on a user's response. Suppose you have a text response interaction that asks the user "Who was the head of state of the newly unified Germany?" The attached icons are used to respond to correct and incorrect responses that you anticipate the user might enter. A text response called "*" (a wildcard that catches any response) is placed right-most in the interaction to catch all unanticipated responses. You track the number of unanticipated responses with a custom variable called `Unanticipated`. Before the interaction, `Unanticipated` is set to a value of 1.

When the user first enters an unanticipated response, Star enters the "*" map. This map contains a decision set to calculated path branching based on the value of `Unanticipated`. Since the current value of `Unanticipated` is 1, Star branches to the first attached icon ("First time").



Attached to the "First time" display icon is a calculation that increments the value of `Unanticipated` by 1. If the user enters another response to match the wildcard, Star branches to the second attached icon ("Second time").

Using data

You can use data in Star to create sophisticated applications without a lot of extra effort. **Variables** store data. **Functions** are specific tasks performed on the values of variables.

Commands in the Data menu are explained in Chapter 5, "[Menu Reference](#)."

You can use functions and variables in several ways:

- Conditional responses
- Conditional branching in a decision icon
- Calculation icon or attaching a calculation to another icon
- In text entry fields of dialog boxes
- Displayed variables in text.

Most fields in Star dialog boxes accept variables. For example, you could make a Quit button available to the user based on a variable that represents the number of correct responses the user has entered. Or you can animate a thermometer so that the mercury rises to the level of the temperature that the user enters. Variables were used in Example 4 in the previous section, which showed a decision icon that used Calculated Path branching.

- Variables
- Functions
- Expressions
- Calculations

Variables

In Star, a variable represents a value that can change. As its name implies, a variable's value *varies*. Variables can take on different values while the application is running.

There are two types of variables:

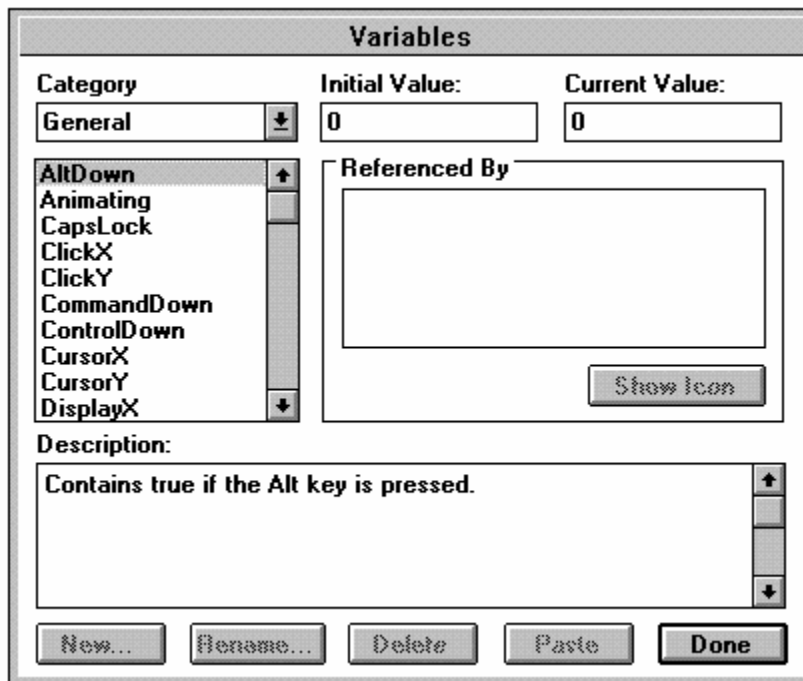
- Star provides many pre-defined **system variables** for you to use.
- You can create **custom variables** to store any type of information you need.

Use variables by inserting them in:

- Calculation windows (in calculation icons or in calculations attached to icons)
- Condition fields
- Option fields
- Display text.

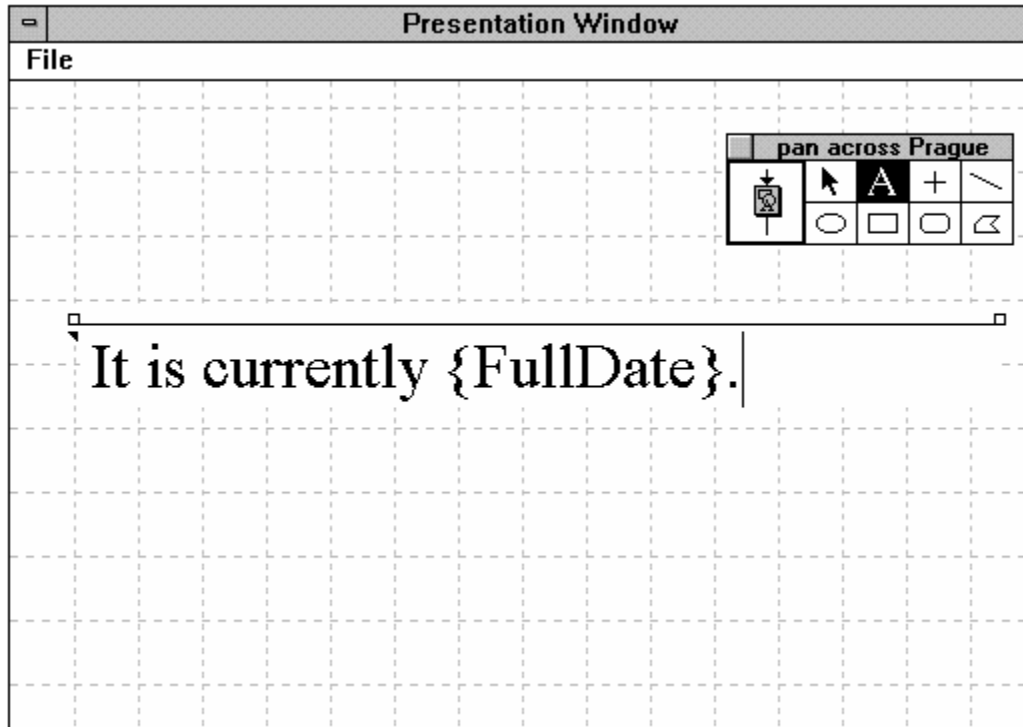
Each variable has a name that identifies it, similar to the number on a mailbox or the name on a locker. System variable names in Star always begin with an uppercase letter, and are made up of one or more words with no spaces between them such as `EntryText` and `Tries`. You can assign any name to a custom variable, except one used by an existing system variable or another custom variable in the file.

- To view variables, choose Show Variables from the Data menu. You can access system variables and any custom variables created or contained in your current file from the Variables dialog box. From the Category pop-up menu, choose a category and select the variable you want to view from the list below it. The other fields in the dialog box contain current information about the selected variable.

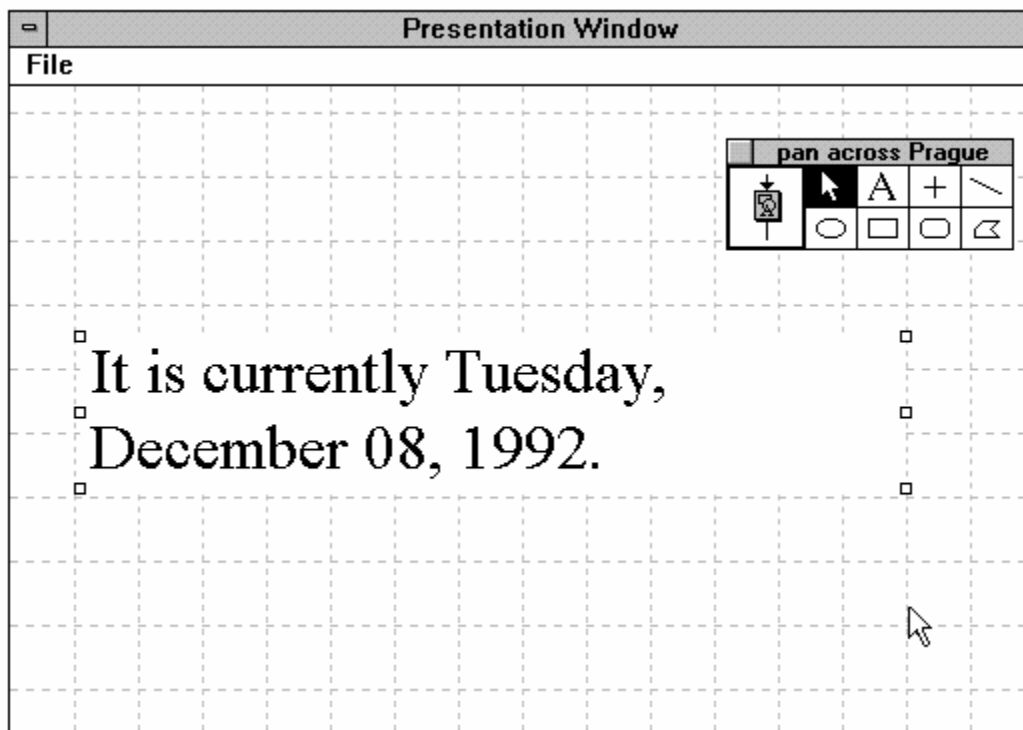


- You can retrieve the value of a system or custom variable at any point in an application. Star automatically updates the values of system variables, while you must define and change the values of custom variables.

- You can display any variable's value during presentation by embedding its name in display text between curly braces.



Once the text object is no longer selected with the text tool, the current value of the variable appears where its name previously appeared.



- If you want the displayed variable to update continuously on screen whenever its value changes, you

must set the Update Displayed Variables option in the Effects dialog box. When displaying a numerical variable's contents on screen, you can change the value's display format (change its decimal and separator options, for instance) using the Number Format command.

Functions

A function performs a specific task.

Star provides many pre-defined system functions for you to use. In addition, you can import external code as custom functions to perform any type of task you need.

You can use functions by inserting them in:

- Calculation windows
- Condition fields
- Option fields
- Display text.

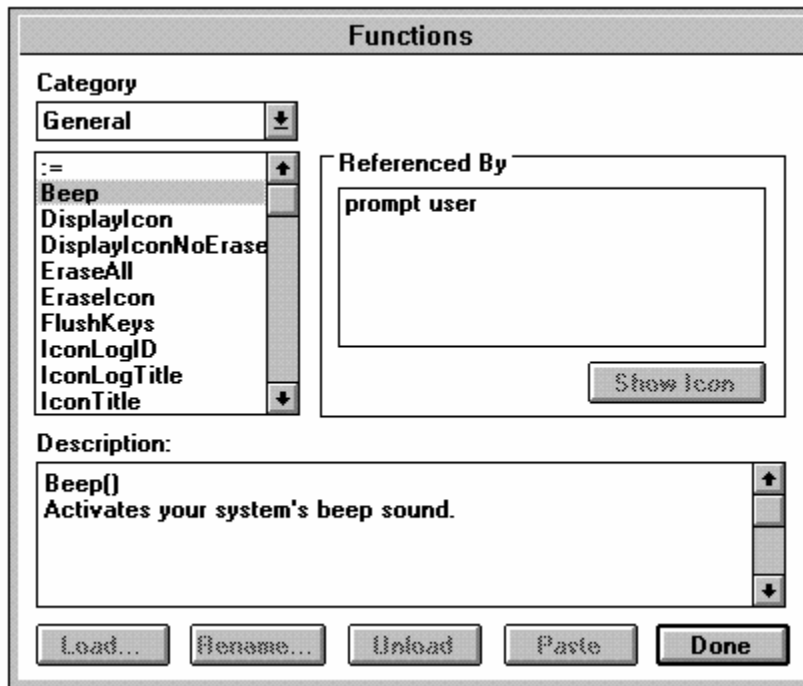
Like variables, system functions in Star follow certain naming conventions: they always begin with an uppercase letter, and are made up of one or more words with no spaces, such as `SoundPlaying` or `Animating`. You can assign any name to a custom function, except one used by an existing system function or another custom function in the file. You might create custom functions such as `EncryptPassword` or `SearchDatabase`.

- Selecting functions
- Syntax of functions
- Creating a custom function

Selecting functions

To view a list of available functions, choose Show Functions from the Data menu. You can access system functions and any user functions loaded or contained in your current file from the Functions dialog box. From the Category drop-down list, choose a category and select the function you want to view from the list below it. The other fields in the dialog box contain current information about the selected function. See the "[Show Functions](#)" section of Chapter 5 of this manual for a brief explanation of the options in this dialog box.

[Click part of the illustration of the dialog box for more information.](#)



Syntax of functions

Functions have their own syntax, which includes one or more arguments enclosed in parentheses. The syntax for a selected function appears in the first line of the function's description in the Functions dialog box. An argument refers to the option or value on which the function operates. The arguments shown in the syntax describe the options or values required. You replace the argument(s) with your own options, values, or variables.

You must supply the function's argument(s) in order for it to work. Even if the function does not require arguments, the parentheses must still be present. Some functions have optional arguments, indicated in the argument's description.

Creating a custom function

To create a custom function, you must write it as a dynamic link library (DLL) or user code file (UCD) and then use the Load Function command to import it into Star.

Expressions

One of the main ways of using variables and functions is in expressions. An expression is a statement that yields a result by evaluating or comparing values. You can include them in Calculation windows and in text entry fields in dialog boxes.

Expressions are used for two reasons:

- You can use an expression to assign a value to a variable. In its simplest form, an expression might consist of a manipulation of a system variable. For example, you could have the user enter a temperature in `Fahrenheit` and have Star store the converted value in a variable called `Celsius`.

```
Celsius := 5/9 * (UserText - 32)
```

This expression uses the assignment ("`:=`") operator. It assigns the result to the `Celsius` variable.

- You can also use an expression to evaluate whether a condition is true or false, based on the values of variables. For example, you have a variable, `Income`, that contains the user's income. Then you could display a certain menu option (to display information on tax shelters), based on whether the user's income is greater than a certain amount.

```
Income > 40000
```

An expression can contain any combination of the following:

- Variables** can be defined by Star or you can create your own variables.

```
Height cm := Height inches * 2.54
```

- Functions** perform operation on variables.

```
Sentence length := WordCount(EntryText)
```

- Numbers** can be whole numbers or decimals.

```
Page := Page + 1
```

- Character strings** represent text.

```
Result := "Your final score is " ^ Score
```

- Constants** are values that cannot change (logical constants such as `True` and `False`).

```
Test Completed := True
```

- Comments** are used to enter notes that do not influence the result of an expression. You separate comments from the expression by prefacing them with two dashes.

```
UserName := EntryText --UserName gets input
```

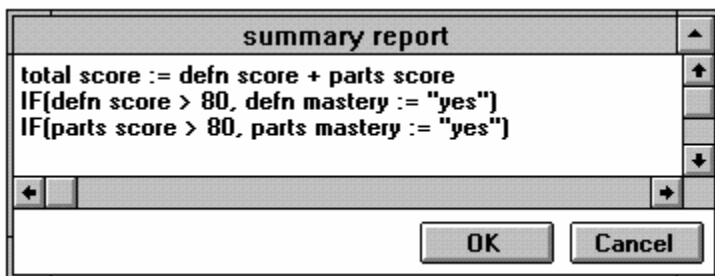
- Operators** are common symbols used to perform actions on values. This table shows the operators you can use in Star.

Category	Operator	Description
Assignment	<code>:=</code>	variable := value or

operator		expression(value or expression is evaluated and the result is assigned to variable)
Relational operators	=	equal to
	<>	not equal to
	<	less than
	>	greater than
	<=	less than or equal to
	>=	greater than or equal to
Logical operators	~	not
	&	and
		or
Arithmetic operators	+	add
	-	subtract
	*	multiply
	/	divide
	**	exponentiate
Concatenation	^	combines two strings into one

Calculations

The Calculation window provides a workspace for typing expressions to be calculated or evaluated. You can place calculation icons at any place on the flowline or attach calculations to other icons. When Star encounters the calculation icon, it evaluates the expression or carries out the function you've inserted.



- Attaching calculations to other icons
- ... to interaction icons
- ... to decision icons

Attaching calculations to other icons

Another way of inserting calculations in your files is to attach them to other icons. You can attach a calculation to any icon, except another calculation icon. When you attach a calculation, Star performs the calculation each time it encounters the icon during presentation. The Calculation window appears the same way as when you open a calculation icon.

To attach a calculation icon to another icon in your file:

1. Select the icon you want to attach a calculation to and choose Calculations from the Data menu.

The Calculation window opens and is titled with the name of the icon you're attaching the calculation to.

2. Type the expression you want to use.

You can enter multiple expressions in a calculation window—press Enter at the end of each expression to separate them. Each expression can contain up to 400 characters.

3. Click the OK button and save your changes.

When you close the window, Star checks the syntax of expressions you typed. If a syntax error is found, Star alerts you.

After you attach a calculation to an icon, an equals sign (=) appears at the upper left corner of the icon.

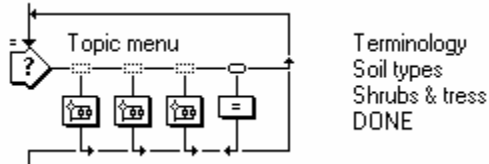
The calculation is performed each time the icon is encountered during presentation. Calculations attached to interaction and decision icons may be performed multiple times, depending on the selected branching.

For example, if you have a display icon that contains variables embedded in display text, you can assign or calculate their values by attaching calculations to the icon rather than placing a calculation icon prior to the display icon.

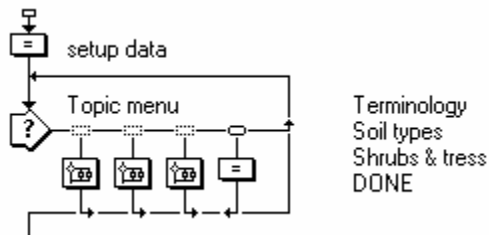
Calculations attached to icons are always performed before the icon is presented. In the example above, the calculations are performed and then the video is presented to the user.

Calculations attached to interaction icons

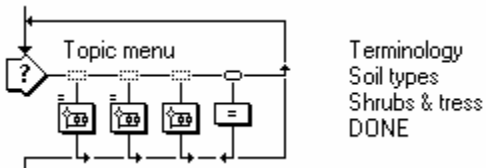
Calculations attached to interaction icons are performed each time the interaction icon is encountered. This means that if an interaction is set to try again branching, the calculation will be performed when the interaction icon is first encountered *and* each time a try again response is matched.



If you want the calculation performed only when the interaction is first encountered and *not* on try again branching, you must include the calculation in a separate calculation icon placed before the interaction icon on the flowline.

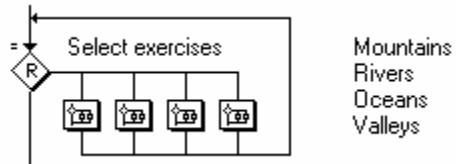


Calculations attached to icons which themselves are attached to an interaction icon are performed only when the response is matched.

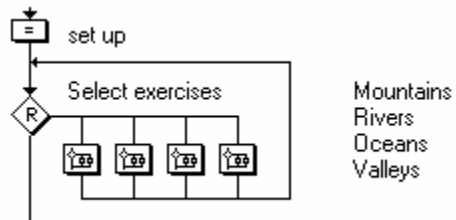


Calculations attached to decision icons

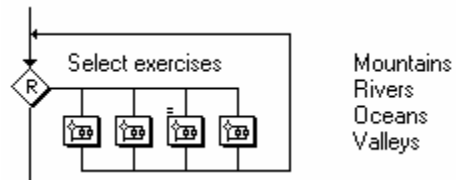
Similar to calculations attached to an interaction icon, calculations attached to a decision icon are performed each time the decision is encountered. If the decision is set to repeat, the calculation is performed *prior to each* selection.



If you want the calculation performed only when the decision is first encountered and *not* with each repetition, you must include the calculation in a separate calculation icon placed before the decision icon on the flowline.



Calculations attached to icons which themselves are attached to a decision icon are performed only when the path is taken.



Chapter 3 Procedures & Examples

Most Star procedures are quite straightforward. This chapter covers some procedures that are more difficult. These procedures are not designed to be a tutorial; rather they provide an overview of the basic steps to set up an animation or response.

Chapters 4 and 5 provide a complete reference of all icons, menu commands, and dialog boxes mentioned in this chapter. This chapter includes step-by-step procedures for:

- Animating objects
- Setting up display positioning
- Setting up responses in interactions

It also includes examples of perpetual responses.

- How objects are moved

How objects are moved

In Star, objects contained in display, interaction, and movie icons can be moved using:

- Animation icons
- Display positioning options in the Effects dialog box
- Movable object responses.

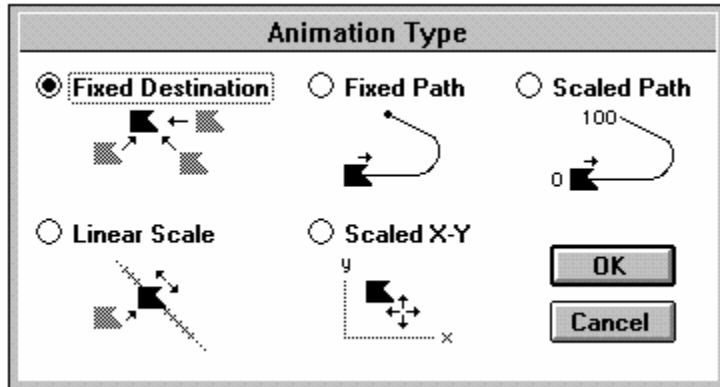
If an object is not on the screen when Star encounters the animation icon, the animation icon is ignored.

Each method provides different capabilities. For example, animation icons provide five different ways of moving an object. Using display positioning options (accessed in the display's Effects dialog box), you can calculate an object's initial position on screen, make an object movable by the user, or constrain an object's movement to an area or path. You can also use variables or expressions with animation icons or display positioning options to control an object's position.

Movable object responses differ from animation and display positioning options in that they provide a *response* to the user's movement of an object into a specified area.

Animation types

Animation icons move display objects or movies that precede them on the flowline. The type of animation you choose depends on how you want the object moved. Double-click the animation icon to open the default animation options dialog box. To choose a different type, click the Change Type button. The Animation Type dialog box appears.



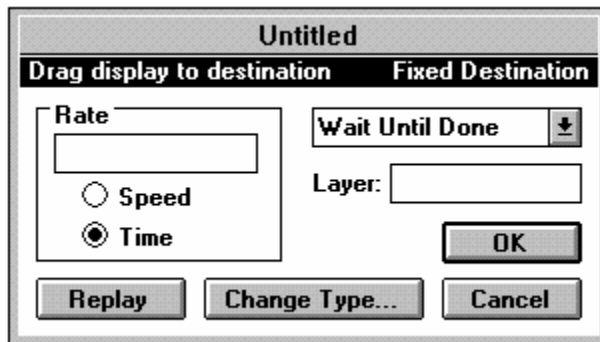
- A fixed destination animation moves an object from its current location to a position you specify. The object is moved in a straight line to the destination position.
- A fixed path animation moves an object from a starting point to an end position along a path consisting of straight and curved segments. You specify a path by defining the points on the path.
- A scaled path animation moves an object along a scaled path to the position corresponding to a variable or expression's value.
- A linear scale animation works like a scaled path animation, except that it does not move the object on a scaled path; instead, it moves an object from any position directly to a position on a straight line scaled between endpoints you specify.
- A scaled X-Y animation also works like a scaled path animation, except that it moves an object to a position within a scaled area rather than along a path. The position is determined by the values of horizontal and vertical variables or expressions you specify.

- Creating paths
- Editing paths
- Creating fixed destination animations
- Creating fixed path animations
- Creating scaled path animations
- Creating linear scale animations
- Creating scaled X-Y animations

Creating paths

The path-based animations (fixed path and scaled path) enable you to create a path for the object's movement. Paths can consist of straight and curved line segments. The path appears only while you're editing the animation icon; during presentation, the display moves smoothly along the path you defined.

1. Drag a display icon onto the flowline.
2. Double-click it to open it and type your name or draw a simple picture.
3. Choose Jump to Icons from the Try It menu.
4. Drag an animation icon onto the flowline, following the display icon.
5. Double-click the animation icon to make the default animation options dialog box appear.



Fixed Destination is the default animation type.

6. Create a fixed path animation by clicking the Change Type button and choosing Fixed Path. Click OK to close the Animation Type dialog box.

The Fixed Path Options dialog box appears.

7. Click the display object to be moved.

You may have to move the dialog box to click the display object. A black triangle appears in the center of the object. This becomes the beginning point of the path. Each point along the path will be marked with a small triangular marker, and straight lines will connect these points to show the animation path. The currently selected marker appears black.

8. Drag the display and release it to create each point on the path.

A line automatically appears to connect the beginning point with the new point. Drag the object to another location and release the mouse button. (Be sure to drag the display away from the existing points or the display will simply follow the current path.) Each time you release the mouse button, a point appears and a line is drawn between the two points. Don't worry about positioning the points perfectly—you can easily adjust them.

Make sure that you drag the object and not the triangular point. Dragging the object creates a point; dragging a point moves the point.

Untitled

Drag display to extend path **Fixed Path**

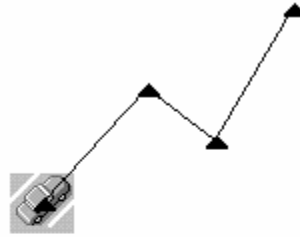
Edit Path Wait Until Done

Rate

Speed
 Time

Animate When TRUE:

Layer:



Editing paths

You edit a path by adjusting its points. It doesn't matter where the object is positioned when you edit the path. You may want to drag the object along the path to make sure it aligns with other objects on the screen. The object's movement is always constrained to the path.

Tip: You can reverse changes made to the path by clicking *Undo*. Repeatedly choosing *Undo* allows you to compare two path designs.

- To move a point, drag it.
- To delete a point, click to select it, and click *Delete Point* in the dialog box.
- To make the segments joining a point curved instead of straight, double-click the point. The segments become curved, and the point changes to a circle marker. To change curved segments into straight ones, double-click the circle marker.
- To add points, click anywhere on the path. A new marker is inserted where you click. A circle marker appears if you clicked adjacent to another circle marker; a triangle marker appears if you clicked between two triangle markers.

To add points past the end of the path, drag the object away from the path and release the mouse button. A new marker appears where you released.

- To make a circular path, add three points; initially place the third point near the base point. The distance between the first two points is the diameter of your circle. Double-click the second point to make it a circle marker. Now drag the third point on top of the base point. To resize the circle, move the second point. If you choose an option which causes the animation to repeat, the display will appear to circle continuously.

The direction an object moves along a circular path depends upon the placement of the path's endpoints. If you drag the starting or "base" endpoint on top of the final endpoint, the object will animate in its usual direction. However, if you drag the final endpoint on top of the starting endpoint, the object will move in the opposite direction.

Creating fixed destination animations

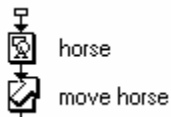
Fixed destination animations move display objects from their current position on screen to the position or destination you specify. If the object is already in its destination position when the animation icon is encountered, the animation is ignored.

In this example, a graphic of a horse is being moved from one location to another using a fixed destination animation.

1. Create the display object to be animated.

Place only the object you want to move in its own icon. For a fixed destination animation, the object's position in the display icon will be its starting position in the animation.

2. Place an animation icon on the flowline following the display you want to animate and title it.



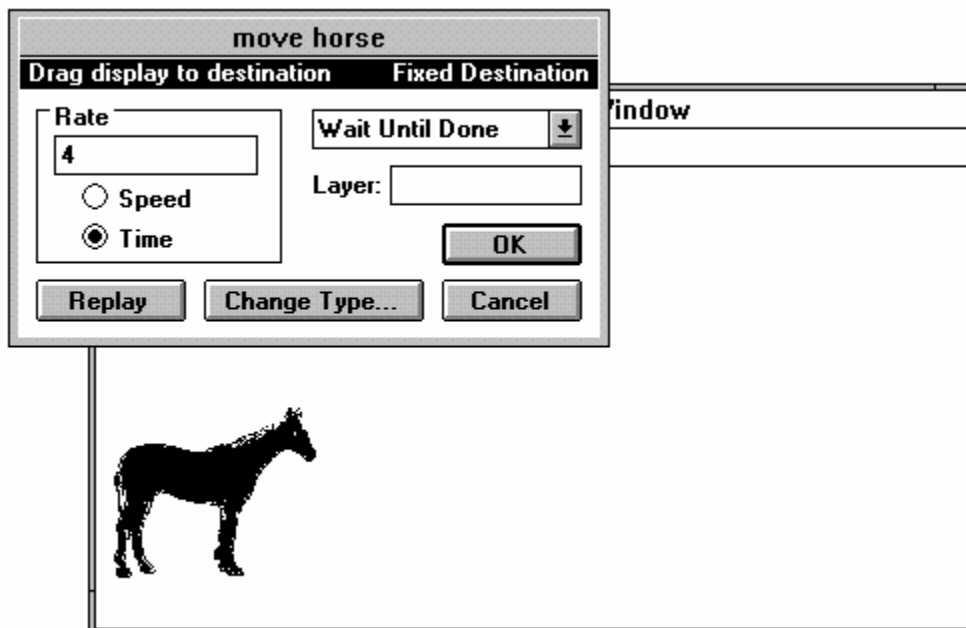
3. Open the animation icon.

Double-click the animation icon in the Design window. This opens the default animation options dialog box and displays the Presentation window, with all objects that last appeared in it.

4. Connect the animation icon to the display object.

When an animation icon is first opened, it is assigned the default Fixed Destination type. Its type appears in highlighted text at the top right of the dialog box.

Follow the instructions at the top of the dialog box. To connect the animation icon to the display, click the object to be animated, and drag it to its destination. Click Replay to see the animation you've set up. To specify a different destination, drag the animated object to the new location.



5. Click OK.

Creating fixed path animations

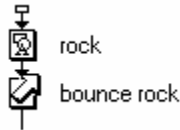
Fixed path animations move display objects from a base point to an end point of a path you specify. If the display is not already at the base point when the animation begins, it jumps to the base point before moving along the path. After being animated, the display is left at the end of the path.

In this example, a rock will bounce to the left on the screen.

1. Create the display to be animated.

Place the object you want to move in its own icon.

2. Place an animation icon on the flowline following the display you want to animate and title it.

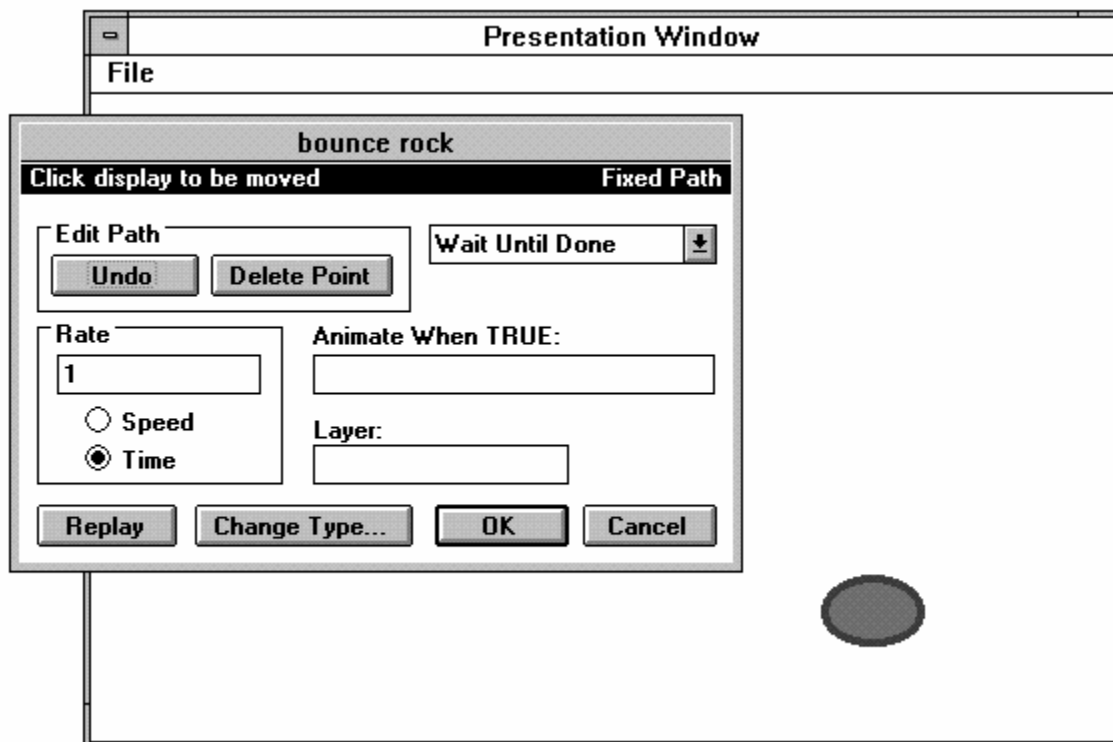


3. Open the animation icon.

Double-click the animation icon. This opens the default animation options dialog box and displays the Presentation window with all objects that last appeared in it. In this case, the "rock" display is shown.

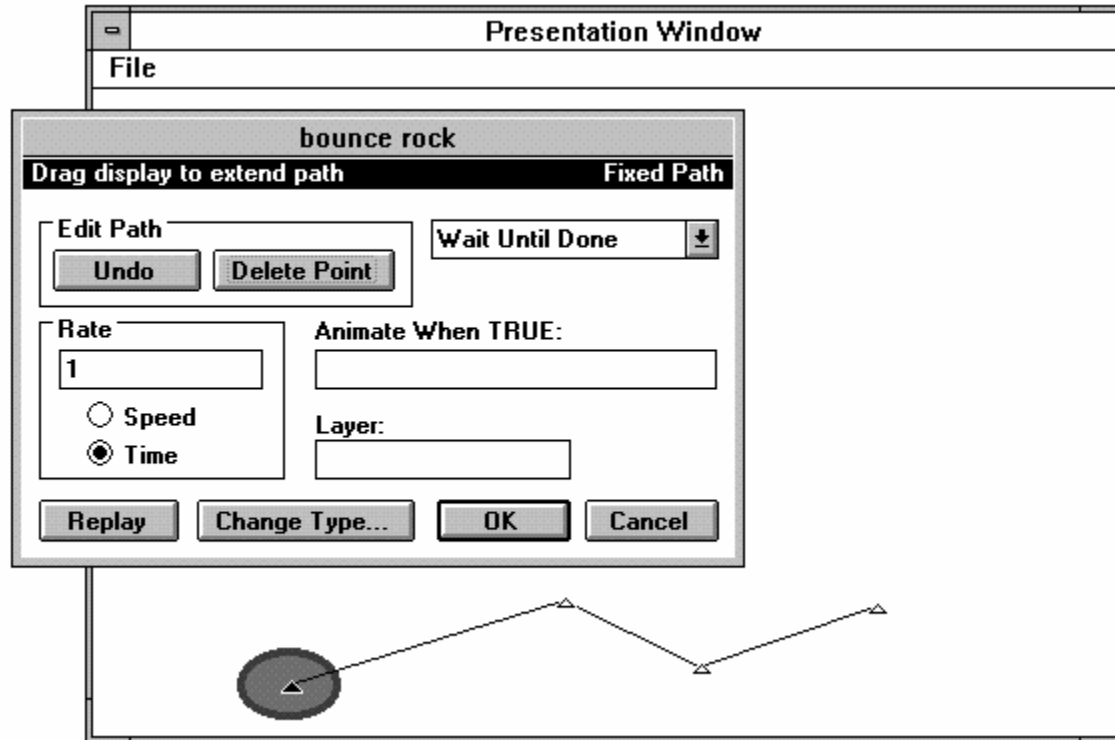
4. Change the animation's type to fixed path.

Click the Change Type button. In the dialog box that appears, select Fixed Path and click OK. The Fixed Path Options dialog box appears.



5. Create the animation's path.

Follow the instructions at the top of the dialog box. To connect the animation icon to the display, click the display to be moved. A black triangle appears in its center. This marker becomes the first point of the path. Drag the object and release to create the path's points. Click Replay to see the animation you've set up.



Double-click markers on the path to create a curved path. For more details, see "[Editing paths](#)" in this chapter.

6. Click OK.

Creating scaled path animations

Scaled path animations allow you to position an object at any point along a scaled path. In a scaled path animation, you define a path and assign numeric values to each end of the path; Star automatically scales all points in between. When the animation is activated, the object moves to the position along the path corresponding to the value of the variable or expression you specified.

In this example, you'll create a stopwatch that counts up to 60 seconds.

1. Drag a display icon onto the flowline and create the display to be animated, such as a red circle. Place the object you want to move in its own icon. Its position in the icon will be its starting position.

2. Drag an animation icon onto the flowline following the display you want to animate and title it.



3. Open the animation icon.

Double-click the animation icon in the Design window. This opens the default animation options dialog box and displays the Presentation window with all objects that last appeared in it.

4. Change the animation's type to Scaled Path.

Click the Change Type button. In the dialog box that appears, select Scaled Path and click OK. The Scaled Path Options dialog box appears.

5. Create the animation's path.

Follow the instructions at the top of the dialog box. To define the scaled path, click the display to be moved. A black triangle appears in its center. This marker becomes the first point of the path. Drag the object and release to create the path's points.

For the stopwatch example, create a circular path by creating a path with three points; the two endpoints must overlap and the middle point must be curved. (See "[Creating paths](#)" for detailed instructions on creating and editing paths.)

6. Insert a variable or expression into the Variable/Expression field to control the animation.

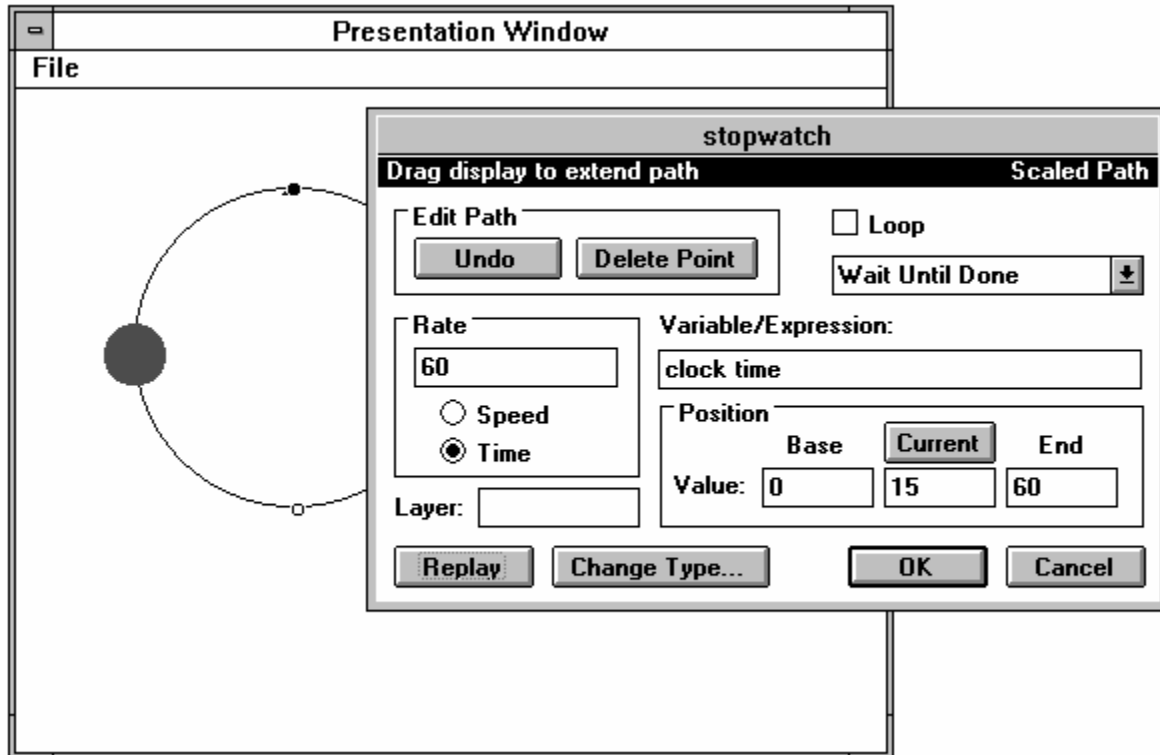
When Star encounters the animation, the numeric value of this variable or expression determines where the animated object will be positioned along the path. This variable or expression works with the base and end values of the path.

To test this example, you can enter numbers in the Variable/Expression field.

7. Assign scale values to the base and end points of the path.

The values you type in the Base and End fields work with the variable or expression in the Variable/Expression field. During presentation, if the variable's value equals the base value, the object moves to the base position; if it equals the end value, the object moves to the end position. If the variable's value is between the base and end values, the object moves to a corresponding scaled position between the base and end points.

In the stopwatch example, suppose that you want the red circle to be at the base of the scaled path (the 12 o'clock position) when the expression has a value of 0, and you want the red circle to be at the end of the path when the expression has a value of 60, so you assign values of 0 and 60 to the base and end points of the path. The position could be based on a custom variable you create named `clock time`.



8. Click OK.

Creating linear scale animations

Linear scale animations allow you to move objects from any starting screen position to a position along a linear scaled line. Whereas a scaled path animation follows any type of path, a linear scale animation always moves the object in a straight line. When Star activates the animation, it moves the object to the position along the scaled line corresponding to the value of the variable or expression you specified.

In this example, a picture of a dog will move to a place on screen in response to the user typing a number.

1. Create the display to be animated, such as a picture of a dog.

Place the object you want to move in its own display icon. Its position in this icon will be its starting position.

2. Place an animation icon on the flowline following the display you want to animate and title it.



3. Open the animation icon.

Double-click the animation icon in the Design window. This opens the default animation options dialog box and displays the Presentation window with all objects that last appeared in it.

4. Change the animation's type to Linear Scale.

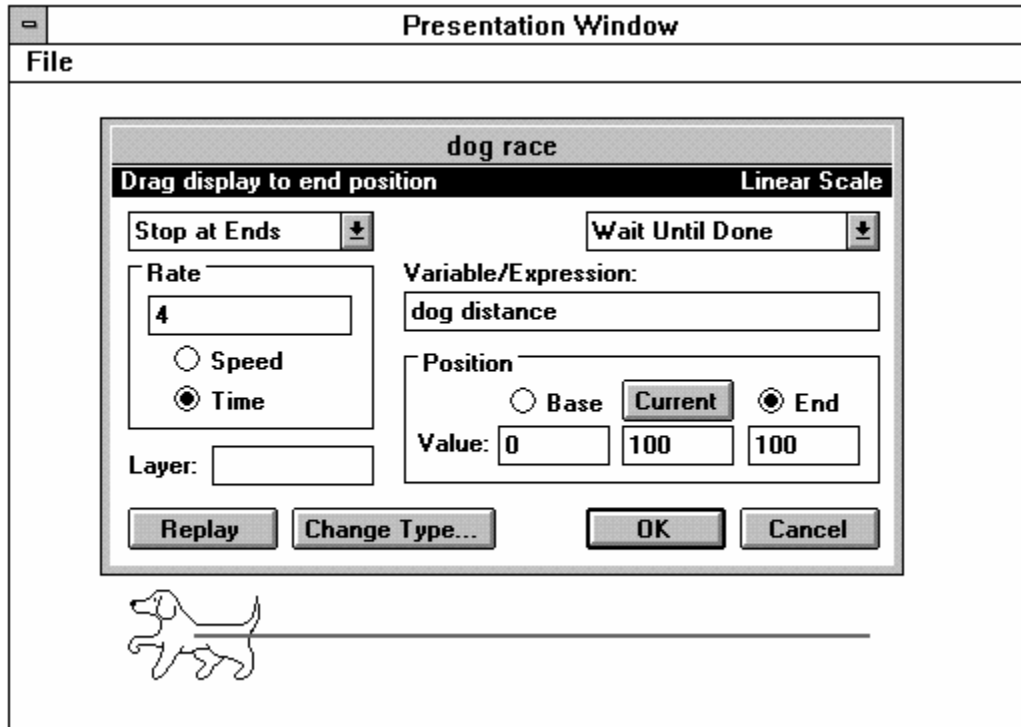
Click the Change Type button. In the dialog box that appears, select Linear Scale and click OK. The Linear Scale Options dialog box appears.

5. Define the base and end points of the scaled line.

Follow the instructions at the top of the dialog box. Since the Base button is selected, it's easier to define the base point first. Drag the display to where you want the linear scaled line to begin. Then click the End button and drag the display to where you want the path to end. When you release the object, a line will connect the base and end points. To adjust the base point, click the Base button and move the display; to adjust the end point, click the End button and move the display. The connecting line moves accordingly.

6. Insert a variable or expression to control the animation.

When Star encounters the animation, the numeric value of this variable or expression determines where it will position the animated object along the scaled line. This variable or expression works with the base and end values of the scaled line.



In this example, the dog will move from the base point to the end point based on the value of the custom variable dog distance.

7. Assign scale values to the base and end points of the scaled line.

The values you type in the Base and End fields work with the variable or expression in the Variable/Expression field. During presentation, if the variable's value equals the base value, the object moves to the base position; if it equals the end value, the object moves to the end position. If the variable's value is between the base and end values, the object moves to a corresponding scaled position between the base and end points.

8. Click OK.

Creating scaled X-Y animations

Scaled X-Y animations allow you to position an object at any point in a scaled area. You define the area and assign numeric values to the area's corners; Star automatically scales all points between. When the animation is activated, the object moves to the position in the area corresponding to the values of the variables or expression you specified.

If you want, you can constrain the object's movement to the scaled area or you can allow the object to be moved anywhere, including outside the screen's viewing area.

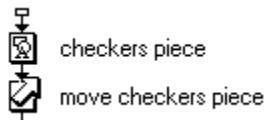
***Tip:** The In Area display positioning feature in the Effects dialog box provides capabilities somewhat similar to those of scaled X-Y animations. You may want to use that feature when you're simply concerned about the initial position of the display.*

In the following example, a scaled X-Y animation moves a checkers piece to the numerical position. The X-Y area was defined to encompass the 8 columns and 8 rows. Base values of 1, 1 and End values of 8, 8 were inserted. Two custom variables called `column` and `row` contain the horizontal and vertical coordinates of the checkers piece.

1. Create the display to be animated.

Place the object you want to move in its own icon. Its position in this icon will be its starting position. For this example, use the oval tool to create a checkers piece. Press the Shift key while drawing to create a circle.

2. Place an animation icon on the flowline following the display you want to animate and title it.



3. Open the animation icon.

Double-click the animation icon in the Design window. This opens the default animation options dialog box and displays the Presentation window with all objects that last appeared in it.

4. Change the animation's type to Scaled X-Y.

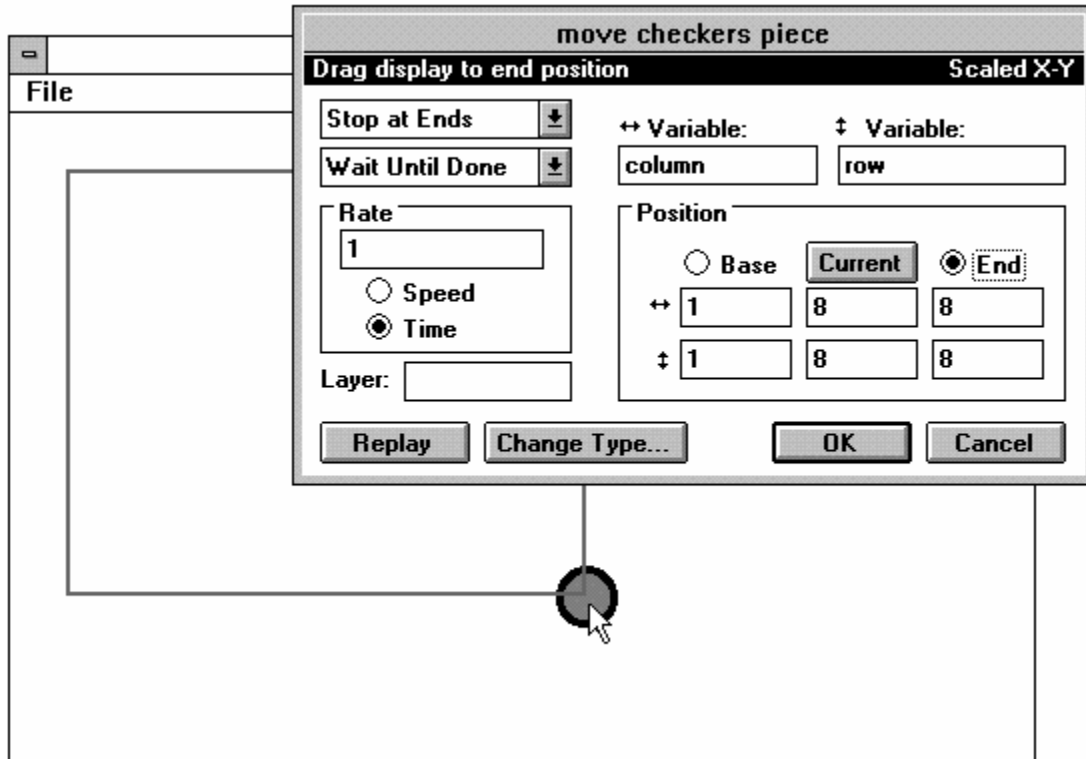
Click the Change Type button. In the dialog box that appears, select Scaled X-Y and click OK. The Scaled X-Y Options dialog box appears.

5. Define the scaled area.

Follow the instructions at the top of the dialog box. Since the Base button is selected, it's easier to define the base corner first. Drag the object to the area's upper left corner. Then click the End button and drag the display to the area's lower right corner. When you release the object, a gray rectangle outlines the scaled area. To adjust the base corner, click the Base button and move the object; to adjust the end corner, click the End button and move the object (the gray rectangle moves accordingly).

6. Insert horizontal (X) and vertical (Y) variables or expressions to control the animation.

When Star encounters the animation, the numeric value of these variables or expressions determines where the animated object will be positioned within the scaled area. These variables or expressions work with the base and end values of the scaled area. For this example, use the custom variables `column` and `row`.



7. Assign scale values to the base and end corners of the scaled area.

The values you type in the Base and End fields work with the variable or expression in the Variable/Expression field. During presentation, if the variables' values equal the base values, the object moves to the base position in the area; if they equal the end values, the object moves to the end position. If the values are between the base and end values, the object moves to a corresponding scaled position in the defined area.

8. Click OK.

You can build upon this example by drawing a checker board and having the user enter values that are assigned to the `column` and `row` variables.

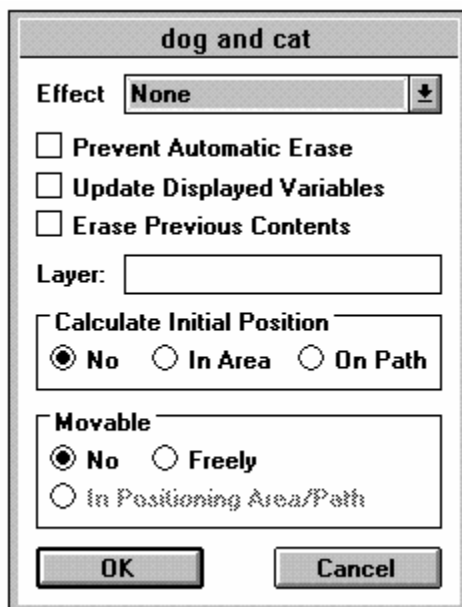
Display positioning

The Effects command provides options for positioning displays, interactions, and movies. Using these options, you can:

- Calculate a display's position within an area, or along a path
- Allow the user to move a display, freely, within an area, or along a path.

To add an effect to a display, click the icon and select Effects from the Attributes menu. The Effects dialog box appears.

[Click part of the illustration of the dialog box for more information.](#)



The screenshot shows a dialog box titled "dog and cat". It contains the following elements:

- An "Effect" dropdown menu set to "None".
- Three unchecked checkboxes: "Prevent Automatic Erase", "Update Displayed Variables", and "Erase Previous Contents".
- A "Layer:" text box.
- A "Calculate Initial Position" section with three radio buttons: "No" (selected), "In Area", and "On Path".
- A "Movable" section with three radio buttons: "No" (selected), "Freely", and "In Positioning Area/Path".
- "OK" and "Cancel" buttons at the bottom.

- Calculating a display's position
- Positioning in an area
- Positioning on a path
- Allowing the user to move a display or movie

Calculating a display's position

Normally, text and graphic objects appear exactly where you've created them in the Presentation window. But sometimes you might want a variable or expression to determine the initial position of a display.

For example, you might track a user's progress by creating a variable and then use the variable to graphically display this progress to the user.

Star lets you define a path or an area in which to position the display. When you choose to calculate initial position in an area or on a path, the Effects dialog box expands to offer additional options.

- The Calculate Initial Position group of the Effects dialog box includes an In Area option, used to position the display at some point within an area according to the value of the variables or expressions you specify. You can define the area, insert the variables or expressions that will control its position, and assign horizontal and vertical scales values for the area's base and end points. You define the scaled area just as you do for a scaled X-Y animation.
- The Calculate Initial Position group of the Effects dialog box includes an On Path option, used to position the display at some point between the endpoints of a path according to the value of the variable or expression you specify. You can define the path, insert the variable or expression that will control its position, and assign scale values to the base and end of the path. You create the path just as you do for a fixed path or scaled path animation, and the path can contain straight and curved line segments.

- Positioning in an area
- Positioning on a path
- Allowing the user to move a display or movie

Positioning in an area

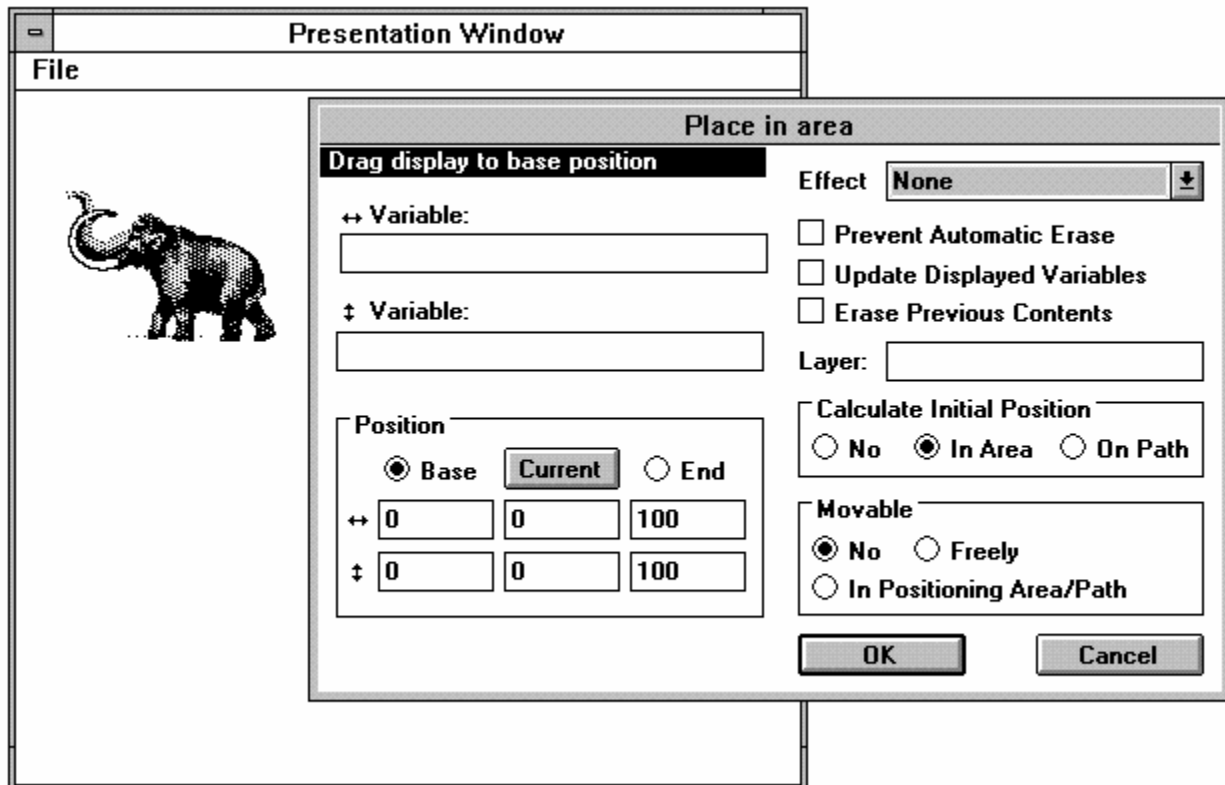
1. Create the display to be positioned in the scaled area.

Place the object(s) you want to position in its own icon.

2. Select the display and choose Effects from the Attributes menu.

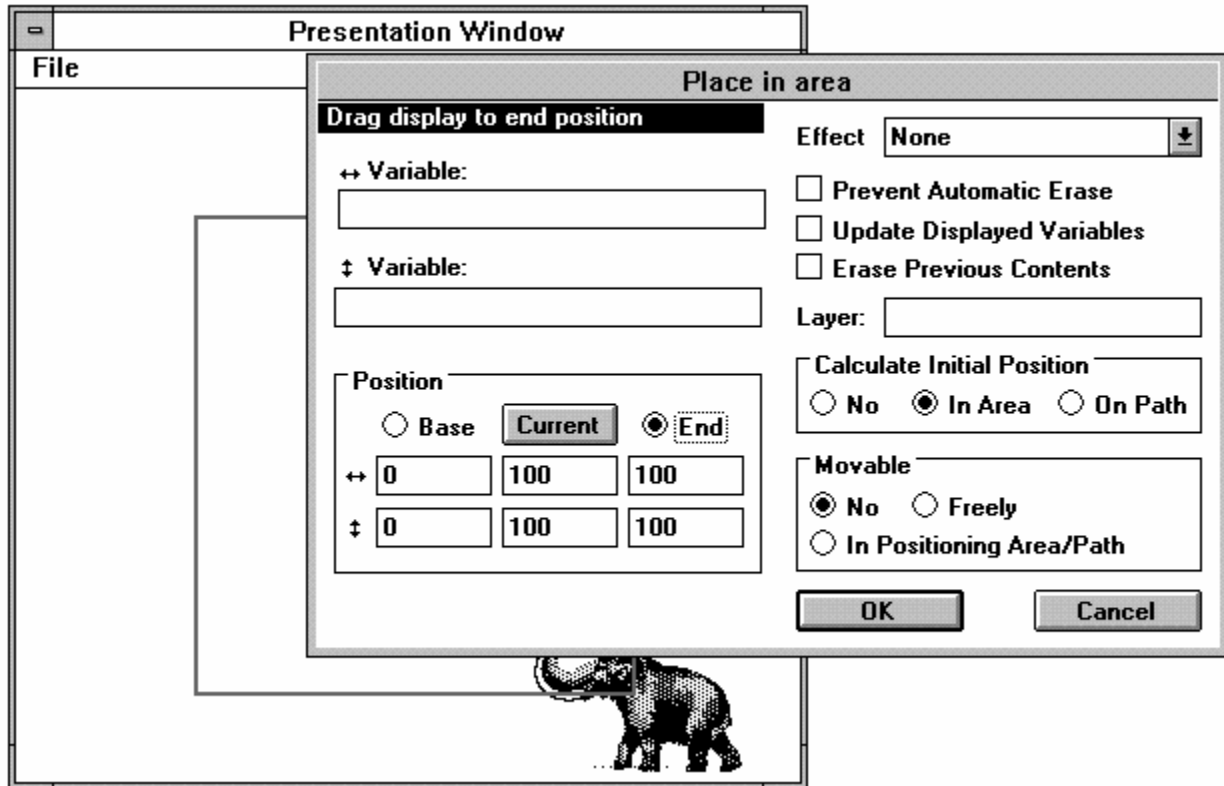
3. Click the Calculate Initial Position In Area button in the Effects dialog box.

The dialog box expands to reveal more options.



4. Define the area.

Since the Base button is selected, it is easiest to define the base corner first. Drag the object to the area's upper left corner. Then click the End button and drag the display to the area's lower right corner. When you release the object, a gray rectangle outlines the scaled area. To adjust the base corner, click the Base button and move the object; to adjust the end corner, click the End button and move the object. The gray rectangle moves accordingly.

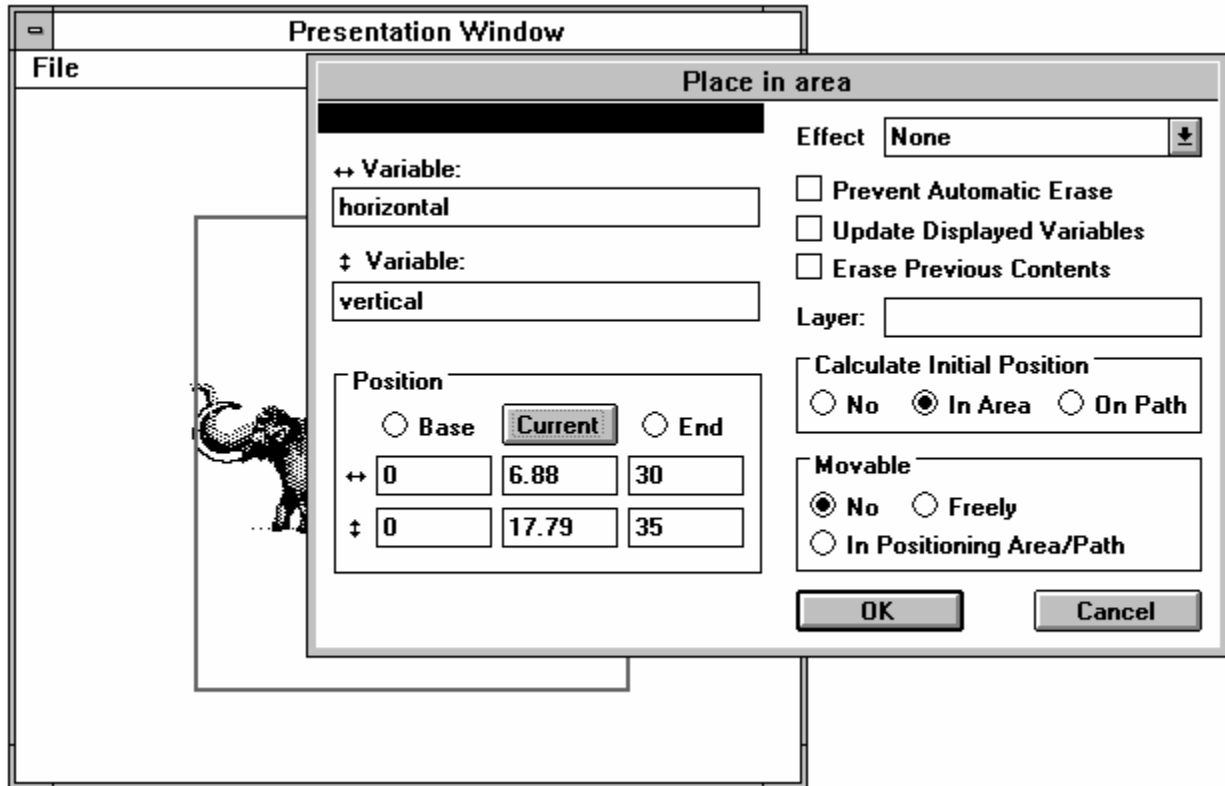


5. Insert variables or expressions to control the display's position.

When Star encounters the display icon, the value of these variables or expressions determines where the object will be positioned within the scaled area. These variables or expressions work with the base and end values of the scaled area.

6. Assign scale values to the base and end corners of the scaled area.

The values you type in the Base and End fields work with the variables or expressions in the horizontal and vertical variables slots. During presentation, if the variables' values equal the base values, the object moves to the base position in the area; if they equal the end value, the object moves to the end position. If the values are between the base and end values, the object moves to a corresponding scaled position in the defined area. If the value of a variable is out of range, the display is positioned at the extreme side of the area closest to the value of the variable. The display will not be positioned outside the area.



To check the values of various area positions, click the Current button and drag the display to different points within the area. The horizontal and vertical values appear in the fields.

To view the display at specific area coordinates, type coordinates in the slots below the Current button and click the button.

Positioning on a path

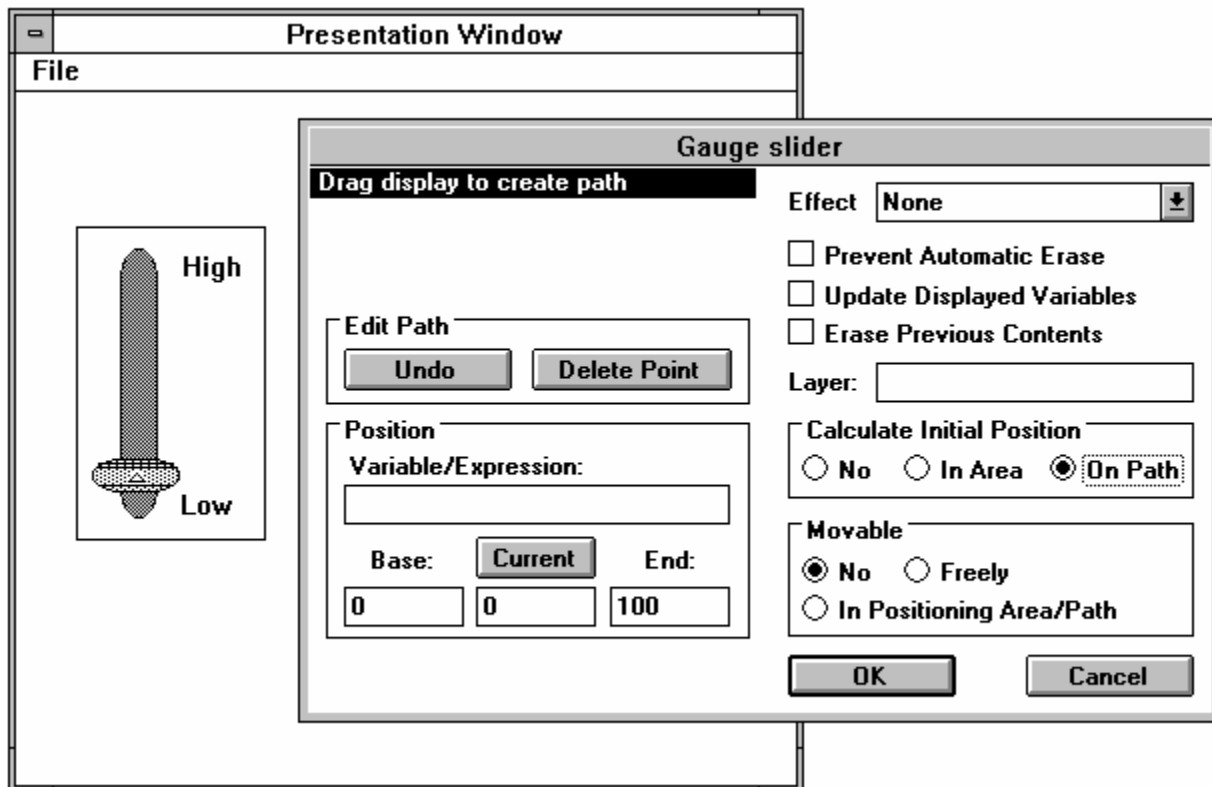
1. Create the display to be positioned on the scaled path.

Place the object(s) you want to position in its own icon.

2. Select the display and choose Effects from the Attributes menu.

3. Click Calculate Initial Position On Path in the Effects dialog box.

The dialog box expands to reveal more options. In the Presentation window, a small triangular marker appears at the center of the current display. If you only have one display object, the marker will be in the center of the object. If you have multiple objects, the marker will be in the center of the area that encompasses all objects.



4. Define the path.

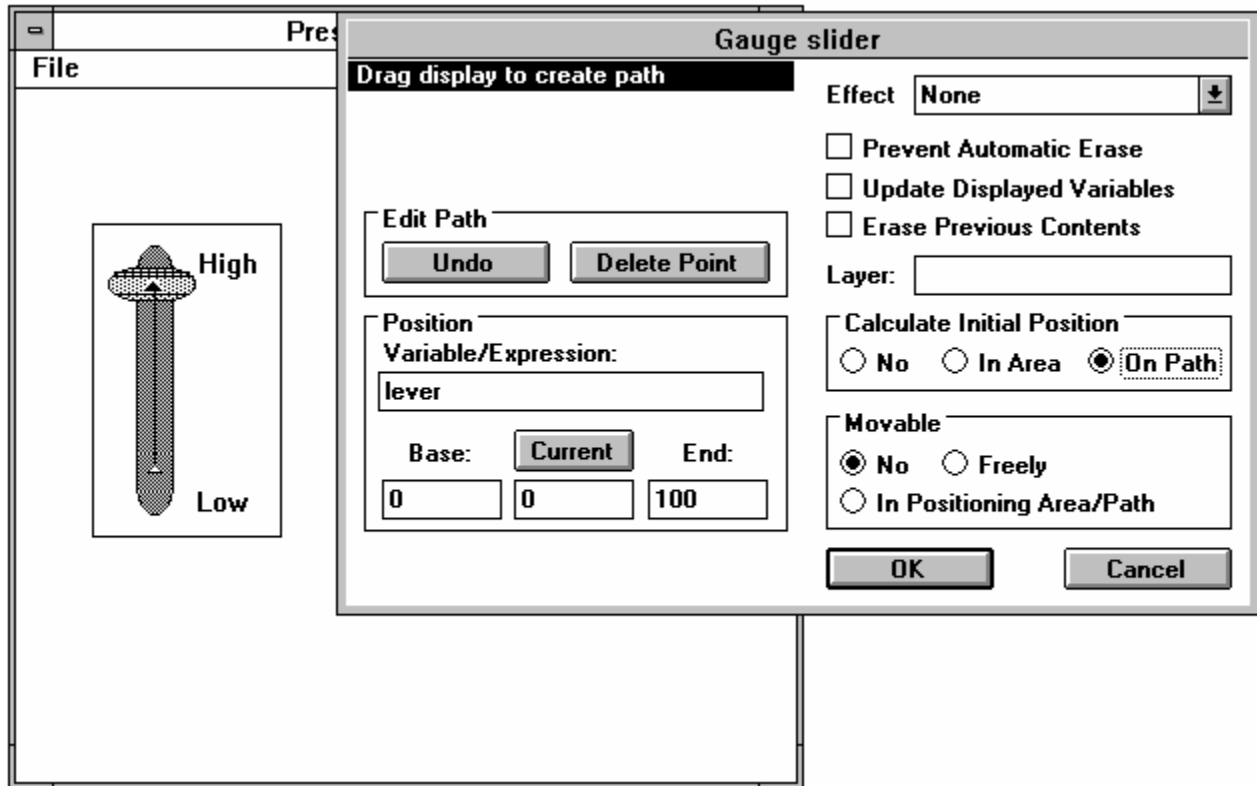
Create the path by dragging the display to points along the path and releasing the mouse button. Each time you release the object, a line is drawn from the previous point to the current one. See "[Creating paths](#)" for detailed information.

5. Insert a variable or expression to control the display's position.

When Star encounters the display icon, the value of this variable or expression determines where it will position the object along the path.

6. Assign scale values to the base and end points of the path.

The values you type here work with the variable or expression in the Variable/Expression field; you can type positive or negative numbers. During presentation, if the variable's value equals the base value, the object is positioned at the base position; if it equals the end value, the object is positioned at the end position. If the variable's value is between the base and end values, the object is positioned at a corresponding scaled position between the base and end points.



To check the numeric value of any position, drag the display along the path and note the number under the Current button.

To view the display at any scaled position, type a number in the field below the Current button and click the button.

Allowing the user to move a display or movie

Users can move objects with the mouse by dragging them. The way you set an object to be user-movable depends on how you want the user to move the object.

- If you want the user to move the object to a specific position on the screen and *to respond to the user* based on this movement, create an interaction containing movable object responses. You'll need a movable object response for each anticipated movement of the object.

In a movable object interaction in which the user must move a specific object, the display to be moved automatically becomes user-movable while the interaction is in progress. The display will be "freely" movable, meaning that the user can move it anywhere. However, if you've set the display to Movable In Positioning Area/Path, movement will be restricted to the area or path you specified. In a movable object interaction in which the user can move any object, you must make all of the objects user-movable.

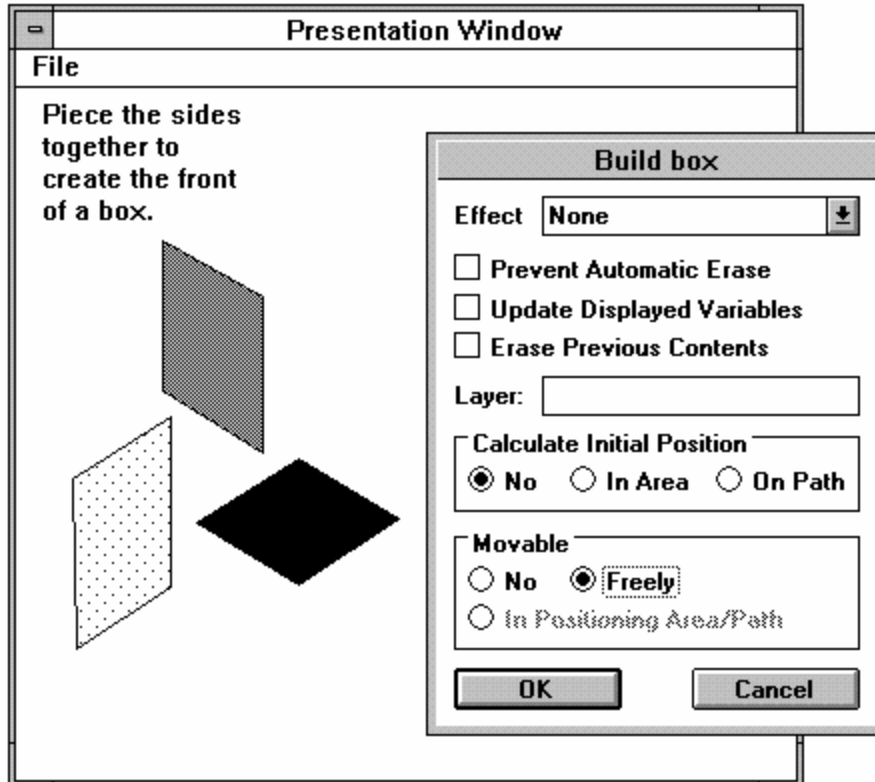
Movable

No Freely

In Positioning Area/Path

You can also make an object movable by using the `Movable` system variable.

- If you want the user to move objects on the screen without judging the positioning, select Freely Movable in the Effects dialog box. For example, you might design an application that asks users to "draw" a picture by positioning objects displayed on the screen.

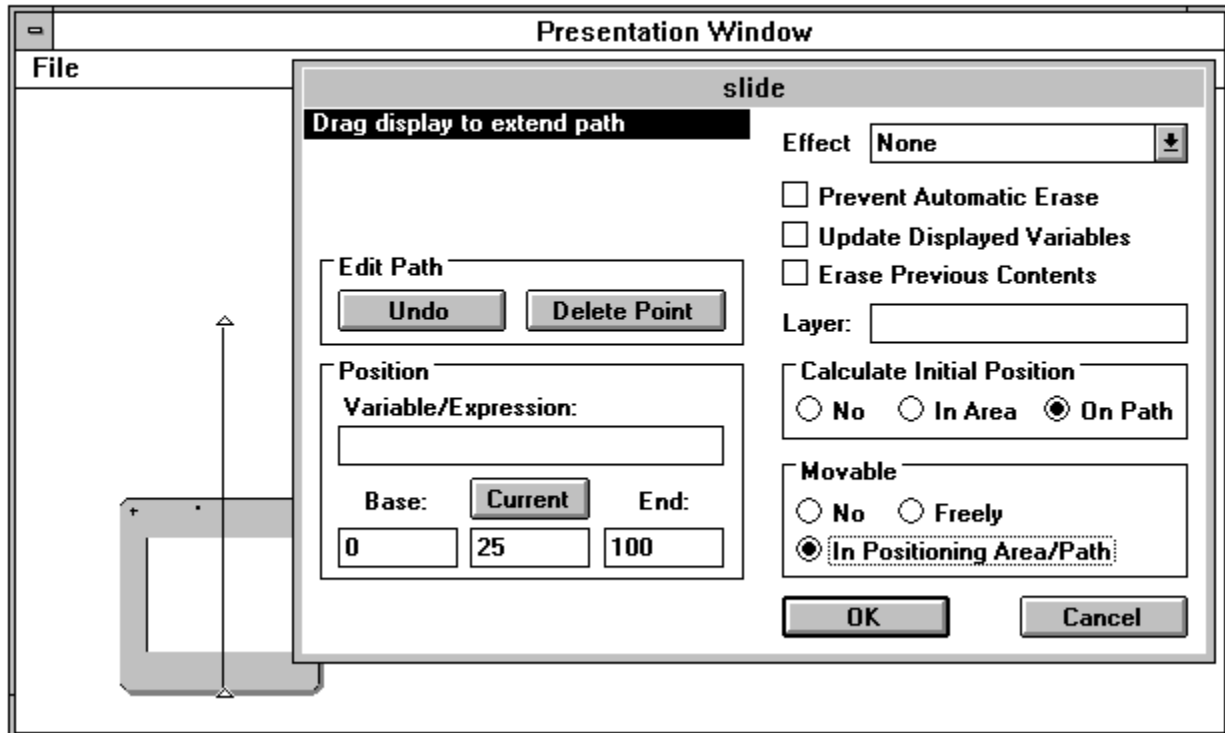


Keep in mind that whether you let the user move the object freely or in a positioning area/path, the

user's response is not judged correct or incorrect as it would be in a movable object response.

- You can constrain the user's movement of an object within the area or on the path that you define. From the Calculate Initial Position group in the Effects dialog box, select either In Area or On Path. Select In Positioning Area/Path for the Movable group. Then define the area or path as described in the previous sections.

In this example, the user drags a picture of a slide to select which video segment to view. The slide is movable only along a previously defined path.



Tip: Users will not know that objects are movable unless you tell them. Be sure to provide instructions on what to move and how to move it.

- Variables related to display positioning

Variables related to display positioning

If you make an object movable using the Effects dialog box, you can keep track of the object's new position with system variables `DisplayX` and `DisplayY`.

Setting up user interactions

There are four basic steps to creating an interaction with a user.

- 1. If you wish, place content in the interaction icon display. This takes the form of a prompt to the user.**
- 2. Attach icons to the interaction.**
- 3. Set up a response what the user will do to match this path.**
- 4. Create feedback to the user inside the attached icon.**

Each interaction response type is discussed in turn.

- [Setting up pushbutton responses](#)
- [Setting up click/touch responses](#)
- [Setting up clickable object responses](#)
- [Setting up movable object responses](#)
- [Setting up pull-down menu responses](#)
- [Setting up conditional responses](#)
- [Setting up text interactions](#)

Setting up pushbutton responses

1. Drag an interaction icon onto the flowline.

2. Attach an icon to an interaction, set its response type to pushbutton, and click OK.

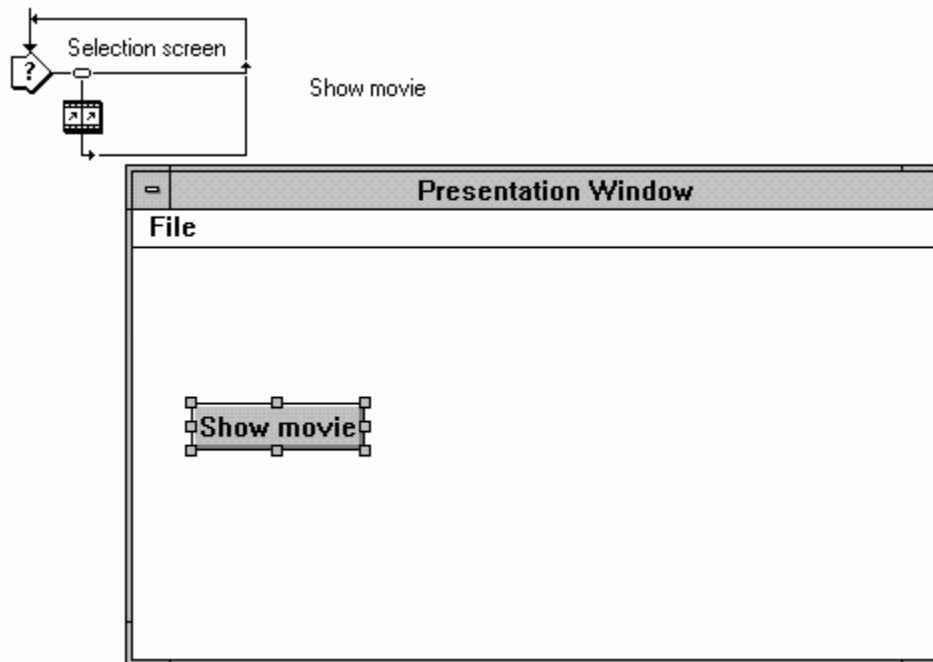
Star automatically places an untitled pushbutton in the interaction icon display.

3. Type a name for the icon attached to the pushbutton.

The title you give the icon is the title that will be placed on the pushbutton. The title in this example is "Show Movie."

4. Open the interaction icon and click OK - Edit Display.

In the interaction display, you'll see the pushbutton.



5. Adjust the size and position of the button.

The button is automatically resized to encompass the title you typed. Click the pushbutton and its selection handles appear. Drag these handles to resize the pushbutton or move the pushbutton by dragging its center.

6. Fill in the response icon.

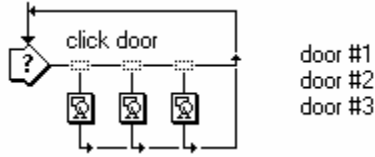
In this example we have attached a movie icon to the interaction icon. In this case, load a movie that will play when the user clicks the pushbutton.

7. Open the Pushbutton Options dialog box and set options as desired.

Double-click the response symbol to display the Pushbutton Options dialog box. This dialog box is explained in detail in "[Pushbutton responses](#)" in Chapter 4.

Setting up click/touch responses

1. Attach a display icon to an interaction and set its response type to click/touch. Click OK.
2. Add two more click/touch responses.



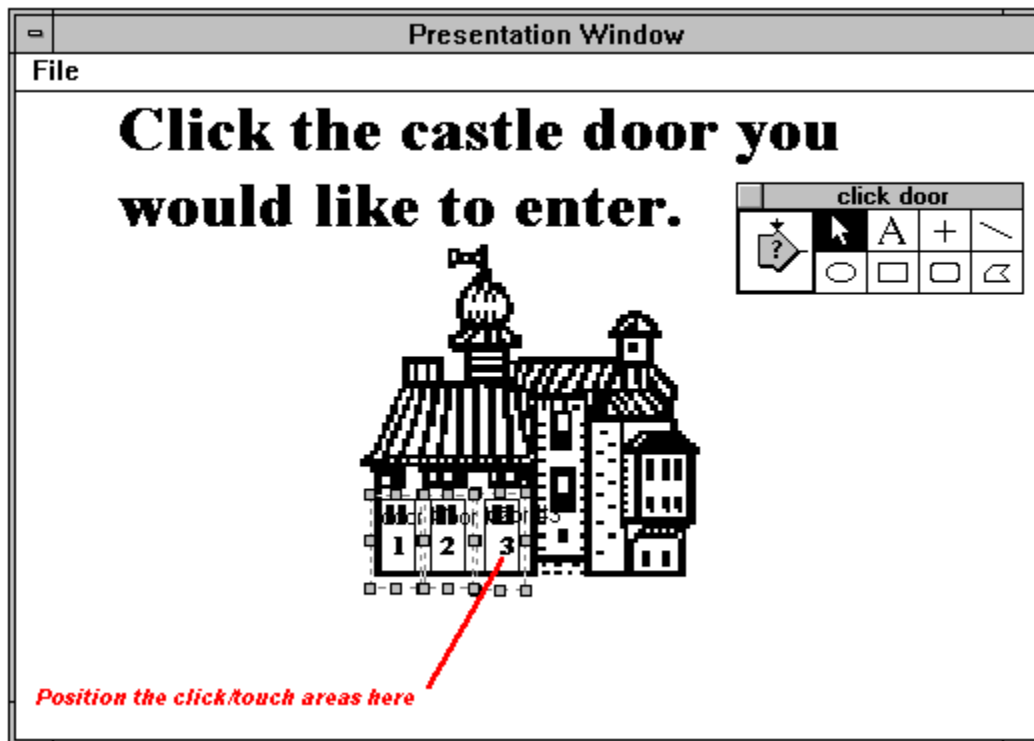
3. Open the interaction icon and click OK - Edit Display.

In the interaction display, you'll see an outline rectangle for each click/touch response. The title of the click/touch response icon appears in the rectangle. Fill in the interaction display by adding text prompting the user to click an area.

4. Size and position the click/touch hotspots.

Resize a hotspot by dragging one of its handles. To move a hotspot, drag its center.

Hotspots can overlap one another. Because responses are matched in left to right order, their placement in the interaction is important.



5. Open the Click/Touch Options dialog box for each response.

Do this by either double-clicking an edge of the hotspot in the interaction display or by double-clicking its response symbol in the Design window.

Click/Touch Options	
Title: <input type="text" value="door #1"/>	<input type="checkbox"/> Perpetual
Optional Key(s): <input type="text"/>	<input type="checkbox"/> Inverse Area
Active If TRUE: <input type="text"/>	<input type="checkbox"/> Mark After Matched
	<input type="button" value="Position & Size..."/>
Custom Cursor Current <input type="text" value="None"/> <input type="checkbox"/> Use Custom <input type="button" value="Load Cursor..."/>	Match With <input type="text" value="Single-click"/> ↓
<input type="button" value="Response Type..."/>	Erase Feedback
<input type="button" value="OK"/>	<input type="text" value="After Next Entry"/> ↓
<input type="button" value="OK - Edit Display"/>	<input type="text" value="Not Judged"/> ↓
<input type="button" value="Cancel"/>	<input type="text" value="Exit Interaction"/> ↓

You can edit each response icon as you set up its click/touch options. Or, after setting up several click/touch responses in an interaction, run the file, click a hotspot to match its response, and edit each response icon in turn.

6. Set up a catch-all hotspot.

A "catch-all" hotspot is used to respond to any out-of-bounds clicks. Because responses are matched in left to right order along the interaction's flowline, the catch-all response is placed after all other click/touch responses (so it won't be matched by a click in one of the other hotspots). A catch-all hotspot will cover the entire Presentation window.

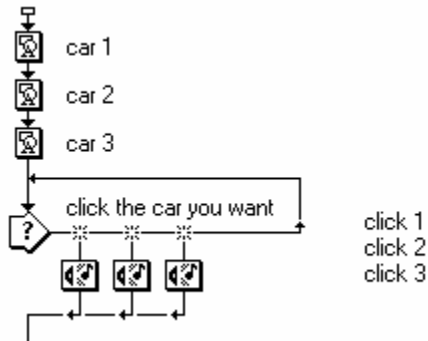
7. Fill in the response icons.

Double-click a response icon to fill in its contents.

Setting up clickable object responses

Clickable object responses are useful when you want the user to click a nonrectangular area.

1. Drag two or three display icons onto the flowline, one for each clickable object.
2. Put graphics in the display iconsone clickable object for each icon.
3. Drag a new interaction icon onto the flowline below the display icons.
4. Attach an icon to the interaction icon and set its response type to clickable object.
5. Attach additional icons to the interactionone for each clickable object. These are automatically set to clickable object responses.



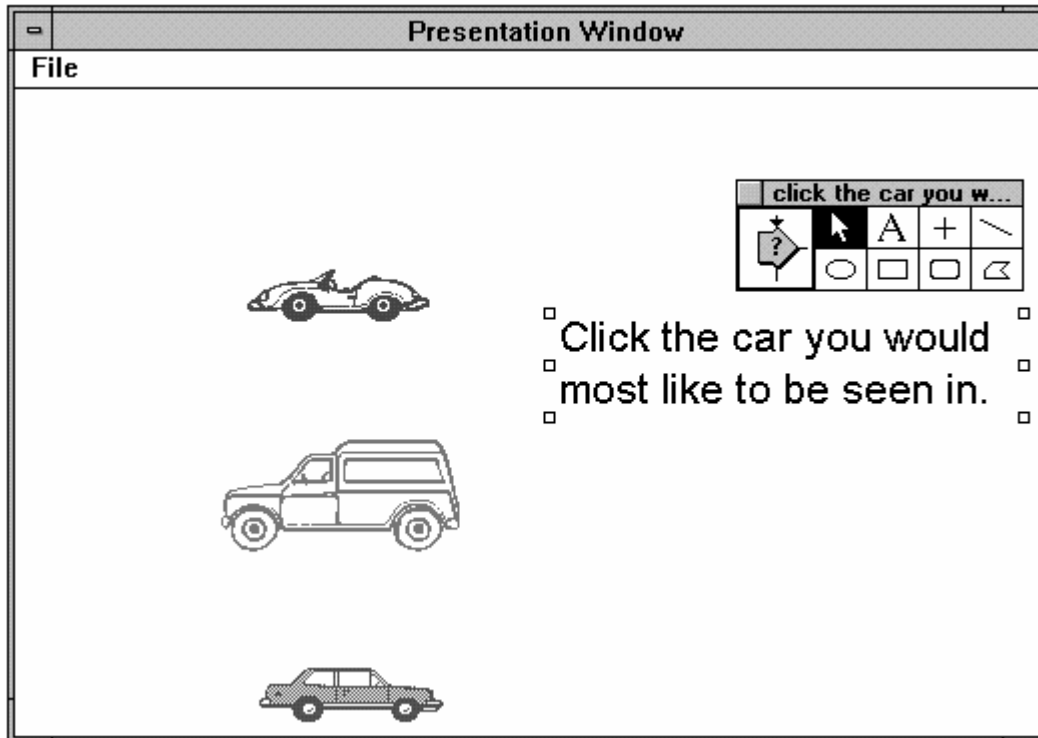
6. Now display the first three icons on screen while you edit the interaction display.

To display all graphics created so far, double-click the first display icon. Click the toolbox close box. Now Shift-double-click the next display icon. The contents that were in the Presentation window are displayed, as well as the new icon. Shift-double-click the third icon. The contents of all three icons are on displayed.

Now create the interaction display, which contains instructions for the end user. Double-click the interaction action and Shift-click OK - Edit Display for the interaction icon. You should see the contents of three display icons.

7. Select the text tool, and type the instructions.

In this case, the instructions are "Click the car you would most like to be seen in."



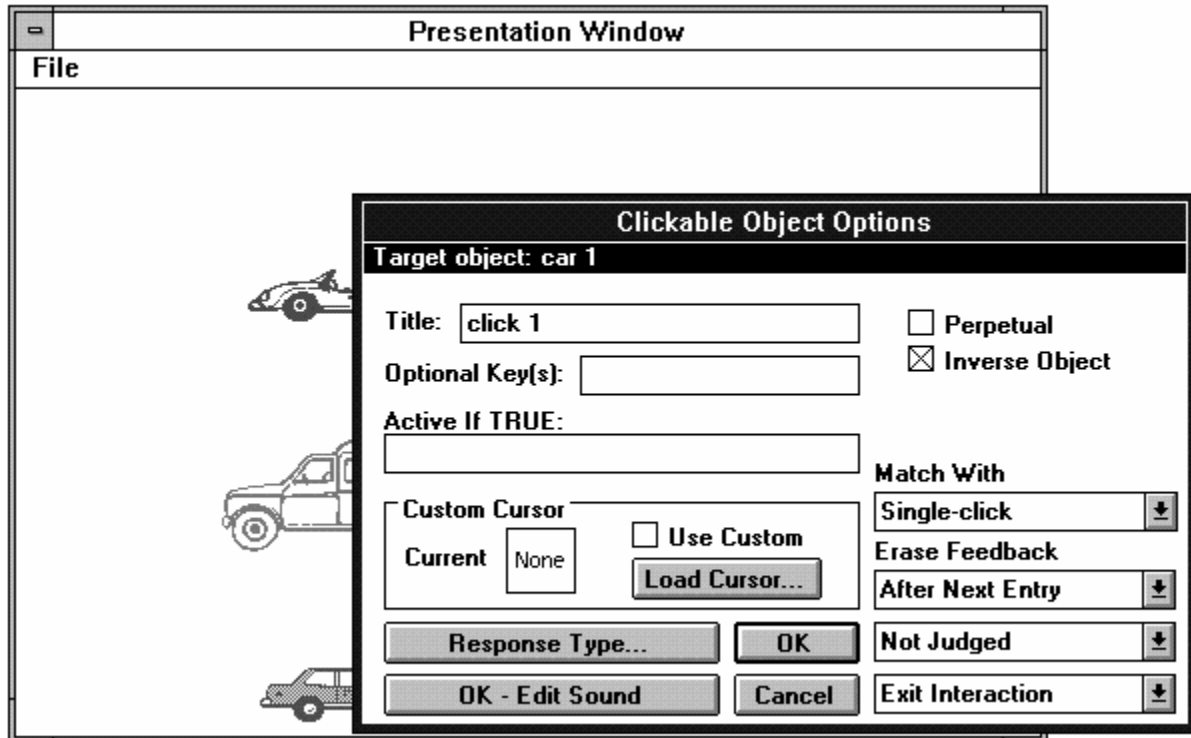
8. Close the Presentation window.

9. Double-click the first clickable object response symbol.

The Clickable Object Options dialog box appears along with a Presentation window that shows all objects that will appear on the user's screen.

10. Click the target object that you want the user to click.

Notice how the message at the top of the Clickable Object Options dialog box changes to notify you of which object is the target of the clickable object response.



11. Click OK.

The Presentation window closes.

12. Set up the clickable object options for the remaining responses.

13. Add user feedback to the attached icons.

Open each icon by double-clicking it on the flowline. The feedback will appear when the user clicks the corresponding clickable object.

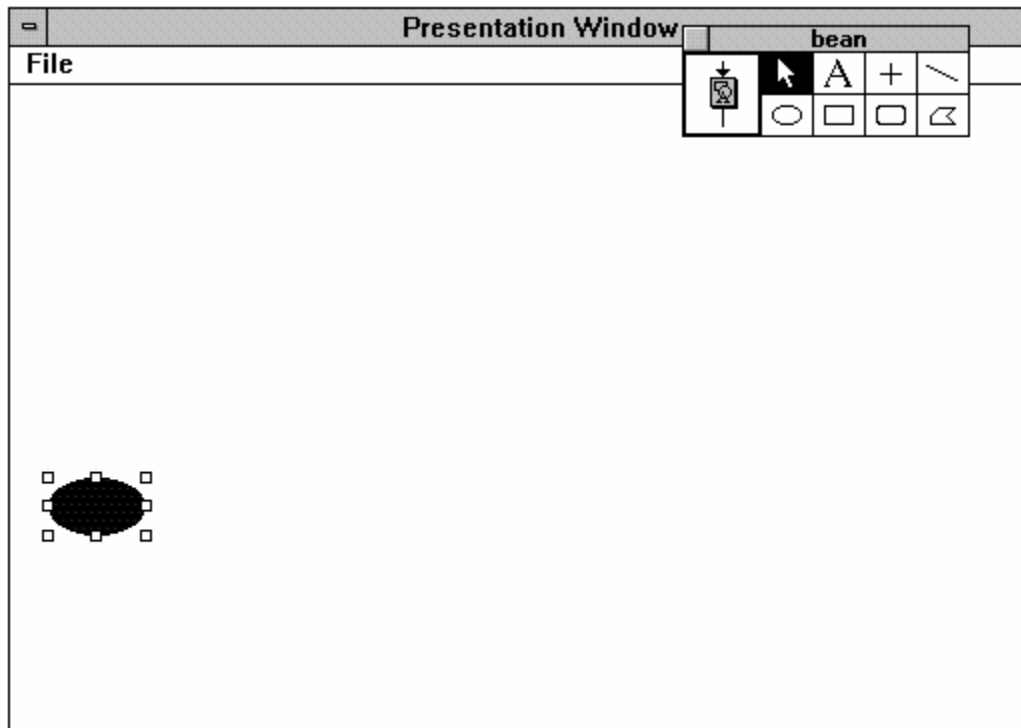
Setting up movable object responses

This example shows how to create a segment of an application that will teach new employees of a coffee house about coffee drinks. Users will drag the coffee bean to the type of drink they want to learn about.

1. Drag a display icon onto the flowline and title it bean.

2. Double-click the display icon and draw an object.

This display icon will contain the object that the user will move: a coffee bean.



3. Click the close box for the bean toolbox.

4. Drag an interaction icon onto the flowline below the display icon and title it.

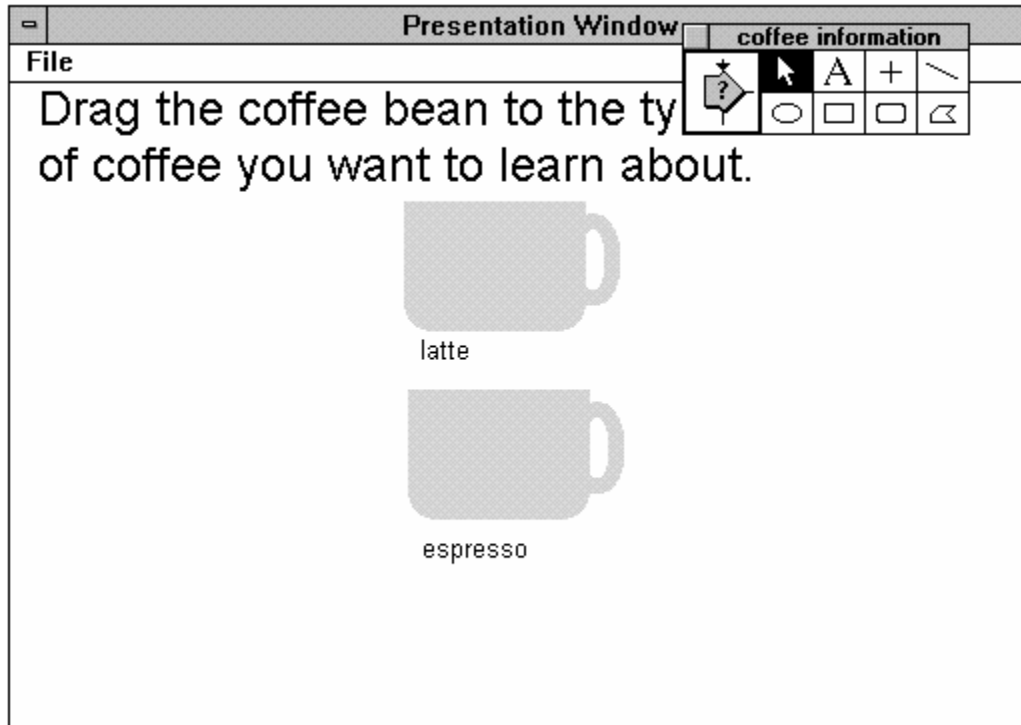
Title the interaction icon "coffee information".

5. Control-double-click the interaction icon to open the Presentation window for the interaction icon.

The Presentation window contains objects that will be displayed throughout the interaction.

6. Add the instructions to the user. Then draw the graphics representing the destination area that the user will drag the object to, as shown below.

Use the text tool to add instructions to the top of the screen. Use a graphics program to draw target coffee cups or use the rounded rectangle tool to draw simple coffee cups.



7. Click the toolbox close box.

8. Choose Run from the Try It menu.

Notice that the coffee bean and the information from the interaction icon appear on the screen. The information in the interaction icon disappears after it is displayed.

9. Choose Jump to Icons from the Try It menu.

10. Drag a display icon to the right of the interaction icon.

This attached icon will contain information that will be displayed to the user when the coffee bean is dragged to the matching target area—the latté cup.

When you add the display icon to the right of the interaction icon, the Response Type dialog box appears.

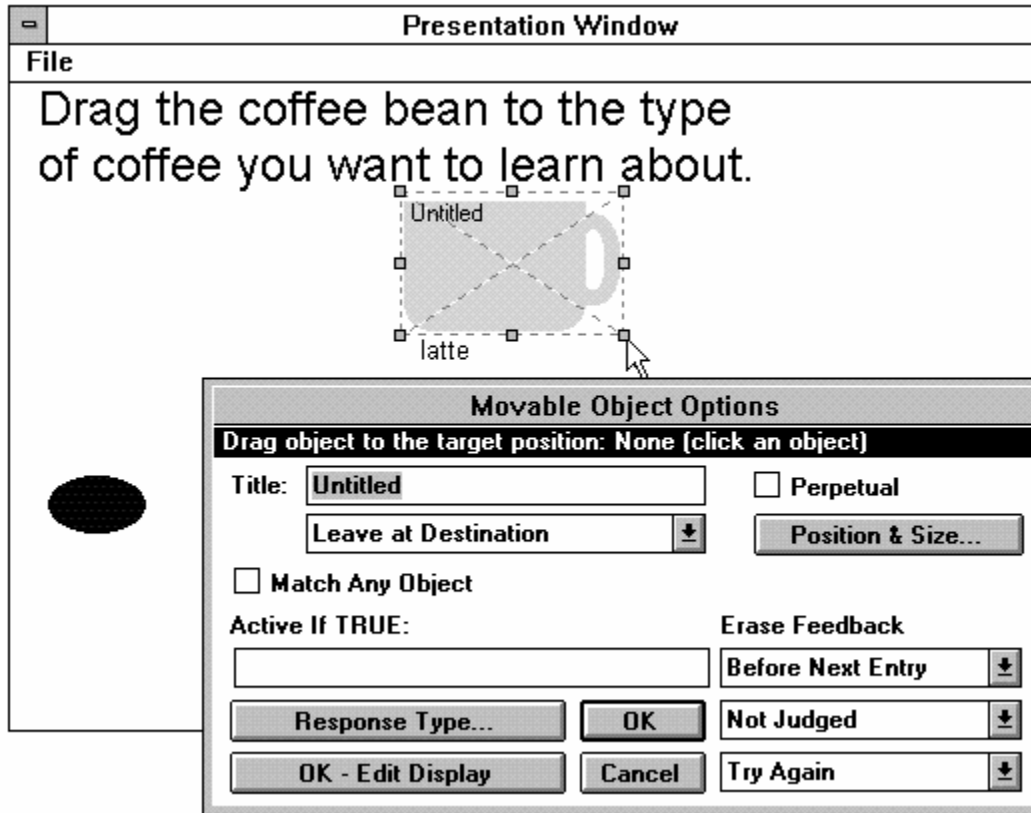
11. Select Movable Object as the response type and click OK.

12. Choose Run from the Try It menu.

When Star encounters the undefined movable object response, it pauses and opens the Movable Object Options dialog box so that you can set up the response.

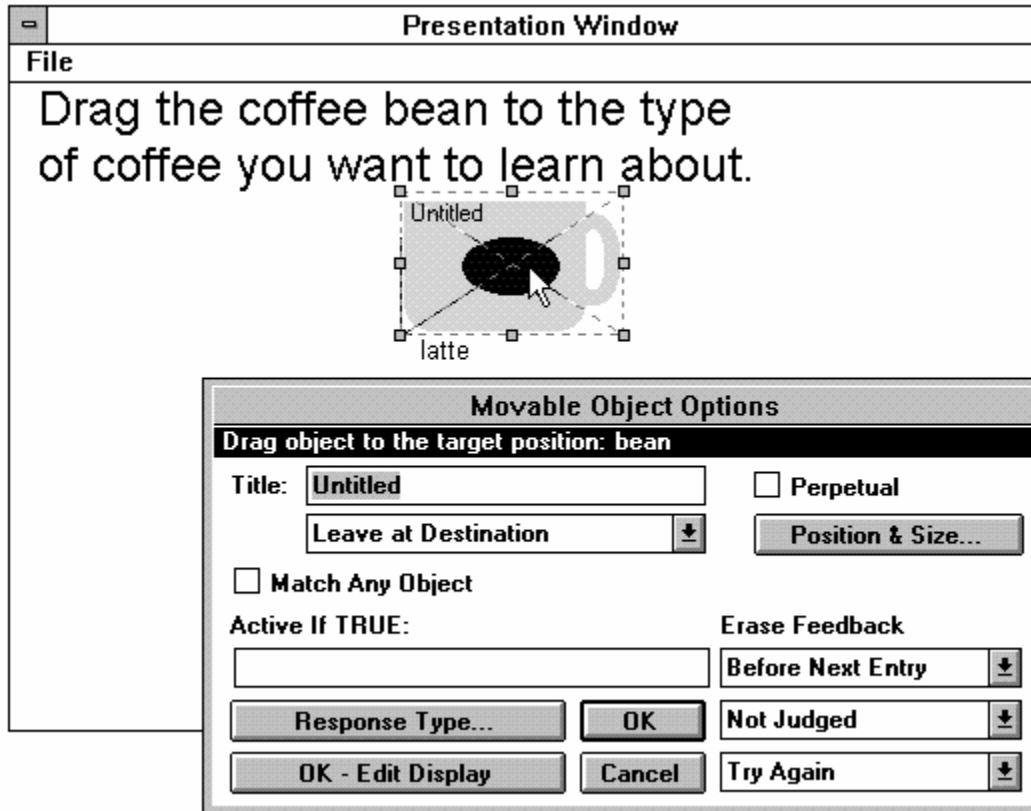
13. Move and resize the target area (now labeled Untitled) on top of the coffee cup.

The target area is the area that the user will have to move the bean to in order to match this response. The target area is indicated by a box with an X from corner to corner. Drag the target area to position it and drag its handles to resize it.



14. Drag the object to the target area.

The message at the top of the Movable Object Options dialog box indicates that the coffee bean is the object that the user will move to match this response.



15. Choose Snap to Center from the Destination drop-down list.

When the end user drags the coffee bean on top of the coffee cup, the coffee bean will snap to the center of the target area.

16. Title the response.

In this example, the response is called "latte." This is the title that will appear for the response in the flowline.

17. Click OK - Edit Display.

The Presentation window for this response appears.

18. Add feedback that will appear if the user correctly matches this response by dragging the object to the target area.

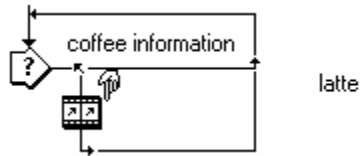
This is the feedback that users will see when they move the coffee bean to the latté cup. Select the text tool and type "Ask the customer if he or she would like a large or regular latte."

19. Close the Presentation window.

20. Select the attached display icon and copy it.

To set up the second response, for dragging the bean to the espresso cup, you will use some of the content and logic that you just created for the first response. Select the icon and use the Copy command from the Edit menu.

21. Click to the right of the first attached icon to set the insertion point, shown as a paste hand.



22. Choose Paste from the Edit menu.

23. Title the newly pasted icon and adjust its response options.

For the newly pasted icon, "espresso," you will need to change the target area to be on top of the espresso icon. Also, change the user feedback to "Ask the customer if he or she would like a slice of lemon."

24. Paste and adjust additional icons/movable object target areas as desired.

25. Add a catch-all movable object response to the right of the other response icons.

Set up the "catch-all" movable object response to have a target area that takes up the entire Presentation window. This response is matched whenever the user moves the coffee bean anywhere other than the two coffee cup target areas. Because responses are matched in left to right order, the catch-all response is placed after all other movable object responses (so it won't be matched when the user drags the bean to one of the other hotspots).

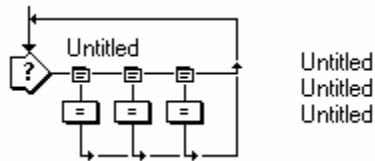
26. Choose Run from the Try It menu.

Setting up pull-down menu responses

1. Attach an icon to an interaction and set its response type to pull-down menu.

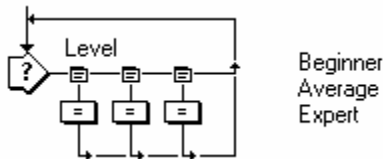
When you drag the first attached icon to the right of the interaction icon, the Response Type dialog box appears. The response type for all remaining attached icons you add to this interaction will be pull-down menu.

Items appear in the menu in the same order in which they are attached to the interaction icon.



2. Title the icons.

When you use pull-down menu responses, the title of the interaction icon becomes the menu name. The title of each pull-down menu response icon appears as a command in that menu. It's therefore important to assign meaningful titles to the interaction and response icons.



3. Open the Pull-down Menu Options dialog box.

Double-click the response symbol to display the Pull-down Menu Options dialog box. Choose options as desired.

4. Run the file.

The pull-down menu displays.

Note: Star automatically inserts a default File menu in the application. It contains a Quit command to give users a way of exiting. Any pull-down menus you create will appear to the right of this File menu in the menu bar. If you want to create your own File menu, title the interaction icon "File" and add pull-down menu responses to it. The File menu you create will replace the one Star automatically inserts. If you create your own File menu, be sure to include a Quit command that gives users a way to exit.

Note: To learn how to disable the Quit command, see the tip in "[Terminating pull-down menu responses](#)".

Setting up conditional responses

1. Attach an icon to an interaction and set its response type to conditional. Click OK.

2. Click the response type symbol to open the Conditional Options dialog box.

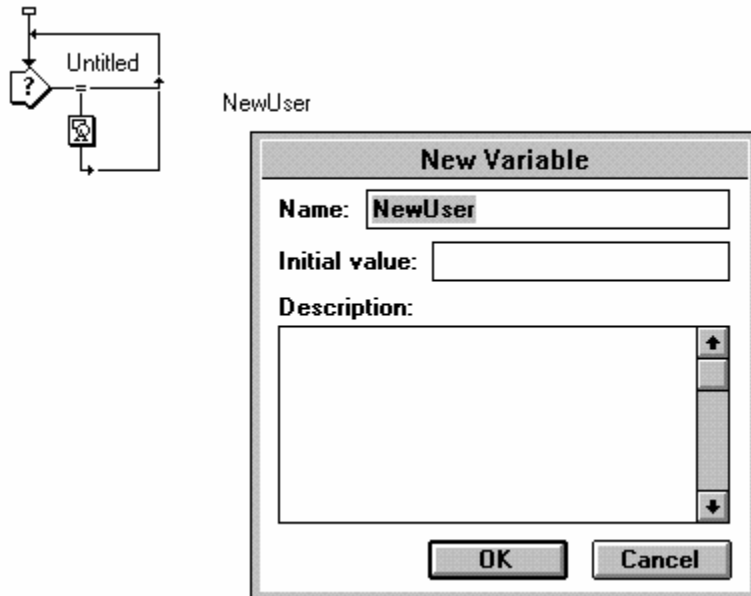
The conditional response type symbol is the equal sign.

Since responses are always evaluated in left to right order, the placement of the conditional response in the interaction is important.

Instead of giving the response icon the default name of "Untitled," Star leaves the title blank, prompting you to specify a condition as its title.

3. Enter the condition, which is the icon's title, in the Match If TRUE field in the Conditional Options dialog box. Each time the conditional response is encountered, the condition is evaluated.

Before you attempt to select another icon in the Design window or close the dialog box, Star checks the syntax of your condition. If you've used characters it doesn't recognize, it assumes that you want to create a new custom variable and displays the New Variable dialog box.



- Examples of conditional responses

Examples of conditional responses

Conditional responses can be used in a variety of ways, as shown in the following examples.

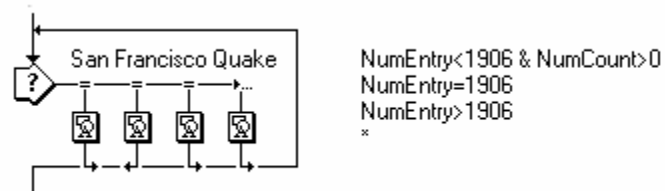
Example 1: Use a logical variable that checks a specific condition.

You might include a conditional response that checks whether the Caps Lock key is on, using the CapsLock system variable.



Example 2: Use a conditional expression that compares two or more values and yields a result of true or false.

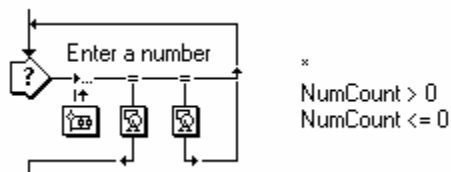
Each of the conditional responses in the example below compares the user's text response (captured in the NumEntry system variable) with a number and matches the response if the condition is true. If the user doesn't type a number (i.e., NumCount = 0), the catch-all text response is matched.



The order in which you place the conditional response in this interaction is important. If you placed the catch-all text response (*) left-most in the interaction, and the conditional responses to its right, the conditional responses would never be matched.

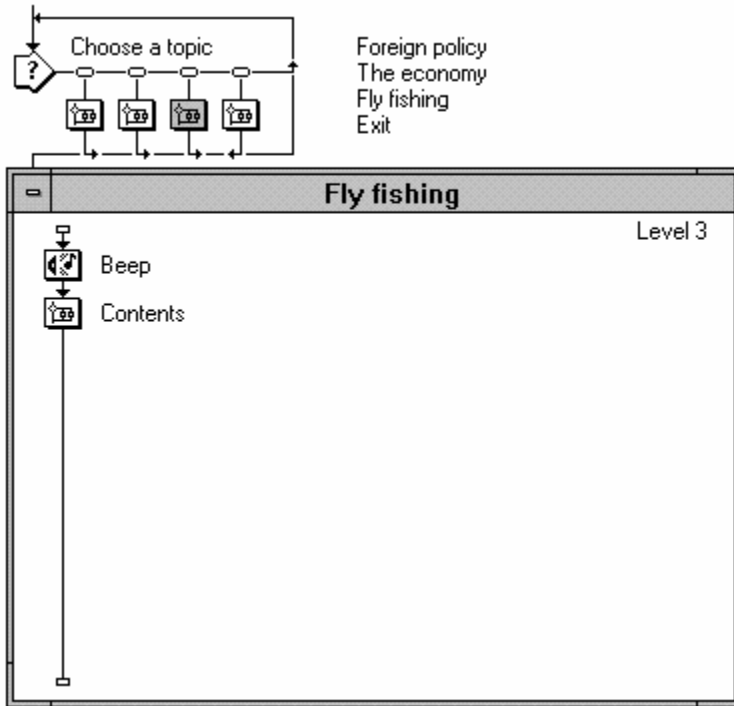
Example 3: Use conditional responses that evaluate data from a preceding text response.

In this case, the conditional responses can be matched after the text response is matched, since the catch-all text response ("*") is set to continue branching. The map attached to the text response is empty.

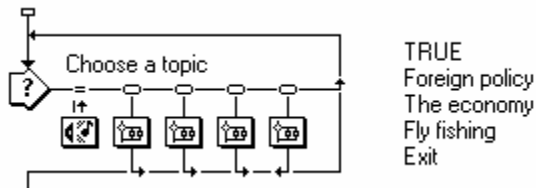


Example 4: Use a conditional response that is always matched, by including "true" as its condition. This is sometimes useful to do temporarily while building a complex interaction or to set up some action which is performed every time a user responds.

Suppose you had a sound you wanted played after the user selected each response in a particular interaction. An obvious but space-consuming way would be to include this sound as part of each response.

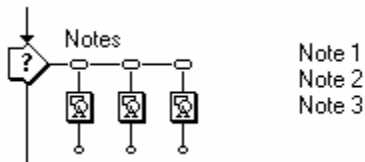


Another way of setting this up would be to include the sound as a conditional response set to true, place the response leftmost in the interaction and set it to continue branching. Each time the user selects a response, the conditional response is immediately matched and Star branches to the selected response.

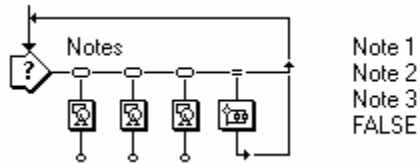


Example 5: Use a conditional response that is never matched, by including "false" as its condition. This can be used to prevent an interaction from becoming a perpetual interaction. When a response is perpetually active, it remains ready to match a user's response—even while the user is responding to another interaction. If all responses in an interaction are set to perpetual (that is, all those having a perpetual option), the interaction becomes a perpetual interaction. Since any response in a perpetual interaction can be matched at any time, Star does not stop when it encounters the interaction icon.

Without the "false" conditional response, the interaction below would be a perpetual interaction. Star would not stop and wait for a user response the first time it encountered the interaction.

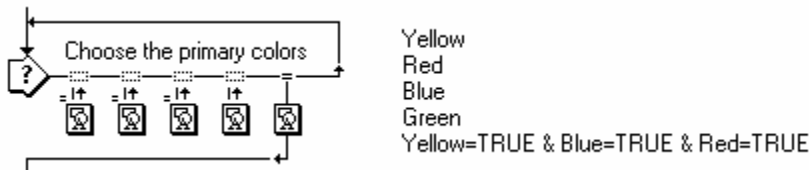


Adding a conditional response set to "false" changes the interaction's exit branching. Star stops and waits for a response, then the perpetual responses are ready to be matched at any time.



Example 6: Use a conditional response that will be matched only when other responses have been matched. Interactions of this type are often referred to as continue-compare interactions.

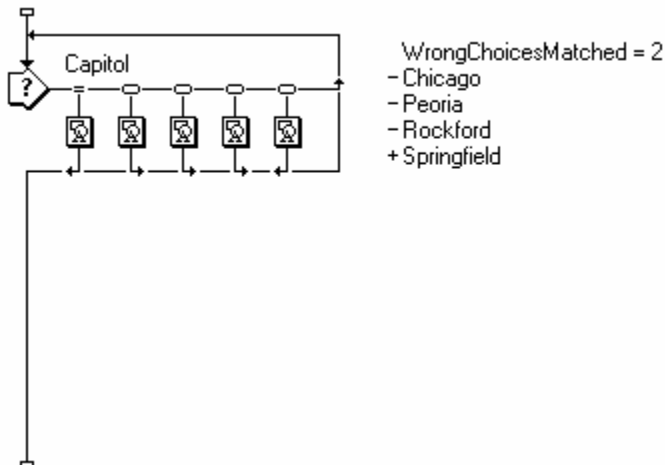
In this interaction, each time the user clicks a correct response, a corresponding logical variable is set to true in the attached calculation. (For example, when the user clicks the Yellow response, for instance, a custom variable called `Yellow` is set to true.) The correct responses are set to continue branching. Once all three responses have been matched, the conditional response is matched.



Note: Examples 1 through 6 all required user action in order to match the conditional response. The following example uses the *On False To True Auto-match* option.

Example 7: Use a conditional response that branches if a specific condition changes from false to true within the interaction.

Suppose that you set up a test in which responses are judged as correct or wrong. You could include a conditional response using the `WrongChoicesMatched` system variable, which contains the number of wrong responses to an interaction. In the Conditional Response Options dialog box, set up the response to Auto-match On False to True. The condition would start out false when encountered in the interaction. As soon as the user matched the second wrong response, the condition would become true, matching the conditional response.



Setting up text interactions

1. Attach an icon to an interaction and set its response type to text. Click OK.

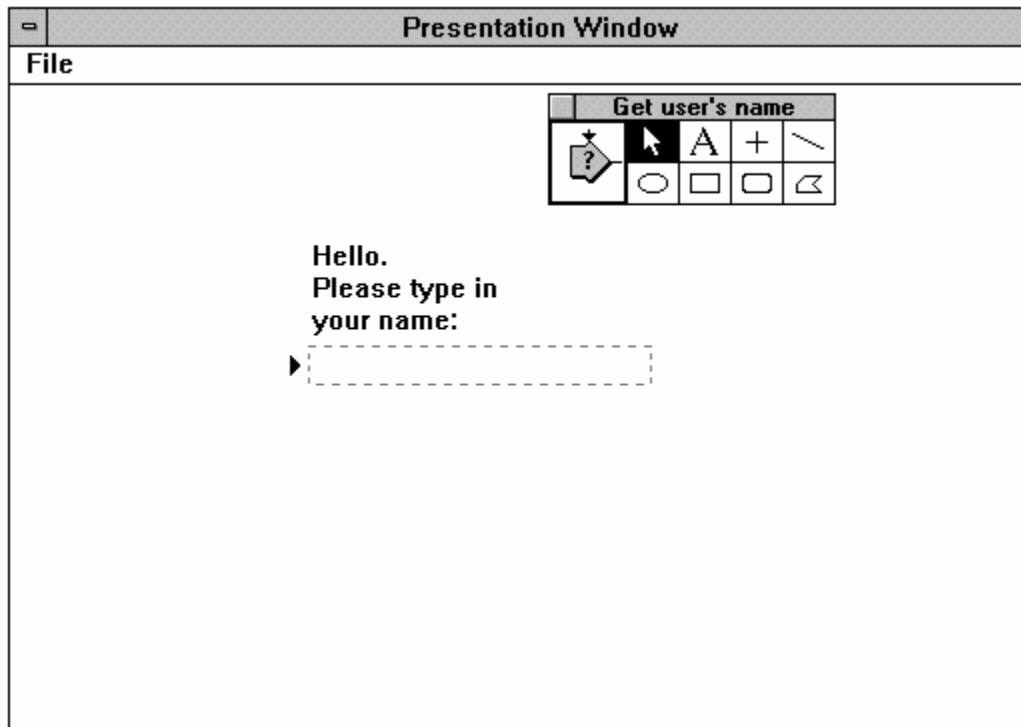
2. Title the attached icon.

The icon title is the text the user will need to type to match the response.

3. Double-click the interaction icon, click OK - Edit Display, and position and size the text entry area. Then select the text tool and add text to prompt the user.

When you set up a text response, Star automatically inserts a text entry area in the interaction icon display. All text response icons you attach to an interaction refer to the same text entry area—an interaction can only have one text entry area.

When you double-click the interaction icon and click OK - Edit Display, you see the text entry area, represented by an outline rectangle with a triangular marker in front of it. (You can also edit this display by Control-double-clicking the interaction icon.)



Drag an edge of the text entry area to move it, or drag a handle to resize it.

4. Double-click the edge of the text entry area to open the Interaction Options dialog box. Then click the Text Entry Options button. Set options as desired.

When you click the Text Entry Options button, the Interaction Options dialog box expands. You can select options for how users' text appears as they type and how many characters they can enter. For instance, the font, font size, style, and color you select here will be used for the text the user types. Select these options from the Text menu while the text entry area is selected.

Get user's name

<input type="checkbox"/> Pause Before Exiting	Character Limit: 20	Action Key(s): Enter
<input type="checkbox"/> Show Button	<input type="checkbox"/> Auto Entry	<input checked="" type="checkbox"/> Ignore Null Entries
Erase Interaction On Exit	Entry Area Position & Size	
Erase Effect None	150	170
Text Entry Options >>	150	18
OK - Edit Display	<input checked="" type="checkbox"/> Show Entry Marker	Font: 10 pt.
OK Cancel	<input checked="" type="checkbox"/> Erase Entry On Exit	System

5. Click OK when you're done.

6. Close the Presentation window

7. Open the Text Response Options dialog box.

Double-click the icon's response symbol to display the Text Response Options dialog box. These options determine exactly how the user can match this response. For example, you can specify whether the capitalization of the letters the user types should be ignored.

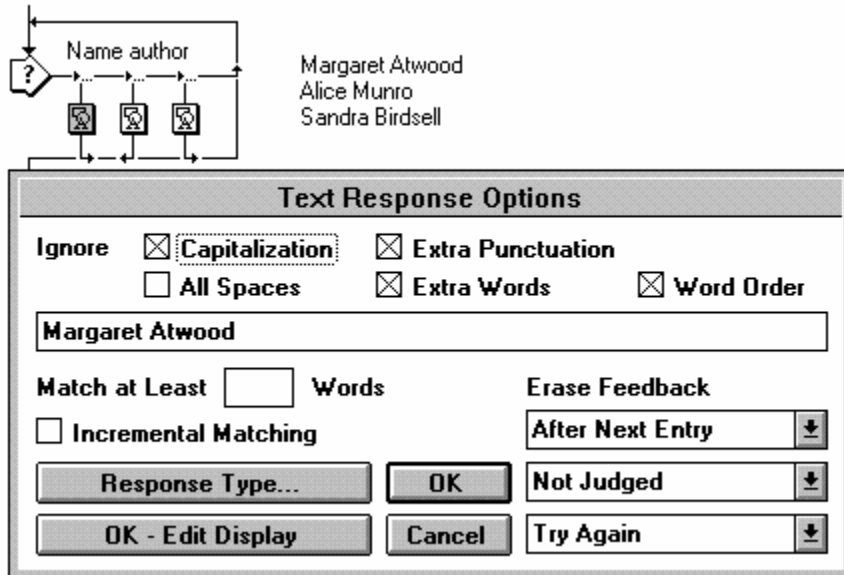
8. Fill in the response icon. Click OK when you're done.

9. Attach additional icons to anticipate incorrect responses. This is described in the following section.

- Anticipating text responses

Anticipating text responses

The titles of text response icons function as anticipated responses. The Text Response Options dialog box contains a field that displays the icon's title. In this example, "Margaret Atwood" is the icon title and also the anticipated response.



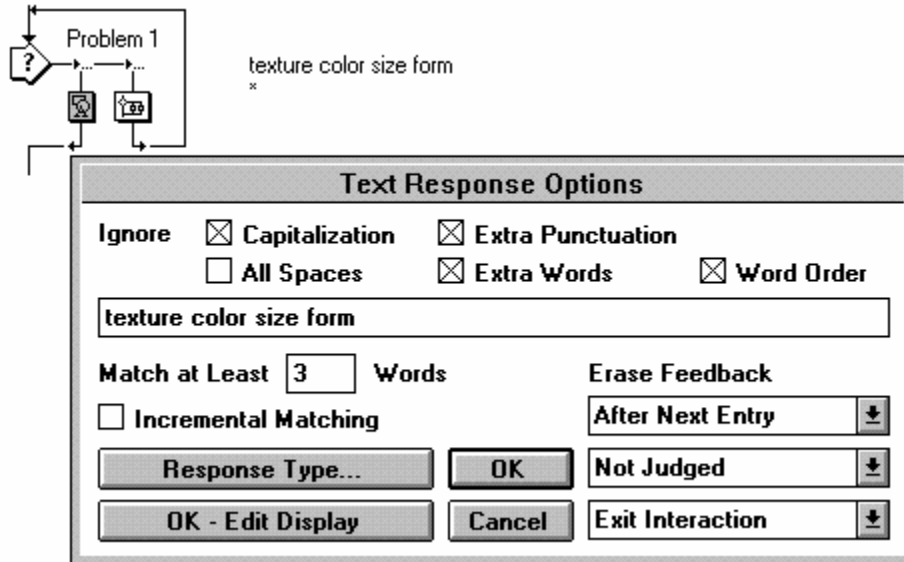
Some special characters can be used to type the title.

- Use the vertical "or" bar (|) to separate equivalent responses. The vertical bar is created by pressing Shift-backslash (\).
- Text responses can normally be matched any time the specified text response is entered in the interaction. You can also make specific text responses active *only* when the system variable `Tries` is at specified values. To make a text response active on a specific try for an interaction, type the number sign (#) character and a number as the first character in the text response's title field.
- Wildcard characters let you take into account misspellings or alternative prefixes or word endings. Type an asterisk (*) to substitute for an entire word or any missing part of a word. Type a question mark (?) to substitute for any single character *which may not be missing*. A backslash (\) before "*" or "?" means that the following character *is not* to be considered a wildcard character, but rather a normal asterisk or question mark.

Examples of special character usage are given in "[Text responses](#)" in Chapter 4.

- Match At Least __ Words—Specifies the minimum number of anticipated words that must be found in the user's response in order to declare a match.

For example, words in the following anticipated response are separated by spaces and not by the "or" bar (|). This anticipated response can be thought of as a list of words. The user's response must contain at least three of them in order to match.



If you specified a response such as "texture color size form | earth air fire water", Star would require a match of any three words *in either* response. If the user typed "fire form air" the response would not be matched.

- Incremental Matching—Saves time when you want the user to supply a list of items. It can save considerable time even when the list has only two elements in it like "Abraham Lincoln," "Minneapolis, Minnesota," or "Atlantic Ocean."

With Incremental Matching, Star remembers the words the user types in each try. In this example, the correct anticipated response is "George Washington." You might have attached icons containing these messages:

Anticipated response

Icon display

George Washington

Very good!

Washington

Yes, but what was his first name?

George

Yes, but what was his last name?

If the user types "Washington," Star replies, "Yes, but what was his first name?" The user might then type "George" to which Star replies, "Yes, but what was his last name?" Repetition would continue until the user typed both names in a single entry. To avoid this repetition, you could select the Incremental Matching option for the *correct* response, in this case, "George Washington".

First president?

George Washington
Washington
George
*

Text Response Options

Ignore Capitalization Extra Punctuation
 All Spaces Extra Words Word Order

George Washington

Match at Least Words Erase Feedback

Incremental Matching ↓

↓

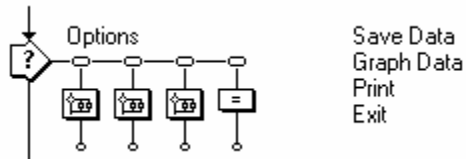
↓

If the user types "Washington," Star responds, "Yes, but what was his first name?" If the user then types "George," Star responds, "Very good!"

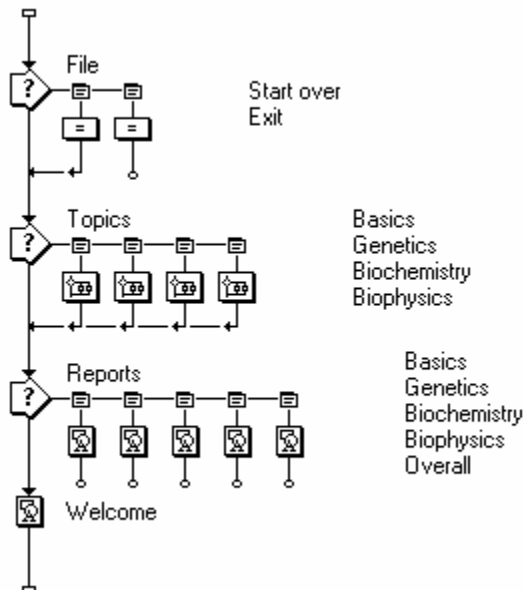
Perpetual response examples

When a perpetual response is matched during presentation, Star immediately leaps to the response symbol of the perpetual response and branches to its attached icon. Where Star goes upon exiting the perpetual response depends on its exit branching.

With return branching, when Star exits the perpetual response, it returns to the icon it was in when the perpetual response was matched. When return branching is selected, exit branching lines look like this:



Example: The Design window contains three perpetual interactions containing pull-down menu responses. Because the three interaction icons have only perpetual responses attached to them, Star immediately falls through the interactions and displays the "Welcome" icon.



In the "Welcome" display, the user is instructed to use the pull-down menus to navigate through the file. If the user chooses "Basics" from the Topics menu, presentation leaps to the "Basics" map. Once the user works through "Basics," Star immediately returns to the "Welcome" display, unless another menu command is chosen.

- Automatic erasing when leaving
- Including perpetual conditional responses as subroutines
- Deactivating and terminating perpetual responses

Automatic erasing when leaping

Depending on where Star leaps when matching a perpetual response, you may or may not want to erase the current contents of the screen. What Star erases upon leaping depends on several factors: the direction Star is leaping, the perpetual response's exit branching, and the type of icon returned to.

In the previous example, text or graphics on the screen would automatically be erased when the user chose any Topics command or "Start over" in the File menu. When the user chose a Reports command, such as "Overall," text and graphics on the screen would not be erased. The reports of user progress can be overlaid on the display by using a white-filled rectangle. When the report is erased, the underlying display reappears.

How does this automatic erasing work? In part, the response depends upon whether leaping is backward on the flowline, within a single interaction, or forward.

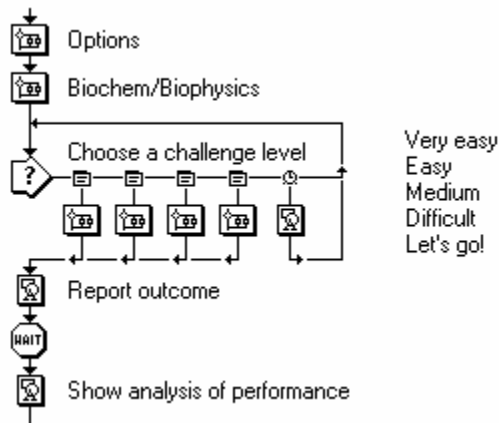
- Erasing when leaping backward
- Erasing when leaping within an interaction
- Erasing when leaping forward
- Erasing when returning

Erasing when leaping backward

When the leap is backwards to a perpetual response, the perpetual response's branching determines whether erasing should occur.

- When the user is to be returned exactly to the point of presentation interrupted by a match with a perpetual response, no automatic erasure occurs.
- When presentation will exit to the flowline (as is the case in choosing an item from the Topics menu in the previous example), all text and graphics presented by any icon between the user's current icon and the icon attached to the perpetual response will be erased.

For example, the following file structure uses an interaction with perpetual pull-down menus to allow the user to select a challenge level. The user can reselect a challenge level at any time, even while working within one level. A time limit response has been attached to the initial interaction. If the user doesn't select a challenge level within a half-minute, some coaching is given.



Time limit responses do not have a perpetual option. As a result, not all responses attached to the interaction are perpetual, and "Choose challenge level" is not a perpetual interaction. Star waits at the interaction for a user response. Notice that there is no exit path coming directly from the interaction icon.

When the user initially selects a challenge level, s/he is branched into the corresponding map icon. The interaction display will be erased if After Next Entry is selected; otherwise, it remains on the screen.

If the user completes a challenge level, presentation proceeds to the "Report outcome" display, waits for the user to press a key, and then presents "Show analysis of performance." If at this point the user selects another challenge level, Star leaps back to the symbol of the matching perpetual response. Display text and graphics presented by the icons between the two points is erased automatically.

Erasing when leaping within an interaction

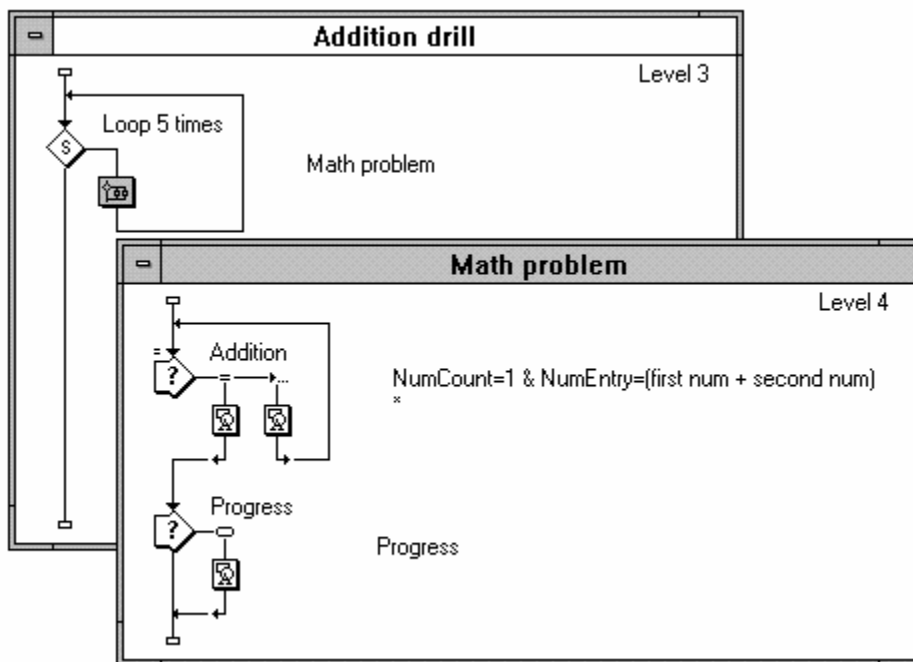
If the user chooses a perpetual response from among the responses attached to the current interaction, such as jumping from "Easy" to "Difficult" in the following design, erasure occurs as specified in the response options.



Erasing when leaping forward

Forward leaping is harder to construct, but you're likely to find that erasure occurs as you want it to. Basically, a forward leap occurs when you have a looping structure (a decision structure set to repeat or "loop") with a perpetual response presented late in a sequence of icons to be repeated. When the loop takes the user back to the beginning of the sequence, and the user makes an entry that matches the perpetual anticipated response, the file leaps forward to the perpetual response.

The following design causes a user to work until at least five math problems randomly generated by an algorithm (embedded in the interaction icon) have been responded to correctly. After the first correct response, the user can use a perpetual pushbutton to review his or her performance record. A forward leap is possible only if the user previously encountered the interaction "Progress chart" with its perpetual response.

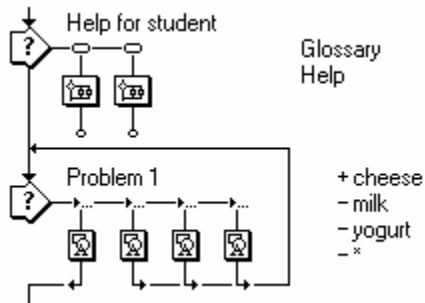


Because the "Progress chart" display icon exits to the flowline (rather than returning), Star determines that the "Addition" interaction must be terminated if the user clicks the pushbutton. Star erases the interaction display and attached icon display according to the erase options you selected for each icon.

Erasing when returning

Perpetual responses can interrupt not only interactions, but also any process such as animation, movie, sound, or wait icons, or the presentation of a series of display icons. When the perpetual response returns to the point of interruption (instead of exiting to the flowline), some special erasure rules apply.

If the return is to an interaction, the perpetual response is treated as though it were directly attached to the interrupted interaction. In the example shown below, "Problem 1" can be interrupted by pressing one of two pushbuttons, "Glossary" and "Help." When the user returns to "Problem 1" after clicking a button, the interaction resumes. Any items displayed by the glossary or help icons are not erased until the user responds to the interaction again.



After the user completes a response to "Problem 1," erasing of the perpetual response depends on the setting specified for that response:

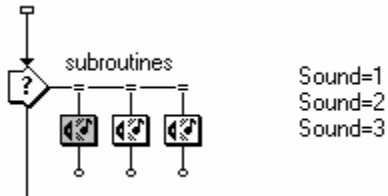
- After Next Entry displays the perpetual response until the user responds to "Problem 1."
- Before Next Entry erases the perpetual response as soon as the user returns to interaction "Problem 1."
- Upon Exit erases the perpetual response when Star exits the "Problem 1" interaction (not the "Help for student" interaction).

If the return is to an icon other than an interaction icon, the perpetual response is erased immediately upon making the return *unless* Don't Erase is specified. If Don't Erase is specified, any text and graphics displayed by the response remains on the screen.

Including perpetual conditional responses as subroutines

A subroutine is a section of an application that can be called from any point in the application. In Star, you can use perpetual conditional responses as subroutines. Whenever a matching condition becomes true, Star branches to the perpetual conditional response.

For example, suppose you use a few sounds repeatedly throughout the application. Rather than copying and pasting them throughout the file, you can include them as perpetual conditional responses at the beginning of the application:



These conditional subroutines will be matched based on the value of the custom variable `Sound`. Whenever you want to play the sound in the application, include a calculation that sets the variable to one of the matching values. Be sure to include an initial value for `Sound` that does not match any of the responses.

Set the conditional options for each of these to match when the condition changes from False to True.

The screenshot shows the 'Conditional Options' dialog box. At the top, the title 'Conditional Options' is centered. Below the title, there are several sections. The first section is 'Match If TRUE:', which includes a text field containing 'Sound=1' and a checked checkbox labeled 'Perpetual'. The second section is 'Auto-match', which has a dropdown menu currently showing 'On False To True'. The third section is 'Erase Feedback', which has a dropdown menu currently showing 'After Next Entry'. Below these sections are several buttons: 'Response Type...', 'OK', 'Not Judged', 'OK - Edit Sound', 'Cancel', and 'Return'. The 'Return' button has a small downward arrow icon next to it.

More complicated subroutines can be used by setting up perpetual conditional responses attached to map icons.

Deactivating and terminating perpetual responses

Using its Active If TRUE condition, you can deactivate a perpetual response at any point. If you want to terminate the perpetual response instead of just making it inactive, you can erase it.

- Terminating perpetual click/touch responses
- Terminating perpetual movable object responses
- Terminating perpetual pull-down menu responses
- Terminating perpetual pushbutton responses

Terminating perpetual click/touch responses

Because click/touch responses present nothing visible to the user, they cannot be erased with an erase icon. Therefore, you must use the Active If TRUE field to specify when the area is and is not active.

In the example below, the author has defined a variable called `Quiz in progress` and sets it to true whenever the user is taking a quiz. When the user is not taking a quiz—when `Quiz in progress` is false—the condition becomes true and the hotspot becomes active.

Click/Touch Options

Title: Perpetual

Optional Key(s): Inverse Area

Active If TRUE: Mark After Matched

Custom Cursor Use Custom

Current

Match With ↓

Erase Feedback ↓

↓

↓

Terminating perpetual movable object responses

Movable object responses can be terminated in two ways: erase the object to be moved or use the Active If TRUE field to make movement of the object into the target area inactive.

In the example below, the author has defined a variable called `Simulation` and sets it to true whenever the user is interacting with a simulation. Since `Simulation` is false at all other times, the user's movement of the object into the target area will be recognized only when the user is interacting with the simulation.

Movable Object Options

Drag object to the target position: None (click an object)

Title: Perpetual

Match Any Object

Active If TRUE: Erase Feedback

Terminating perpetual pull-down menu responses

To erase a perpetual pull-down menu, insert an erase icon. When prompted to select the objects to erase, click the menu name in the menu bar. The menu and all commands on it will be erased.

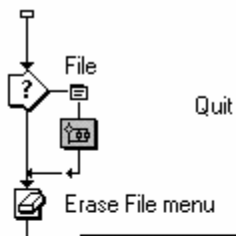
To deactivate a single command within a menu, use the Active If TRUE field. When a pull-down menu response is inactive, it appears dimmed in the pull-down menu and the user cannot choose it.

In the example below, the author only allows users to use the Summary command after they've completed the introduction. The author has created a variable called `Intro complete` and sets it to true when the introduction has been completed.

The dialog box is titled "Pull-down Menu Options". It contains the following fields and controls:

- Title:** Summary
- Perpetual**
- Optional Key:** (empty text box)
- Active If TRUE:** intro complete = true
- Erase Feedback:** After Next Entry (dropdown menu)
- Response Type...:** (button)
- OK** (button)
- Not Judged** (dropdown menu)
- OK - Edit Display** (button)
- Cancel** (button)
- Return** (dropdown menu)

Tip: The default File menu includes the *Quit* command. You may want to disable the *Quit* command in your application. To do this, put a "File" interaction at the beginning of your application and attach a "Quit" menu response to the interaction. Double-click the response symbol and make the response perpetual with Exit Interaction branching and a `CtrlQ` optional key. Then add an erase icon directly below it that erases the File menu.



The dialog box is titled "Pull-down Menu Options". It contains the following fields and controls:

- Title:** Quit
- Perpetual**
- Optional Key:** (empty text box)
- Active If TRUE:** (empty text box)
- Erase Feedback:** After Next Entry (dropdown menu)
- Response Type...:** (button)
- OK** (button)
- Not Judged** (dropdown menu)
- OK - Edit Map** (button)
- Cancel** (button)
- Exit Interaction** (dropdown menu)

When you run the file, the *Quit* command will be disabled in the File menu.

Terminating perpetual pushbutton responses

To erase a perpetual pushbutton, insert an erase icon. When prompted to select the objects to erase, click the pushbutton to remove it.

If you want the pushbutton to be active intermittently, use the Active If TRUE field. In the example below, the author activates the "Start Over" pushbutton until the exercise has been completed. After the user completes the exercise, the pushbutton disappears.

Pushbutton Options

Title: Perpetual

Optional Key(s):

Active If TRUE:

If Inactive: Dim Hide

Button Type:
 Standard Outlined

Position & Size...

Erase Feedback:
After Next Entry

Response Type... Not Judged

OK - Edit Display Return

As long as the pushbutton has not been erased, the author could make the pushbutton reappear at any later time, by setting `Exercise complete` to false.

Chapter 4 Icon Reference

Icons are the basis of Star. This chapter explains in detail each icon and the options dialog boxes associated with it, including animations options and interaction responses.

The graphics toolbox is explained as well.

- [Display icon](#)
- [Animation icon](#)
- [Erase icon](#)
- [Wait icon](#)
- [Decision icon](#)
- [Interaction icon](#)
- [Interaction response options dialog boxes](#)
- [Calculation icon](#)
- [Map icon](#)
- [Start and stop flags](#)
- [Movie icon](#)
- [Sound icon](#)
- [Video icon](#)
- [Toolbox](#)

Display icon

The display icon is typically used for displaying text and graphics. Many display options are accessed through the Effects command in the Attributes menu.

Before you can edit a display icon, you need to open it to display its contents.

You can open a display icon in three ways:

- Double-click the display icon on the flowline.
- Run the file. When Star encounters an empty display icon, the presentation stops and the toolbox appears.
- Double-click the icon's contents in the Presentation window when running the file.

The graphics toolbox is explained in detail at the end of this chapter.

To view the contents of a display icon (as well as an interaction, sound, or movie icon) from the Design window without opening the icon, click it with the right mouse button; or you can select the icon, use the Get Info command from the Edit menu, and click the Preview button. The contents are displayed and scaled if necessary; the scaling percentage appears in the upper left corner of the preview window. When you're done, click anywhere or right-click another icon to preview it.

Tip: *To keep previously displayed items in the Presentation window when you open a display icon, press the Shift key while you double-click the icon.*

Animation icon

Animation icons do not present or contain display objects—instead, they move displays, including movies, from one place to another in a given amount of time or at a specified speed. Animation icons use the display contents of a preceding display, movie, or interaction icon, and all the display objects in that icon move together.

Note: *Click an animation icon with the right mouse button to preview the contents of the icon it animates. Then click anywhere to make the preview disappear.*

- System variables
- Animation options

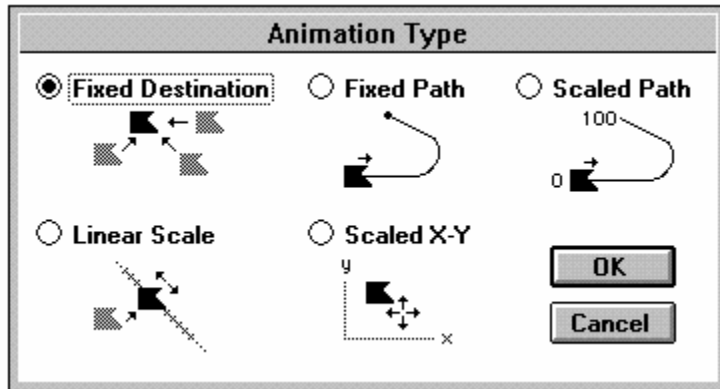
System variables

System variables particularly useful with animations include Animating, Moving, DisplayX, DisplayY, PathPosition, PositionX, and PositionY.

Animation options

There are five types of animations:

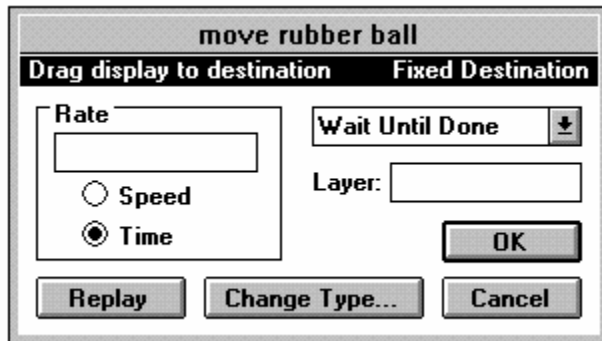
- [Fixed destination animations](#)
- [Fixed path animations](#)
- [Scaled path animations](#)
- [Linear scale animations](#)
- [Scaled X-Y animations](#)



Each animation type has its own set of options. To display the animation options dialog box, double-click the animation icon in the Design window. First you will need to choose an animation type; then you'll select options for the particular animation type. Detailed procedures for how to set up each animation type are in Chapter 3, "[Procedures & Examples.](#)"

Fixed Destination Options dialog box

[Click part of the illustration of the dialog box for more information.](#)



Rate

When you first drag an object to be animated, Star automatically records the number of seconds you take to move it in the Rate field. Use the Rate field to specify how long you want the animation to take, given your selected timing method (Time or Speed). You can type entries such as 3, 1.75, or 10. You can also insert a variable or expression in this field.

- **Time**—If you select Time, the entire animation takes place in the time specified in the Rate field. For example, if you select Time and type 10 in the Rate field, the animation takes 10 seconds, regardless of the distance to be covered.
- **Speed**—If you select Speed, the animation will move about 72 pixels (about one inch) in the time specified in the Rate field. For example, if you select Speed and type 10 in the Rate field, the object moves about 72 pixels every 10 seconds. This option allows you to make sure that an animated object moves at the speed you specify, regardless of the distance it must move. Controlling the speed can be important when synchronizing the animation of several objects or animating objects relative to each other. A speed-controlled animation set to 4 seconds, for instance, will move twice as fast as one set to 8 seconds.

Concurrency

The Concurrency drop-down list controls the animation's presentation relative to the icons that follow it on the flowline.

- **Wait Until Done**—When this option (the default) is chosen, Star waits until the animation is done before proceeding to the next icon on the flowline.
- **Concurrent**—When this option is chosen, Star activates the animation and proceeds immediately to icons following the animation so they are presented concurrently with the animation. This option is useful when you want two or more objects animated simultaneously or when you want to play a sound while animating.
- **Perpetual**—When this option is chosen, the object can be animated after Star exits the animation. Star monitors the variables specified in the animation's option fields; if a variable's value changes, the animation is activated.

Layer

By default, objects in the Presentation window are layered in the order they appear on the flowline. Animated objects appear in front of stationary objects while they are being animated; if two animated objects overlap, the one animated last appears on top of the other object.

The Layer option enables you to layer overlapping animated objects. Assign a number to animations in the Layer field, and the object with the highest layer number appears on top. (Leaving the Layer field blank gives the animation a layer number of 0.) You can enter any positive or negative number or a variable or expression. For example, entering 10 causes the animated display to pass above other animated displays that have layer numbers less than 10. If two animations with the same layer number overlap, the animation started second appears on top.

Some points about layering to keep in mind:

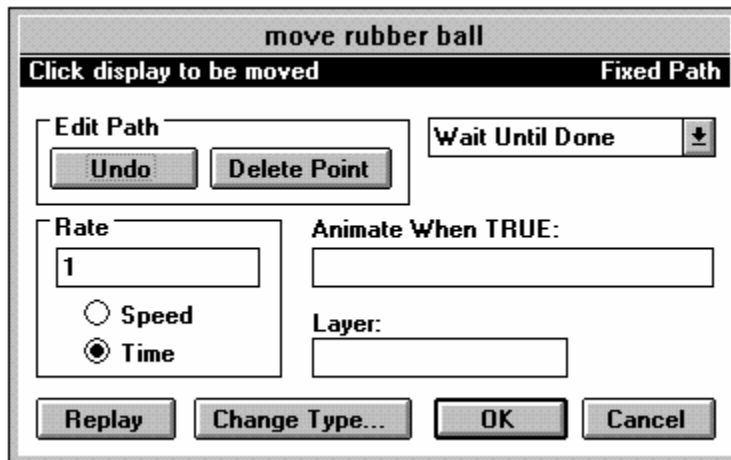
- The Layer option only affects objects while they are being animated. If the animation of one of several overlapping objects stops, it will be moved back to the layer specified in the Effects dialog box, if a layer is specified; otherwise it is moved to layer 0.
- Be sure to set the drawing mode of the animated objects appropriately. If the drawing mode of an animated object is set to Transparent instead of Opaque, the objects over which it passes will show through, even if it is set to a higher layer number.
- Movies with the Direct to Screen option selected always play in the top layer, above all other graphics.

- **Replay**—Replays the animation using the current options.
- **Change Type**—Displays the Animation Type dialog box, which allows you to select a different type of animation.
- **OK**—Records your entries and removes the dialog box. If you choose a different animation type and click OK, the animation options dialog box for the new type will appear. Any entries you made for the previous animation type that apply to the new animation type are retained.
- **Cancel**—Removes the options dialog box without changing any entries.

Fixed Path Options dialog box

Double-click the animation icon in the Design window to access its options. If it is not already a fixed path animation (indicated in the upper right corner of the animation options dialog box), click the Change Type button and change the animation to fixed path.

[Click part of the illustration of the dialog box for more information.](#)



Edit Path

Click the Delete point pushbutton to deselect a selected marker, or click Undo to reverse changes.

Concurrency

The Concurrency drop-down list controls the animation's presentation relative to the icons that follow it on the flowline.

- **Wait Until Done**—When this option (the default) is chosen, Star waits until the animation is done before proceeding to the next icon on the flowline.
- **Concurrent**—When this option is chosen, Star activates the animation and proceeds immediately to icons following the animation so they are presented concurrently with the animation. This option is useful when you want two or more objects animated simultaneously or when you want to play a sound while animating.
- **Perpetual**—When this option is chosen, the object can be animated after Star exits the animation. Star monitors the condition in the Animate When TRUE field after the animation icon is exited (unless the object has been erased, in which case the animation is ignored). Whenever the variable or expression becomes true, the animation begins immediately. If the condition is still true at the end of the animation, Star repeats the animation; if the condition becomes false, Star completes the animation but does not repeat it.

Animate When TRUE

Animates the object only when the specified condition is true. When the condition is false, the animation is ignored.

If the specified condition is true when Star encounters the animation icon, the object is animated. If the condition is still true at the end of the animation—when the object has reached the endpoint of the path—Star repeats the animation; if the condition is false, it does not repeat.

If you leave this field empty, Star animates the object once when it encounters the icon.

Scaled Path Options dialog box

Double-click the animation icon in the Design window to access its options. If it is not already a scaled path animation (indicated in the upper right corner of the animation options dialog box), click the Change Type button and change the animation to scaled path.

[Click part of the illustration of the dialog box for more information.](#)

The image shows a dialog box titled "move rubber ball" with a subtitle "Scaled Path". The dialog is divided into several sections:

- Click display to be moved**: A header bar on the left.
- Edit Path**: Contains "Undo" and "Delete Point" buttons.
- Loop**: A checkbox that is currently unchecked.
- Wait Until Done**: A dropdown menu with a downward arrow.
- Rate**: A text input field containing the number "1".
- Speed/Time**: Two radio buttons, "Speed" (unchecked) and "Time" (checked).
- Layer**: A text input field.
- Variable/Expression**: A text input field.
- Position**: A section with three buttons: "Base", "Current" (highlighted), and "End".
- Value**: Three text input fields with values "0", an empty field, and "100".
- Buttons**: "Replay", "Change Type...", "OK", and "Cancel" are located at the bottom.

Loop

Controls what happens if the value specified in the Variable/Expression field is outside the range of the base and end values. If you don't check Loop, the animation moves the object to the endpoint nearest the field's value and leaves it there. If you check the Loop option, Star calculates a scaled point and moves the object there.

Concurrency

The Concurrency drop-down list controls the animation's presentation relative to the icons that follow it on the flowline.

- **Wait Until Done**—When this option (the default) is chosen, Star waits until the animation is done before proceeding to the next icon on the flowline.
- **Concurrent**—When this option is chosen, Star activates the animation and proceeds immediately to icons following the animation so they are presented concurrently with the animation. This option is useful when you want two or more objects animated simultaneously or when you want to play a sound while animating.
- **Perpetual**—When this option is chosen, the object can be animated after Star exits the animation. Star monitors the entry in the Variable/Expression field after the animation icon is exited. If the value changes, and the animation still appears in the Presentation window (the object to be animated has not been erased), Star moves the object to the location corresponding to the new value.

Variable/Expression

Controls the animation. When Star encounters the animation, the numeric value of this variable or expression determines where the animated object will be positioned along the path. This variable or expression works with the base and end values of the path.

Position

These options apply to the path you define.

- **Base and End field**—These values represent the path's base and end points and work with the variable or expression in the Variable/Expression field. Star scales all points between the base and end points on the path. By default, Star provides a base value of 0 and an end value of 100. You can enter numbers or variables and their values can be positive or negative. You could insert 0 as the base value and 1 as the end value to provide scaled fractional values or to display binary data.
- **Current button and field**—The Current options let you see the object's position at any location along the path. (The Current Value field is ignored during file presentation.) Type a number in the Current Value field and click the Current button. The object will move to the scaled position you specified. You can also drag the object to a position along the scaled path. When you release it, the numeric scaled position of the object appears in the Current Value field.

Linear Scale Options dialog box

Double-click the animation icon in the Design window to access its options. If it is not already a linear scale animation (indicated in the upper right corner of the animation options dialog box), click the Change Type button and change the animation to linear scale.

[Click part of the illustration of the dialog box for more information.](#)

The image shows a dialog box titled "move rubber ball" with a "Linear Scale" indicator in the top right corner. The dialog is divided into several sections:

- Stop at Ends:** A dropdown menu with a downward arrow.
- Wait Until Done:** A dropdown menu with a downward arrow.
- Rate:** A text input field containing the number "1".
- Speed/Time Selection:** Two radio buttons, "Speed" (unselected) and "Time" (selected).
- Layer:** A text input field.
- Variable/Expression:** A text input field.
- Position:** A section with three radio buttons: "Base" (selected), "Current" (unselected), and "End" (unselected).
- Value:** Three text input fields containing "0", an empty field, and "100".

At the bottom of the dialog are four buttons: "Replay", "Change Type...", "OK", and "Cancel".

Loop

This drop-down list controls what happens if the value specified in the Variable/Expression field is outside the range of the base and end values:

- **Stop at Ends**—The object always moves to a position on the line or to one of the ends of the line. If the value of the variable or expression is outside the range of the base and end values, the object moves to the end of the line nearest the variable's value. If the base value is 5, the end value is 100, and the variable equals -5, the object will be moved to 5, which is the value on the path closest to -5.
- **Loop**—The object moves to an appropriate scaled position on the line. For example, if the base value is zero, the end value is 50, and the variable equals 75, looping will place the object at 25. To determine this point, subtract the path length (50) from the value (75); the remainder (25) is the destination. During presentation, the object moves directly from its starting position to the calculated destination.
- **Go Past Ends**—The object moves to the appropriate scaled position, even if the object must be moved outside the base or end points of the scaled line. With this option selected, think of the scaled line as infinite in length, and the base and end points as reference points on the line. If the base value is 5, the end value is 100, and the variable equals -5, the object will be moved to -5 even though that location is beyond the defined endpoints.

Concurrency

The Concurrency drop-down list controls the animation's presentation relative to the icons that follow it on the flowline.

- **Wait Until Done**—When this option (the default) is chosen, Star waits until the animation is done before proceeding to the next icon on the flowline.
- **Concurrent**—When this option is chosen, Star activates the animation and proceeds immediately to icons following the animation so they are presented concurrently with the animation. This option is useful when you want two or more objects animated simultaneously or when you want to play a sound while animating.
- **Perpetual**—When this option is chosen, the object can be animated after Star exits the animation. Star monitors the entry in the Variable/Expression field after the animation icon is exited. If the value changes, and the animation still appears in the Presentation window (the object to be animated has not been erased), Star moves the object to the location corresponding to the new value.

Variable/Expression

Controls the animation. When Star encounters the animation, the numeric value of this variable or expression determines where the animated object will be positioned along the scaled line. This variable or expression works with the base and end values of the scaled line.

Position

These options apply to the scaled line you define.

- **Base and End buttons**—Use these buttons when creating the scaled line. Click the Base button and define the base point by dragging the object to where you want the linear scaled line to begin. Click the End button and define the endpoint by dragging the object to where you want the path to end. When you release the object, a line connects the base and end points.
- **Base and End fields**—The Base and End fields contain the numeric values of the line's base and end points. These values work with the variable or expression in the Variable/Expression field. Star scales all points between the base and end points on the line. By default, Star provides a base value of 0 and an end value of 100. You can enter numbers or variables and their values can be positive or negative. Type 0 as the base value and 1 as the end value for use with fractional values or binary data.
- **Current button and field**—The Current options let you see the object's location at any position on the scaled line. (The Current Value field is ignored during file presentation.) Type a number in the Current Value field and click the Current button. The object will move to the scaled position you specified.

Scaled X-Y Options dialog box

Double-click the animation icon in the Design window to access its options. If it is not already a scaled X-Y animation (indicated in the upper right corner of the animation options dialog box), click the Change Type button and change the animation to scaled X-Y.

[Click part of the illustration of the dialog box for more information.](#)

The image shows a dialog box titled "move rubber ball" with a subtitle "Scaled X-Y". The dialog box is divided into several sections:

- Drag display to base position**: A header bar with "Scaled X-Y" on the right.
- Stop at Ends**: A button with a dropdown arrow.
- Wait Until Done**: A button with a dropdown arrow.
- Rate**: A section containing a text box with the value "1", and two radio buttons labeled "Speed" and "Time". The "Time" radio button is selected.
- Layer**: A text box.
- Position**: A section containing three radio buttons labeled "Base", "Current", and "End". The "Current" radio button is selected. Below these are two rows of input fields: the first row has a double-headed arrow icon followed by "0", an empty box, and "100"; the second row has a double-headed arrow icon followed by "0", an empty box, and "100".
- Buttons**: At the bottom, there are four buttons: "Replay", "Change Type...", "OK", and "Cancel".

Loop

This drop-down list controls what happens if the value specified in the Variable/Expression field is outside the range of the scaled area defined by the base and end values:

- **Stop at Ends**—The display always moves to some point in the scaled area or to one of its corners. If the values of the variables are outside the range of the base and end values, the display moves to the position in the area nearest to the variables' values. If the base points are 0,0, the end points are 50, 50, and the variables equal -5, -5, the object will be moved to 0, 0, which is the position in the area closest to -5, -5.
- **Loop**—The display moves to an appropriately scaled position in the scaled area. For example, if the base value is 0, 0, the end value is 50, 50, and the variable equals 75, 75, looping will place the object at 25, 25. During presentation, the object moves directly from its starting position to the calculated destination.
- **Go Past Ends**—The object moves to the appropriate scaled position, even if the object must be moved outside the scaled area. With this option selected, think of the scaled area as infinite in size, and the base and end points as reference points in the area. If the base value is 5, 5, the end value is 100, 100 and the variables equal -5, -5, the object will be moved to -5, -5 even though that location is outside the defined area.

Concurrency

The Concurrency drop-down list controls the animation's presentation relative to the icons that follow it on the flowline.

- **Wait Until Done**—When this option (the default) is chosen, Star waits until the animation is done before proceeding to the next icon on the flowline.
- **Concurrent**—When this option is chosen, Star activates the animation and proceeds immediately to icons following the animation so they are presented concurrently with the animation. This option is useful when you want two or more objects animated simultaneously or when you want to play a sound while animating.
- **Perpetual**—Choosing this option causes the animation to respond to changes in any of the variables named in the option fields, even after the animation is exited. For example, if the X variable changes at any time after initial presentation, the object immediately moves horizontally. Star ensures the object is correctly positioned at all times until the animated object is erased or another animation icon takes control of the object.

Horizontal and vertical variables

When Star encounters the animation, the numeric value of these variables or expressions determines where the animated object will be positioned within the scaled area. These variables or expressions work with the positioning base and end values of the scaled area.

Position

These options apply to the scaled area you define.

- **Base and End buttons**—Use these buttons when creating the scaled area. Click the Base button and define the base corner by dragging the object to where you want the upper left corner of the scaled area to begin. Click the End button and define the end corner by dragging the object to where you want the path to end. When you release the object, a dotted rectangle outlines the scaled area.
- **Base and End fields**—The Base and End fields contains the numeric values of the area's base and end corners. These values work with the variables or expressions in the vertical and horizontal variable fields. Star scales all points between the base and end points in the area. By default, Star provides base values of 0, 0 and end values of 100, 100. You can enter numbers or variables, and their values can be positive or negative. You could type 0, 0 as the base value and 1, 1 as the end value to provide scaled fractional values or to display binary data.
- **Current button and field**—The Current options let you see the object's location at any position in the scaled area. (The Current Value field is ignored during file presentation.) Type numbers in the Current Value fields and click the Current button. The object will move to the scaled position you specified.

Erase icon

The erase icon erases text and graphic displays. Erasing a display erases all objects contained in it. If you want to erase only specific objects in a display, place these objects in their own icons.

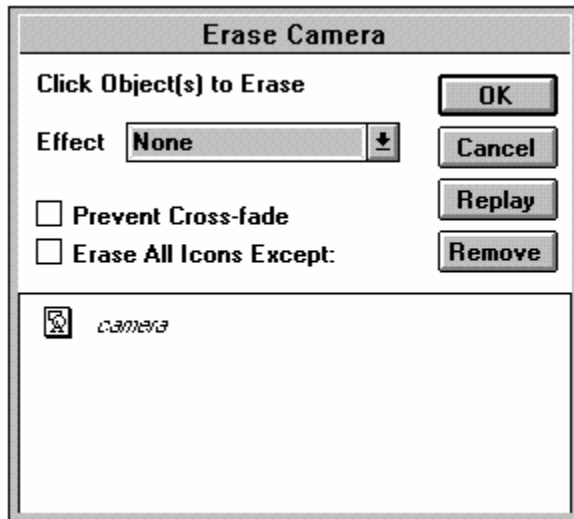
If you're running your file and Star encounters a new erase icon, it automatically opens the Erase Options dialog box. If you open an erase icon by double-clicking it in the flowline, the Erase Options dialog box opens and the Presentation window appears, showing its previously displayed contents.

Note: *If you click an erase icon with the right mouse button, you will see a preview of the first icon in the erase icon's list, if there are any icons on that list. Click again to make the preview go away.*

- Erase Options dialog box

Erase Options dialog box

Click part of the illustration of the dialog box for more information.



As the instructions at the top of the dialog box indicate, click the object (such as a display, pushbutton, or menu) that you want to erase. (You may need to move the dialog box by dragging its title bar if it covers an object you want to erase.) If the contents of more than one icon are displayed, click all displays you want to erase. All objects that you click disappear from the screen. If you've chosen a special effect, the objects are erased using this effect.

If the objects you wish to erase do not appear when you open the erase icon, close the Presentation window, double-click the icon that contains the icon, close the Presentation window, and open the erase icon again.

Effect

Star provides numerous special effects for erasing text and graphics. Once you click the display(s) you want erased, you can select different effects and see them demonstrated.

If you use no effects (None), the display will erase from the screen quickly. For example, the Mosaic effect causes the display to gradually erase in a mosaic pattern while Iris In removes the display from its center.

- When you click an object to erase, the object's icon and title appear in the scrolling list in the dialog box. Select the Erase All Icons Except checkbox if you want all displays erased *except* those in the list of icons.

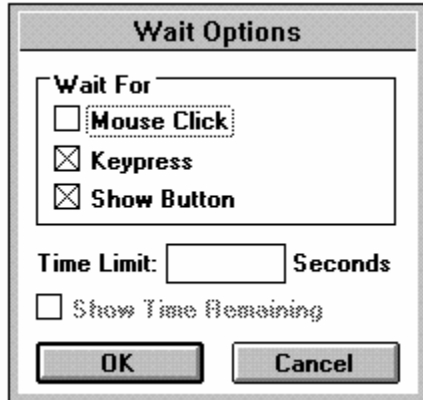
To delete an object from the list of icons in the dialog box, select the icon and click the Remove button or press the Delete key.

- Click Prevent Cross-fade if you want the objects to be completely erased before any subsequent display with the same effect is displayed. If you don't check this box, one display is erased as the next one is displayed.
- Use the Replay button to view the erasure again; objects are erased using the effect you've selected in the drop-down list.

Wait icon

The wait icon pauses the file until the user presses a key or clicks the mouse or a specified amount of time elapses. To open the wait icon, double-click it. After you open a wait icon, its options dialog box appears.

Click part of the illustration of the dialog box for more information.



Unlike many of the other icons, the wait icon does not automatically open when Star encounters a new one while running the file. However, you can manually open it during presentation, provided that you chose to display the wait icon's time remaining clock. Just double-click the clock.

Wait for Mouse Click

Continues running the file when the user clicks the mouse anywhere on screen.

Wait for Keypress

Continues running the file when the user presses any key on the keyboard.

Show Button

Displays a button the user must click to continue. The title you assign to the wait button in the File Setup dialog box determines what appears on all wait icon buttons. The default button title is Continue.

You can position the wait button anywhere you want while running the file after choosing Pause from the Try It menu. Simply drag it to a new location. When you insert a new wait icon, its button prompt (if any) is automatically positioned wherever you last positioned a button prompt. This makes it easy to standardize placement of wait buttons throughout your file.

Time Limit

Stops running the file until the specified amount of time has elapsed. Specify the amount of time in seconds. To make the amount of time dependent on a variable, insert a variable or expression in the Time Limit field instead of a number. For instance, entering a custom variable into the Time Limit field of multiple wait icons can be useful if you want all pauses to be uniform in your file, but want to experiment with different time limits. Instead of changing the number in each wait icon, you'd simply change the value of the custom variable.

***Note:** If you wait for a click or a keypress and also specify a time limit, the pause is ended by whichever event occurs first.*

Show Time Remaining

Displays a small alarm clock to the user that graphically counts down the time specified in the Time Limit field. You can move the clock while running the file without pausing—just drag it to a new location. Double-clicking the clock brings up the Wait Options dialog box.

Decision icon

When Star encounters a decision icon, it determines which icons attached to the decision icon it should branch to. Star decides which attached icon to use based on two factors:

- The branching setting, which determines which icon should be selected
- The repeat setting, which determines how many times Star returns to the decision icon and branches again (loops).

These options are both set in the Decision Options dialog box which you can display by double-clicking the decision icon.

- Decision Options dialog box
- Attached Decision Options dialog box

Decision Options dialog box

To open a decision icon, double-click it. Because decision icons have no display capabilities, you can't access them from the Presentation window. The Decision Options dialog box appears with the decision icon title in the title bar.

[Click part of the illustration of the dialog box for more information.](#)

Optional examples

Branching

- Sequential
- Random w/o Replacement
- Random with Replacement
- Calculated Path

[]

Reset Paths on Entry

Repeat

- [] Times
- Until All Selected
- Until Click / Keypress
- Until TRUE
- Don't Repeat

[]

Time Limit: [] Seconds

Show Time Remaining

OK Cancel

Branching

The branching option determines which attached icon Star will branch to. The decision icon on the flowline displays the type of branching you choose: S=Sequential, W=Random without Replacement, R=Random with Replacement, and C=Calculated Path.

- Sequential—Star chooses the first attached icon the first time it encounters the decision. Star selects the second attached icon the second time it encounters the decision, and so on.

The sequential option is useful when you need to alternate between two options. Star remembers which attached icon was last presented and presents the other icon the next time.

- Random without Replacement and Random with Replacement—These options work similarly. When Star encounters the decision icon, it randomly chooses an attached icon to branch to.

If the decision is encountered again or repeated under Random without Replacement, once an icon has been selected, Star will not branch to it again until all available icons have been chosen. Under Random with Replacement, Star does not ensure that it selects a different icon each time—it could branch to the same icon twice in a row.

- Calculated Path—Provides a text entry field for a variable or expression that calculates which attached icon should be presented. The integer value of this variable or expression determines which icon is selected: if it equals 1, the first attached icon is chosen, if it equals 2, the second attached icon is chosen, and so on.
- Reset Paths on Entry—Allows you to start the decision over again, as if none of the attached icons have been branched to. This is useful if you're going to use the decision structure from several different places in your application and you want to reset the branching each time.

Repeat

Repeat options determine how many times Star returns to the decision icon to determine whether it should branch again. By default, decisions are set to Don't Repeat.

- Times— Allows a number, variable, or expression to determine how many times the decision is repeated. If the value is less than 1, no branching occurs, and the system exits or bypasses the decision icon.
- Until All Selected— Ensures that all attached icons are branched to at least once before Star exits the decision.
- Until Click/Keypress—Repeats the decision until the user presses a key or clicks the mouse button. This is useful for animations and other sequences that you want repeated until the user stops them.
- Until TRUE—Evaluates the variable or expression in the text entry field each time the decision icon is encountered. As long as the result is false, Star repeats the decision and branches as specified. When the result is true, Star exits the decision.
- Don't Repeat—Branches once according to the branching option you chose. After presenting that icon, Star exits the decision and moves to the next icon on the main flowline.

Time Limit/Show Time Remaining

The time limit option allows you to specify the amount of time a user can spend within a decision structure. As soon as the specified time elapses, Star interrupts the current activity, exits the decision, and moves to the next icon on the main flowline.

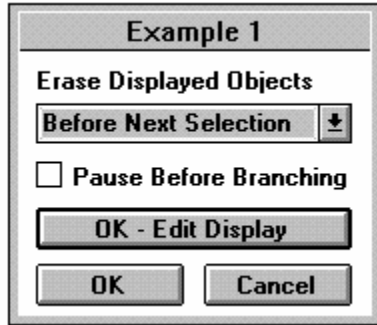
Time is measured in seconds and may be expressed by a number, a variable, or an expression (for example, "1.5*average time"). If you check the Show Time Remaining checkbox, a small alarm clock appears on the screen for the user and graphically counts down until the time is up.

If you want to give a special message when the time limit has been reached, name an attached icon "TimeLimit" (no space between words). This icon will be ignored by normal selection routines, but will be presented when the time has expired.

Attached Decision Options dialog box

This dialog box appears when you double-click an icon attached to a decision.

Click part of the illustration of the dialog box for more information.



- Variables related to decisions

Erase Displayed Objects

- **Before Next Selection**—Erases the displayed text and graphics just before the next attached icon is presented. If you have a series of displays that you want presented one after another, with the previous one erasing just before the next is shown, attach all the displays to a sequential decision and use this erase option.
- **Upon Exit**—Leaves all display items in the attached icon on the screen, and then erases them when the decision is exited.
- **Don't Erase**—Leaves display items in the attached icon on the screen until you explicitly remove them with an erase icon.

***Tip:** Using **Before Next Selection** along with the **Pause Before Branching** option provides convenient paging capabilities, especially when used with **Repeat Until All Selected**.*

Pause Before Branching

Displays a wait button the user must click to exit the attached icon.

OK - Edit Display

The name of this button varies (such as OK - Edit Sound or OK - Edit Map) depending on which type of icon is attached to the decision. Click the button to bring up the attached icon's display (or appropriate options dialog box) in the Presentation window.

Variables related to decisions

A special set of variables relates to decision icons. Use the Show Variables command in the Data menu and select the Decision category.

Interaction icon

The interaction icon combines the functions of the display icon and the decision icon by providing:

- Display capabilities. You can present users with something to which they must respond—have them click an object, press a button, type text, and so on.
- Branching capabilities. When the user responds to whatever you've presented, Star branches to an icon attached to the interaction icon. Each type of response the user can make corresponds to an attached icon. The attached icons contain information you want to give users based on how they responded. For example, if users typed text, you probably want to tell them whether or not the text typed was correct—if it was incorrect, you may want to give a hint and ask them to try again.

For detailed explanations for how to set up each response type, see Chapter 3, "[Procedures & Examples](#)."

- Interaction icon display
- Interaction Options dialog box
- Text Entry Options dialog box

Interaction icon display

Editing the display within an interaction icon is much like editing a display icon. There are several ways to open the interaction display:

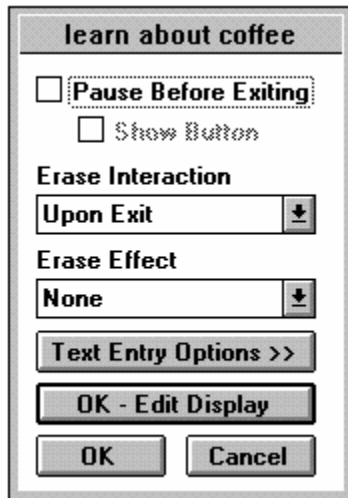
- Double-click an interaction icon, and then click the OK - Edit Display button in the Interaction Options dialog box.
- Control-double-click an interaction icon.
- While running the file, double-click any display object contained in the interaction icon display.

When an interaction's display is open, its contents appear in the Presentation window. The graphics toolbox shows the selected icon's image and title. Any visible response areas—click/touch, pushbutton, movable object, or text entry—also appear.

Tip: *To keep previously displayed items in the Presentation window when you open an interaction display, either hold down the Shift key while you click the OK - Edit Display button or hold down both the Shift key and the Control key when you double-click the interaction icon.*

Interaction Options dialog box

Click part of the illustration of the dialog box for more information.



The image shows a dialog box titled "learn about coffee". It contains several settings:

- Pause Before Exiting**
 - Show Button
- Erase Interaction**
Upon Exit [dropdown arrow]
- Erase Effect**
None [dropdown arrow]
- Text Entry Options >>
- OK - Edit Display
- OK [button] Cancel [button]

Pause Before Exiting

Stops presentation before the interaction is exited. This gives the user time to see what's on the screen before continuing. To continue, the user presses any key. If you select Show Button, presentation continues when the user clicks the wait button.

Erase Interaction

Lets you control when the interaction display will be erased. You can choose from three settings that appear in the drop-down list:

- Upon Exit—Erases the interaction display when Star exits the interaction.
- After Each Entry—Erases the interaction display as soon as an attached icon is presented. This clears the screen for any information displayed by the attached icon. The interaction display automatically reappears if Star repeats the interaction (the user is asked to respond again).
- Don't Erase—Leaves the interaction display on the screen until it is erased with an erase icon.

Erase Effect

Allows you to select how the interaction display will be erased. These effects are the same as those available for the erase icon. If you use no effects (None), the display snaps off the screen quickly. For example, the Mosaic effect erases the display gradually in a mosaic pattern. Spiral erases the display in a spiral pattern.

Text Entry Options

Applies only to interactions in which an attached icon uses a text response. Clicking this button opens the Text Entry Options dialog box, described in the next section.

OK - Edit Display

Brings up the interaction Presentation window. You can then create or edit the display just as you would for a display icon—import graphics, type text, and so on.

Text Entry Options dialog box

These options are specific to interactions containing text responses. To access these options, double-click the interaction icon and then click the Text Entry Options button. The right side of the Interaction Options dialog box expands.

[Click part of the illustration of the dialog box for more information.](#)

The screenshot shows a dialog box titled "Get startup info" with the following controls:

- Pause Before Exiting
 - Show Button
- Erase Interaction
 - On Exit [dropdown]
- Erase Effect
 - None [dropdown]
- Text Entry Options >> [button]
- OK - Edit Display [button]
- OK [button] | Cancel [button]

Expanded options on the right side:

- Character Limit: [text box]
- Action Key(s): Enter [text box]
- Auto Entry
- Ignore Null Entries
- Entry Area Position & Size
 - Width: 150 [text box]
 - Height: 170 [text box]
 - Left: 150 [text box]
 - Bottom: 18 [text box]
- Show Entry Marker
- Font: 10 pt. System
- Erase Entry On Exit

If no text responses are attached to the interaction icon, these options are ignored.

Character Limit

Lets you specify the maximum number of characters the user may type in response to this interaction. If the user tries to type more characters than are allowed, the additional characters don't display and are ignored.

The size of the user entry area can also limit the amount of text the interaction will accept. If you leave the maximum characters setting blank, the user can type as many characters as will fit in the text entry area.

Auto Entry

Interacts with the Character Limit option and is effective only if you specify a maximum number of characters. If you've done so and have selected the Auto Entry checkbox, the system will behave as if the user pressed the action key immediately after typing the maximum number of characters.

Action Key(s)

Allows you to specify which key the user must press to complete the text entry and allow the response to be judged. You can use the "or" bar to specify more than one action key (for instance, Enter|Tab). Enter is the default action key.

Ignore Null Entries

Ignores the action key if the user presses it without typing anything.

Entry Area Position & Size

Allows you to precisely define the position and size of the text entry area by inserting screen coordinate (pixel) values or variables. You could, for instance, use the system variables `ClickX` and `ClickY` to create a text entry area in the form of a note pad that is displayed at the user's last click.

The `Position` values determine where the top left corner of the text entry area will be placed. The `Size` values determine the height and width of the text entry area. The values of any variables you use must be set prior to the interaction. Experiment using variables from the `General` category, such as `CursorX`, `CursorY`, `DisplayX`, `DisplayY`, `PositionX`, `PositionY`, `WindowHeight`, `WindowLeft`, `WindowTop`, and `WindowWidth`.

Show Entry Marker

Presents a small triangular marker to users to indicate where they should type. It automatically appears to the left of the text entry area. Whether or not you show the marker, the user will see a blinking cursor indicating where the typed input will be displayed.

Erase Entry On Exit

Erases the user's typed response when the interaction is exited. If you deselect this option, the user's response remains on the screen until you remove it with an erase icon.

Font

Displays the font, size, and style that will be used for the text the user types. Choose from the Font, Size, and Style submenus under the Text menu.

Interaction response options dialog boxes

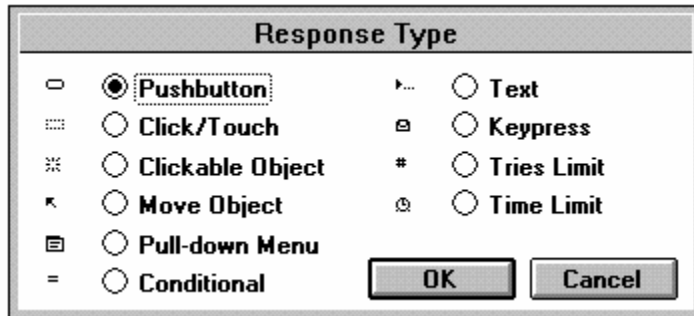
Each icon you attach to an interaction has its own set of options. To display each response options dialog box, double-click the icon's response symbol in the Design window.

- [Response Type dialog box](#)
- [Pushbutton responses](#)
- [Click/touch responses](#)
- [Clickable object responses](#)
- [Movable object responses](#)
- [Pull-down menu responses](#)
- [Conditional responses](#)
- [Text responses](#)
- [Keypress responses](#)
- [Tries limit responses](#)
- [Time limit responses](#)

Response Type dialog box

When you attach the first icon to an interaction icon, the Response Type dialog box appears. Here, you select the type of response the user must make in order to be presented with the icon you're attaching.

Click part of the illustration of the dialog box for more information.



After you choose the response type, a response type symbol appears above the icon in the Design window. Once you choose a response type for an attached icon and set any options for it, all other icons you attach to the right of that icon will automatically be assigned the same type and options as that icon. To change an icon's response type, double-click the response type symbol and click the Response Type button. (You can also press the Control key and double-click the response symbol.) The Response Type dialog box appears, and you can select a different option.

You can easily include multiple types of user responses in one interaction. An interaction can contain any combination of these response types:

- **Pushbutton**—Displays a button on the screen that the user can click. You can name, reposition, and resize this button as you like. The user matches the response by clicking the corresponding button.
- **Click/Touch**—Lets you create a "hotspot," an area on screen the user can click. You can create any number of hotspots and easily resize and reposition them. To match the response, the user must click the corresponding hotspot.
- **Clickable Object**—Turns an existing object in a display or movie icon into a hot area the user can click.
- **Movable Object**—Lets you set up an interaction in which the user must drag an object to a specified location on the screen. To match the response, the user must place the object within the corresponding target area you defined.
- **Pull-down Menu**—Displays a pull-down menu at the top of the screen that contains commands that you set up. The user matches the response by choosing the corresponding command from the menu.
- **Conditional**—Allows you to insert an attached icon that is only matched if a certain condition is true.
- **Text**—Displays an entry area in which the user can type a response. To match the response, the user must type the text as you specify.
- **Keypress**—Lets you set up an interaction in which the user responds by pressing a specified key on the keyboard. The response is matched when the user presses the corresponding key.
- **Tries Limit**—Presents the attached icon only after the user has responded to the interaction a specified number of times. The user matches the response by responding to the interaction the specified number

of times.

- Time Limit—Presents the attached icon only after a given amount of time has elapsed. As soon as the specified amount of time elapses, the response is matched.

- Unanticipated responses

Erase Feedback

The Erase Feedback option lets you erase items in the attached icon automatically so you won't need to insert a lot of erase icons. All you need to do is specify when you want the items erased.

- **Before Next Entry**—Erases items displayed by the attached icon just before the user is asked to enter another response. When you use this option, be sure to give the user time to see the display before it's erased; you may have to insert a pause using a wait icon.

If branching is set to continue, the response icon display remains on the screen until the display for any other matched response is shown. If no other response is matched, the response icon display is erased just before the user can enter another response.

If **Before Next Entry** is chosen for the first of these two attached icons, and the user's response matches both, the display in the first icon will be erased just before the display in the second icon is presented.

If branching is set to exit interaction, Star erases items in the attached icon when it exits the interaction.

- **After Next Entry**—Erases items displayed by the attached icon just after the user has entered another response. If branching is set to try again or continue, the previous display items remain on the screen until the user responds again. If and when the new response is matched, the display items are erased. If the user's new response does not match any anticipated response, the display items are not automatically erased.

If branching is set to exit interaction, Star erases the display items when it exits the interaction. However, if the return takes the user back to another interaction, the items won't be erased until the user enters a response.

- **Upon Exit**—Leaves display items from attached icons on the screen even if the user's other responses present attached icons that display other items. When Star exits the interaction and moves to the next icon on the main flowline, it erases the attached icon displays.
- **Don't Erase**—Leaves display items from attached icons on the screen until they are explicitly removed by an erase icon.

Response status

You can choose a response judging status for each attached icon from a drop-down list.

Selecting a response status is optional but can be useful. Several system variables in the Interaction category store information about a user's responses. For example, the `ResponseStatus` variable stores information on how the user responded. You could use this information later in your file, such as if you wanted to take a different path in a decision based on the user's answer to a question.

- **Not Judged**—Assign this status to responses which aren't right or wrong. For example, a pull-down menu response would probably have a Not Judged status—the user isn't doing either right or wrong by choosing the command. All responses are automatically set to Not Judged unless you change the status.
- **Correct Response**—Use this status for the icon you want presented when users do what you want them to. For example, if the user answers a question correctly, the attached icon might give some positive feedback.
- **Wrong Response**—Assign this status to all incorrect responses. For instance, if the user clicks the wrong object on the screen, you may want to show which object should have been clicked.

In the Design window, you can see the response status assigned to each attached icon. A plus sign (+) is placed next to correct responses and a minus sign (-) next to wrong responses; no symbol is used for responses that are not judged.

Tip: You can quickly change the response (judging) status in the Design window by holding down the Control key and clicking to the left of the title of the attached icon. Clicking repeatedly cycles through the available options.

Branching

The branching option lets you select what Star will do after it branches to an attached icon—in other words, after it finds a match for the user's response and presents the attached icon.

- Try Again—Loops back to the interaction icon and requires the user to enter another response.
- Continue—Checks to see if any attached icon to the right of this response also matches the user's response.
- Exit Interaction—Drops out of the interaction and moves to the next icon on the main flowline.
- Return—This choice becomes active only if you select the perpetual option available for click/touch, clickable object, movable object, pull-down menu, pushbutton, and conditional response types.

A perpetual response remains active after the user leaves the interaction to which it is attached. This allows you to have pull-down menus and pushbuttons active throughout the file or through certain sections of your file. When return branching is used, and users match a perpetual response, Star immediately presents the perpetual response icon. After presenting the perpetual response icon, Star returns to the icon following the one that was being presented when the user matched the perpetual response.

In the Design window, you can see the branching option selected for each attached icon.

***Tip:** You can quickly change the branching option in the Design window by Control-clicking the branching arrow. Clicking repeatedly cycles through the available options.*

Other options

- **Response Type**—Displays the Response Type dialog box, which allows you to select a different type of response.
- **Cancel**—Removes the options dialog box without changing any settings.
- **OK - Edit Display**—Records your choices and allows you to edit the icon's content. The name of this button varies depending on the type of attached icon. For example, it could be named OK - Edit Movie, OK - Edit Sound, or OK - Edit Map.

If the icon is a display icon, you can hold down the Shift key when you click OK - Edit Display. When you do this, all items that were displayed in the Presentation window when you last used it also appear. This is useful when you want to plan for the overlay of graphics objects contained in several icons.

- **OK**—Records your entries and removes the options dialog box. If you choose a different response type and click OK, the response options dialog box for the new response type appears. Any entries you made for the previous response type that apply to the new response type are retained.

Unanticipated responses

Although it's important to anticipate how users will respond so you can provide specific feedback, it is impossible to anticipate every possible response. When a user responds in a way you haven't anticipated, Star just waits until the user gives a response you have anticipated—unless you set up a way of handling unanticipated responses.

With some types of responses, there really isn't a way for the user to make an unanticipated response. Pull-down menus, for example, simply allow users to select from the listed commands. The user cannot select an unlisted command.

Limiting the amount of time the user has to respond or the number of attempts the user can make lets you coach users who are simply not responding effectively.

Unanticipated responses are described in each response option section.

Pushbutton responses

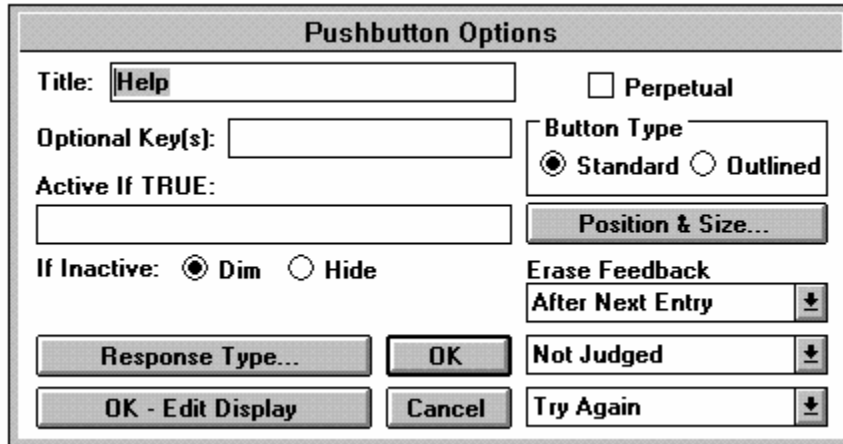
Pushbutton responses allow you to automatically create onscreen pushbuttons. They provide a convenient way of giving users access to special options within an interaction. When you set up a pushbutton response, a pushbutton appears in the interaction icon's display.

Users match the pushbutton response by placing the mouse pointer on it and clicking – when they click the button, Star branches to the icon attached to the pushbutton response symbol.

- Pushbutton Options dialog box

Pushbutton Options dialog box

Click part of the illustration of the dialog box for more information.



The image shows a dialog box titled "Pushbutton Options". It contains several fields and controls:

- Title:** A text field containing "Help".
- Optional Key(s):** An empty text field.
- Active If TRUE:** An empty text field.
- If Inactive:** Radio buttons for "Dim" (selected) and "Hide".
- Perpetual:** An unchecked checkbox.
- Button Type:** Radio buttons for "Standard" (selected) and "Outlined".
- Position & Size...:** A button.
- Erase Feedback:** A dropdown menu with "After Next Entry" selected.
- Not Judged:** A dropdown menu with "Not Judged" selected.
- Try Again:** A dropdown menu with "Try Again" selected.
- Response Type...:** A button.
- OK:** A button.
- Cancel:** A button.
- OK - Edit Display:** A button.

You can access the Pushbutton Response Options dialog box by double-clicking the pushbutton while its selection handles appear—if you're running the file, you need to pause first.

Title

Displays in the center of the pushbutton on the screen. The button is automatically resized to encompass the title you type. If you change the title here, it will also be changed on the icon attached to the pushbutton.

Optional Key(s)

Allows you to enter keys that will be equivalent to pressing the pushbutton; the user can either click the pushbutton or press one of the specified keys on the keyboard. Enter alphanumeric keys by typing them; separate multiple keys with an "or" bar (|). For example, if your pushbutton is titled "Help," you may want to let the user type "H" or "h" in addition to clicking the Help button. To enter these keys as optionals, type "H|h".

Use keys such as Tab, Enter, and Backspace by typing their names. For the Control key, type "Ctrl" followed by the key to be pressed with the Control key. You would enter Control-A, for instance, as "CtrlA". For more details and a complete list of supported key names, see "[Keypress responses](#)."

Active If TRUE

Specifies that the pushbutton is active only when the condition you enter here is true.

If Inactive

Lets you choose how an inactive pushbutton appears to the user. If you choose Dim, the pushbutton appears dimmed when it's inactive. If you choose Hide, the pushbutton is removed from the screen when it's inactive and reappears when the user can push it again.

Perpetual

Keeps the pushbutton response active after the user leaves the interaction in which it's contained. This feature provides a convenient way of making an option available to the user throughout an entire file or section of a file without having to duplicate the option in every interaction.

Whenever the user clicks the pushbutton, Star branches to the pushbutton's attached icon immediately. When the pushbutton is no longer needed, erase it with an erase icon—it will not be removed by the standard erase interaction options.

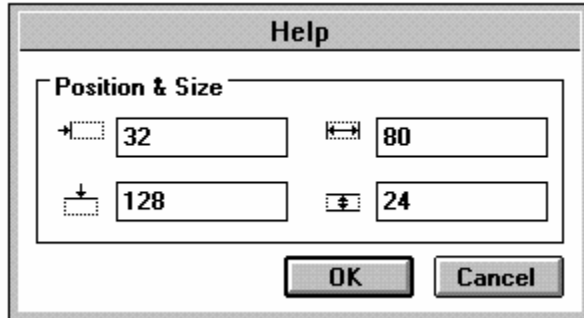
Button Type

Allows you to choose between a standard and outlined pushbutton.

If you select the outlined style, the user can activate it by pressing the Enter key as well as by clicking it with the mouse. Only one pushbutton in an interaction can be outlined. If you have multiple pushbutton responses in an interaction and make two or more outlined, only the first outlined pushbutton response (the one closest to the interaction icon) will be outlined on the screen and respond to the Enter key.

Position & Size

Brings up a window in which you can precisely define the position and size of the pushbutton by inserting screen coordinate (pixel) values or variables. The top left edge of the pushbutton is placed at the coordinates specified in the Position fields. The values in the Size fields determine how wide and how tall the button will be. Entering these values is useful for standardizing the placement and size of pushbuttons that appear in different places in your application.



Click/touch responses

Use click/touch responses when you want to make an area on screen "hot." To match the response, the user clicks the area (or double-clicks it or moves the cursor into the area, depending on how the response is configured).

- Click/Touch Options dialog box

Click/Touch Options dialog box

[Click part of the illustration of the dialog box for more information.](#)

Click/Touch Options

Title:

Optional Key(s):

Active If TRUE:

Perpetual
 Inverse Area
 Mark After Matched

Custom Cursor
Current: Use Custom

Match With

Erase Feedback

Title

Contains the click/touch response's icon title. While you're authoring, this title also labels the hotspot in the interaction display.

Optional Key(s)

Allows the user to press the specified key instead of clicking the hotspot. For example, if you have multiple click/touch responses you might want to label the areas on the interaction display with single-digit numbers and allow the user to type the appropriate number to respond to the interaction.

Enter alphanumeric keys by typing them; separate multiple keys with an "or" bar (|). For example, to let the user type either "A" or "a", type "A|a" in the text entry field.

Use keys such as Tab, Enter, and Backspace by typing their names. For the Control key, type "Ctrl" followed by the key to be pressed with the Control key. For example, enter Control-A as "CtrlA". For more details and a complete list of supported key names, see "[Keypress responses](#)."

Active If TRUE

Lets you make the click/touch response active only when the specified condition is true. When the condition is false, the response cannot be matched.

Custom Cursor

You can change the appearance of the cursor when it enters the click/touch hotspot. This is useful for showing users that the cursor is in a "hot" area. To select a custom cursor from a .CUR file, click the Load Cursor button. The Load Cursor dialog box appears.

Once you've loaded a custom cursor, it appears in the Current box of the Click/Touch Options dialog box. Select Use Custom to use the custom cursor in the "hot" area. The default cursor is the standard arrow pointer. A custom cursor is copied into the Star file—you don't need to retain the cursor file.

Perpetual

Leaves the click/touch hotspot active after Star exits the interaction. If the user clicks the hotspot (or presses an optional key), the response is matched immediately and Star branches to the attached icon.

Inverse Area

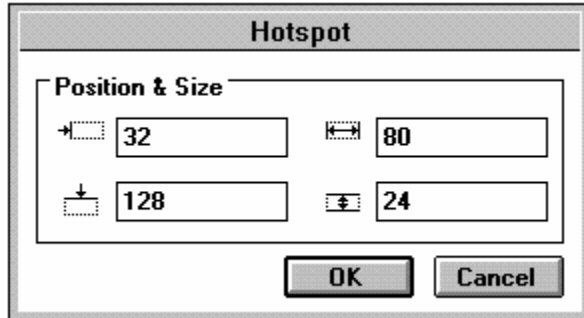
Displays the hotspot inversely when the user clicks it or presses an optional key. This option is useful for showing the user which click/touch areas have been selected. If the hotspot area is white, it changes to black; if the area is color, it changes to its inverse color. If the user matches the response by clicking, the hotspot remains inverted until the user releases the mouse button, at which point the response is matched if the cursor is still over the hotspot.

Mark After Matched

Places a small square symbol in the left inside edge of the hotspot. The square is empty when the interaction containing the click/touch response is first encountered. If the response is matched, the square is filled in. The squares are erased along with the interaction display. If you resize a hotspot set to Mark After Match, the square adjusts accordingly.

Position & Size

Brings up a dialog box that lets you precisely define the position and size of the hotspot by inserting screen coordinate (pixel) values or variables. The top left edge of the hotspot is placed at the coordinates specified in the Position fields. The Size values determine the height and width of the hotspot. Entering these values is useful for standardizing the placement and size of hotspots that appear in different places in your application.



The image shows a dialog box titled "Hotspot". Inside the dialog, there is a section labeled "Position & Size" which contains four input fields. The first row has a horizontal arrow icon to the left of a text box containing "32", and a double-headed horizontal arrow icon to the left of a text box containing "80". The second row has a vertical arrow icon to the left of a text box containing "128", and a double-headed vertical arrow icon to the left of a text box containing "24". At the bottom of the dialog, there are two buttons: "OK" and "Cancel".

Match With

Provides three ways a user can match the response:

- With Single-click (the default option) selected, the user must click once in the hotspot. Generally buttons are clicked only once.
- With Double-click selected, the user must click twice quickly within the hotspot.
- With Cursor in Area selected, the user just needs to place the cursor in the hotspot without clicking. The response will not be matched again until the cursor is moved out of the area and then back in. The Inverse Area option is not available when Cursor in Area is selected. If the Erase Feedback option is set to Before Next Entry, the feedback is not erased until the cursor leaves the area.

Clickable object responses

A clickable object response is used to specify a "hot" object in the interaction display. A hot object is an object the user can activate by clicking, double-clicking, or moving the cursor over the object. Options you select determine how the response can be matched so that Star will branch to the attached icon.

Clickable object responses are similar to click/touch responses. Clickable object responses, however, allow you to make an object a hotspot rather than an area of the screen. You can also make moved or moving objects hot.

- Clickable Object Options dialog box

Clickable Object Options dialog box

[Click part of the illustration of the dialog box for more information.](#)

Clickable Object Options

Target object: None (click an object)

Title: Perpetual

Optional Key(s): Inverse Object

Active If TRUE:

Match With
Single-click ▾

Erase Feedback
After Next Entry ▾

Not Judged ▾

Try Again ▾

Use Custom

Current

The options for clickable object responses are similar to those for click/touch responses.

Title

Contains the title of the clickable object response icon.

Optional Key(s)

Allows the user to press the specified keys instead of clicking the object. For more information, see "[Click/touch responses](#)".

Active If TRUE

Lets you make the clickable object response active only when the specified condition is true. When the condition is false, the response cannot be matched.

Custom Cursor

Allows you to change the appearance of the cursor when it is positioned on the clickable object. This is useful for showing users that the cursor is positioned on a "hot" object. To select a custom cursor, click the Load Cursor button. The Load Cursor dialog box appears.

Once you've loaded a custom cursor, it appears in the Current box of the Click/Touch Options dialog box. Select Use Custom to use the custom cursor in the "hot" area. The default cursor is the standard pointer arrow. When you package the file, any custom cursors you used are copied into the packaged file.

Perpetual

Leaves the hot object active after Star exits the interaction. If the user clicks the object (or presses an optional key), the response is immediately matched and Star branches to the attached icon.

Inverse Object

Displays the hot object inversely when the user clicks it or presses an optional key. This option is useful for showing the user which objects have been selected. If the object is white, it becomes black; if the object is colored, it becomes its inverse color. If the user matches the response by clicking, the object remains inverted until the user releases the mouse button, at which point the response is matched if the cursor is still over the object.

Match With

Provides three ways a user can match the response:

- With Single-click (the default option) selected, the user must click the object once.
- With Double-click selected, the user must click the object twice quickly.
- With Cursor on Object selected, the user just needs to place the cursor on the object without clicking.

Movable object responses

A movable object response requires the user to move an object into a specified area in the interaction display. If the user drags the specified object into the target area, the response is matched and Star branches to the attached icon.

Each movable object response you attach to an interaction inserts a target area—an outline rectangle with an X through it—into the interaction icon's display. The target area is labeled with the response icon's title. Since target areas don't appear during file presentation, you must be editing with the toolbox or paused at the interaction display in order to see them.

- Movable Object Options dialog box
- Unanticipated responses

Movable Object Options dialog box

Click part of the illustration of the dialog box for more information.

The image shows a screenshot of a dialog box titled "Move Object Options". The dialog box has a title bar with the text "Move Object Options". Below the title bar, there is a header area with the text "Drag object to the target position: None (click an object)". The main area of the dialog box contains several controls: a "Title:" label followed by a text box containing "move coffee bean"; a "Leave at Destination" label followed by a dropdown menu with a downward arrow; a "Perpetual" checkbox; a "Match Any Object" checkbox; an "Active If TRUE:" label followed by a text box; an "Erase Feedback" label followed by a dropdown menu with "After Next Entry" selected and a downward arrow; a "Response Type..." button; an "OK" button; a "Not Judged" label followed by a dropdown menu with a downward arrow; an "OK - Edit Display" button; a "Cancel" button; and a "Try Again" label followed by a dropdown menu with a downward arrow.

Move Object Options	
Drag object to the target position: None (click an object)	
Title: <input type="text" value="move coffee bean"/>	<input type="checkbox"/> Perpetual
<input type="text" value="Leave at Destination"/> ▾	<input type="button" value="Position & Size..."/>
<input type="checkbox"/> Match Any Object	
Active If TRUE: <input type="text"/>	Erase Feedback
	<input type="text" value="After Next Entry"/> ▾
<input type="button" value="Response Type..."/>	<input type="button" value="OK"/>
	<input type="text" value="Not Judged"/> ▾
<input type="button" value="OK - Edit Display"/>	<input type="button" value="Cancel"/>
	<input type="text" value="Try Again"/> ▾

Title

Contains the movable object response icon's title. While you're authoring, this title also labels the target area in the interaction display.

Object destination drop-down list

Controls what happens to the object once the user stops dragging it. These options apply only when the user moves the object into the target area and matches the movable object response.

- Leave at Destination leaves the object exactly where the user let go of it.
- Put Back returns the object to its previous screen location. This option is useful for incorrect responses set to try again branching, since it allows the user to move the object again from its original position.
- Snap to Center centers the object in the target area. This option is useful for showing the user that the object has been moved correctly.

Match Any Object

Matches the response when the user drags any movable object into the target area. When you select this option, the instructions displayed in the black banner change, directing you to size and place the movable object area without dragging an object into it.

If you select this option, you'll need to make each object you want the user to be able to drag movable through the display's Effects dialog box.

***Tip:** After the user drags an object into the target area, the `ObjectMatched` system variable contains the title of the object that was dragged. In addition, the `ObjectMoved` variable contains the name of the last display clicked and dragged.*

Active If TRUE

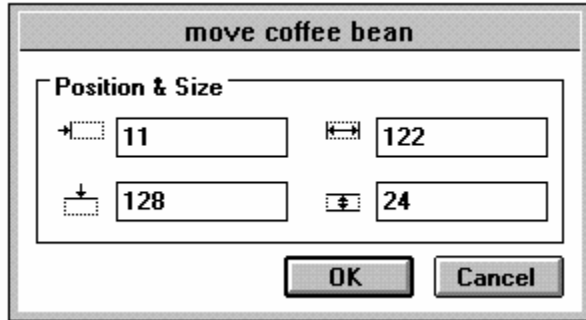
Lets you make the movable object response active only when the specified condition is true. When the condition is false, the response cannot be matched.

Perpetual

Leaves the movable object response active after Star exits the interaction. If the user drags the object to the target area, the response is immediately matched and Star branches to the attached icon. A movable object response set to perpetual remains active until you erase its movable object using an erase icon or you deactivate it by making the condition in its Active if TRUE field false.

Position & Size

Brings up a dialog box that lets you precisely define the position and size of the target area by inserting screen coordinate (pixel) values or variables. The top left edge of the target area will be placed at the coordinates specified in the Position fields. The size values determine the height and width of the target area. This option is helpful for standardizing the placement and size of target areas in different places in your application.



Unanticipated responses

It's often useful to include a movable object response whose target area covers the entire screen to respond to all incorrect movement of objects. Be sure to place the "catch-all" response icon to the right of any smaller response areas it might overlay, or these smaller response areas will never be matched.

Pull-down menu responses

Pull-down menus allow the user to choose options by selecting a command from a menu.

When an interaction icon has attached pull-down menu responses, a pull-down menu with the interaction icon's title appears in the menu bar. You must include a separate interaction icon for each pull-down menu.

- Pull-down Menu Options dialog box
- Unanticipated responses

Pull-down Menu Options dialog box

[Click part of the illustration of the dialog box for more information.](#)

The image shows a dialog box titled "Pull-down Menu Options". It contains several input fields and controls:

- Title:** A text box containing the word "Help".
- Optional Key:** An empty text box.
- Active If TRUE:** An empty text box.
- Perpetual:** A checkbox that is currently unchecked.
- Erase Feedback:** A dropdown menu currently showing "After Next Entry".
- Response Type...:** A button.
- OK:** A button.
- Not Judged:** A dropdown menu currently showing "Not Judged".
- OK - Edit Display:** A button.
- Cancel:** A button.
- Try Again:** A dropdown menu currently showing "Try Again".

Title

Represents a command that will be placed in the pull-down menu. You can use some special codes when you type the title to control the title's appearance in the menu. Type these codes in the text entry field with the title.

Use the left parenthesis, "(", to disable items in the menu. If you type only the left parenthesis, a blank line appears in the menu. Type the left parenthesis followed by a dash "-" to insert a separator line in the menu. If you type the parenthesis followed by text, the text will be dimmed in the menu and the user won't be able to select it.

Type "&" before a letter to underline it in the menu and make it an accelerator key. Type "&&" to place an "&" in the menu.

You can also put an "&" in the title of the interaction icon. During authoring, the "&" is displayed; when the file is packaged, the underline character is correctly interpreted.

Optional Key

Allows you to specify an optional Control or Alt key that is equivalent to selecting the command from the menu. The Control or Alt key equivalent you choose will be displayed in the menu. To specify a Control key, simply enter the key in the Optional Key field. For example if you type "O" in this field, the menu command is matched with Control-O. To specify an Alt key, type "Alt_" in the Optional Key field. For example, if you type "AltC" in this field, the user can select the command by pressing the Alt key and typing C.

Active If TRUE

Specifies that the menu command is active only if the condition you type here is true. When the condition is false, the command is dimmed in the menu; the user cannot select it.

Perpetual

Displays the pull-down menu and this menu command until you erase the menu with an erase icon. This gives you an easy way of keeping the menu and command active throughout the whole file or a part of the file.

If you want a menu to be active throughout the file, place the interaction at the top of the flowline and set all of the menu response icons to Perpetual. If an interaction has only perpetual responses, Star does not stop at the interaction and wait for the user to respond, but falls through to the next icon on the main flowline, since perpetual responses can be given at any time.

It's convenient to set up all the user menus at the beginning of the file. Don't forget that you'll need one interaction icon for every menu you want displayed in the menu bar.

Unanticipated responses

There are no unanticipated pull-down menu responses. You could add a time limit response icon to the interaction as a way of prompting users who don't select a command in a given amount of time.

Conditional responses

Conditional responses allow you to provide feedback to the user if a certain condition is true. For example, you may want to see if the user has matched more than one previous response before exiting the interaction.

- Conditional Options dialog box

Conditional Options dialog box

Click part of the illustration of the dialog box for more information.

The image shows a dialog box titled "Conditional Options". It contains the following elements:

- A label "Match If TRUE:" followed by a checkbox labeled "Perpetual".
- An empty text input field below the "Match If TRUE:" label.
- Two columns of dropdown menus:
 - The first column is labeled "Auto-match" and has a dropdown menu currently showing "Off".
 - The second column is labeled "Erase Feedback" and has a dropdown menu currently showing "After Next Entry".
- A row of three buttons: "Response Type...", "OK", and "Not Judged".
- A second row of three buttons: "OK - Edit Display", "Cancel", and "Try Again".

Match If TRUE

This field contains the conditional expression and also appears as the response icon's title. This field is similar to other condition fields, such as the Active If TRUE field in many other response options dialog boxes.

Type any variable or expression in the text entry field—it needn't be a logical variable or a conditional expression. Whatever variable or expression you specify, Star evaluates it and comes up with a result of true or false.

In evaluating the variable or expression:

- A value of 0 equals false, while any numeric value other than 0 equals true.
- The character strings "TRUE," "T," "YES," and "ON" equal true. All other characters equal false.

Following are some example conditional expressions you might use:

- `score > 20`—The condition is true if `score`—a custom variable—contains a value greater than 20.
- `ResponseStatus = 2`—A status of 2="wrong." The associated path will be taken if the user responded incorrectly.
- `WordCount>5 | CharCount>25`—Expression is true if there are more than 5 words or more than 25 characters in the response.

Auto-match

Matches a conditional response without an explicit action by the user. Generally, a conditional response's condition is evaluated each time the response is encountered. The auto-match options, however, enable you to match a conditional response at any point in the interaction. Star then branches directly to the conditional response.

- Off is the default. The conditional response can only be matched when the user responds to the interaction and the specified condition is true.
- When True matches the conditional response repeatedly as long as the condition evaluates to true. This option is useful if you have a response that you want matched automatically, depending on the value of a certain condition. Since a conditional response matches repeatedly when true, you'll need to set the value to false after it's matched in order to match other responses or exit the interaction.
- On False To True causes the conditional response to be matched only when the condition changes from false to true while file flow is within the interaction. No user response is needed for a match.

Perpetual

With Perpetual selected, a conditional response is active throughout the application. It will match whenever the Match if TRUE condition is met, and the user has responded to an interaction or the auto-match is set.

Text responses

Text responses are used when you want the user to type a word or phrase. Each interaction can have only one text entry area; each text response icon you attach provides a possible response.

- Text Response Options dialog box
- Unanticipated responses

Text Response Options dialog box

[Click part of the illustration of the dialog box for more information.](#)

Text Response Options

Ignore Capitalization Extra Punctuation
 All Spaces Extra Words Word Order

doc happy sleepy bashful sneezy dopey larry

Match at Least Words

Incremental Matching

Erase Feedback
After Next Entry

Response Type... OK Not Judged

OK - Edit Display Cancel Exit Interaction

Ignore Capitalization

Ignores capitalization when checking if the user's response matches this response. If the user's response and the icon title are the same except for capitalization (depending on the other options you have selected), the system will declare a match if Ignore Capitalization is checked.

Ignore All Spaces

Ignores all spaces the user types. Star usually compares user responses to anticipated responses word by word. One or more spaces indicates the start of a new word, and multiple spaces are automatically ignored.

If you select Ignore All Spaces, every space in the user's response is ignored, and the response is viewed as a single word or an unbroken string of characters.

For example, the anticipated response "red, yellow, and blue" cannot be matched if spaces are ignored, because the user's response would be seen as "red,yellow,andblue" (or "redyellowandblue" if punctuation was also ignored).

Ignore Extra Punctuation

Ignores extra punctuation the user types that you have not included in the response title. For example, if an anticipated response was "Clarion, Iowa" and the user typed "Clarion Iowa!", there would be no match regardless of the Ignore Extra Punctuation setting. This is because the anticipated response requires the comma.

If the user typed "Clarion, Iowa!" or "Clarion, Iowa", there would be a match if Ignore Extra Punctuation was selected.

Ignore Extra Words

Allows extra words to appear anywhere within the user's response. "I think it's red" would match anticipated response "red" if extra words and punctuation were ignored.

Ignore Word Order

Declares a match between the user and anticipated responses if the same words are present but aren't typed in the same order.

Matching text field

This field contains the words the user must match. The user need not match all of the words, depending on the Match at Least _ Words setting.

The text in this field becomes the title of the attached icon.

Some special characters can be used in this field:

- Use the vertical "or" bar (|) to separate equivalent responses. (The vertical bar is created by pressing Shift-backslash (\)). You may have many alternative responses separated from each other with the "|" character. For example, if the matching text field contains "red|yellow|blue", the response is matched if the user types in "red", "yellow", or "blue".

The text in the matching text field may be up to 400 characters long, so you can include many alternate responses separated from each other with the "|" character.

- Text responses can normally be matched any time the specified text response is entered in the interaction. You can also make specific text responses active *only* when the system variable `Tries` is at specified values.

To make a text response active on a specific try, type "#" and a number as the first characters in the text response's title field. For example, if the matching text field is "#3dog", the response "dog" will match only on the user's third try.

You can specify that a response be matchable for more than one condition by separating the conditions with a vertical bar (|). For example, if the matching text field is "a|b|#1c|#2d|#3d", responses of "a" or "b" always matches, a response of "c" matches when `Tries = 1`, and a response of "d" only matches when `Tries = 2` or when `Tries = 3`.

- Add comments to the end of the text field by inserting two hyphens. For example if "hello--user password" is in the matching text field, the "--user password" portion is ignored.
- Wildcard characters let you take into account misspellings or alternative prefixes or word endings.

Type an asterisk (*) to substitute for an entire word or any missing part of a word. Type a question mark (?) to substitute for any single character *which may not be missing*.

A backslash (\) before "*" or "?" means that the following character *is not* to be considered a wildcard character, but rather a normal asterisk or question mark.

Examples of wildcard characters are shown in the following table.

Wildcard character examples

Anticipated responses	Matching responses	Non-matching responses (Ignore functions not in use)
*	one, red, fantastic (any single word or character)	one red ball, (>1 word unless ignoring extra words)
**	red ball, a b, (any two words)	all, one red ball, (<2 words or >2 words)
re*d	red, read, reed, rested, required	reds, re d, redone, reedit
red*	red, redeploy	cornered, read
*red	red, cornered	redeploy, redone

red	red, redeploy, cornered, redeem, redundant	read, der, re:
?	a, b, 1, 0, -, +, (any single character)	red, 10, (null entry, 0 or >1 characters)
??	ab, 10, -2, if, (any two characters)	red, a, 0, +, (<2 or >2 characters)
? ?	1 2, R L, (any two characters separated by a space)	12, ab, +-
*?	1, daffodil, terrific (any single character or word)	red herring (null entry or more than one word unless ignoring extra words)
?*	same as above	same as above
re?d	read, reed	red, received
*	*	anything else
\?	?	anything else
red\?	red?	red\?, anything else
2*3	2*3	2*3, anything else
?*?	a*b, 1*2, x*7	a*b, a\b
??*	a*b, 10*lbs, four*three	a * b, a+b, *b, a*

Match At Least _ Words

The user must match at least this number of words from the matching text field.

When words in the matching text field are separated by the "or" (|) bar, they are considered as separate groups. For example, if you were to include "red white blue|rojo blanco azul" and specify that the user needs to match at least three words, a response would match if it contained either all three words in English or all three words in Spanish.

Incremental Matching

Select this option when there is more than one word in the matching text and you want to keep track of the words a user enters over successive tries. For example, if the matching text field were "Django Reinhardt," the user could type in "Django" on one try and match on a later entry of "Reinhardt."

Unanticipated responses

The most likely unanticipated responses are text responses, because there is an infinite number of things a user can type. Carefully using wildcard characters and ignoring word order, punctuation, capitalization, and extra words increases the variety of user responses that will match your anticipated responses. But some users will probably make unanticipated entries.

Use a single asterisk as your last anticipated response to capture any response you haven't already provided for. (Ignore extra words and punctuation, just to be safe.) If the asterisk response follows all the anticipated responses, then it will match only unanticipated responses.

In the attached icon display, you can say something like "Please type yes or no" to direct the user. Be sure to put the asterisk response after all anticipated responses. If you put it among anticipated responses, those that follow will never be matched.

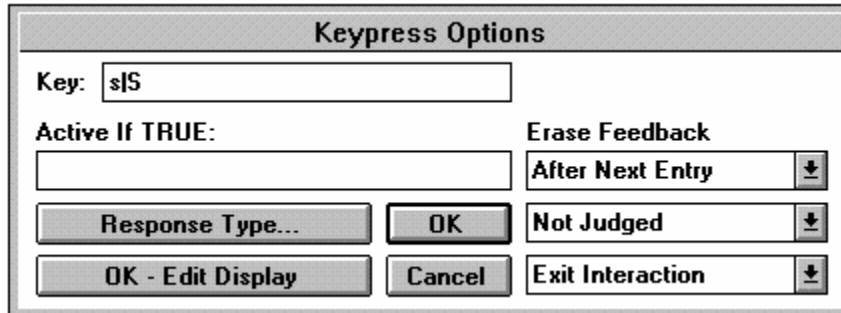
Keypress responses

Use keypress responses when you want a user to match a response by pressing a key on the keyboard. This is ideal for multiple choice tests or for identifying objects on screen by a letter.

- Keypress Options dialog box

Keypress Options dialog box

[Click part of the illustration of the dialog box for more information.](#)



The image shows a dialog box titled "Keypress Options". It contains several fields and buttons:

- Key:** A text input field containing "sIS".
- Active If TRUE:** An empty text input field.
- Erase Feedback:** A dropdown menu with "After Next Entry" selected.
- Response Type...:** A button.
- OK:** A button.
- Not Judged:** A dropdown menu with "Not Judged" selected.
- OK - Edit Display:** A button.
- Cancel:** A button.
- Exit Interaction:** A dropdown menu with "Exit Interaction" selected.

Key

Allows you to enter one or more keys the user can press to match the response. You can use any alphanumeric key and many special function keys. The keys you enter are displayed as the title of the attached icon.

Enter alphanumeric keys by typing them and using an "or" bar (|) to separate them: "a|e|i|o|u|1|2|3".

Keypress responses are case-sensitive—the user must press keys in the same case you specify. For example, if you want the user to access a help function by pressing either "h" or "H," type "h|H" in the field.

For Control keys, type "Ctrl" followed by the key you want the user to press with the Control key. For example, to use Control-A, type "CtrlA" in the field.

To use keys such as Tab, Enter, or Delete, type their names in the field. The keys you can type are listed below. Some of these keys may not be available on your keyboard. Because Star applications can be ported to different platforms, it's often useful to include keys which would be used on other systems. By typing the key name rather than pressing the key, you can activate keys not even available on your keyboard; then when the application is run on a system where these keys are available, they will be active.

Valid key names

Enter*	Delete	Backspace
Tab	Return*	Clear
LeftArrow	RightArrow	UpArrow
DownArrow	PageDown	PageUp
Home	End	Insert
Pause	Print	SysReq
Del	F1, F2,...F15	Help
Break	Esc	Shift_
Cmd_**	Ctrl_	Alt_

* "Enter" and "Return" both refer to the Enter key. Authorware Star for Windows does not differentiate between multiple Enter keys on a keyboard.

** "Cmd_" is used in Authorware Professional for Macintosh to refer to Macintosh Command key combinations. In Authorware Star for Windows, "Cmd_" and "Ctrl_" both refer to Control key combinations.

Multiple key matching: To allow the user to press either the Enter key or the Tab key, type "Enter|Tab". To allow the user to press Control-H, F1, or Help, type "CtrlH|F1|Help".

Question mark as wildcard: You can create keypress responses matching any key using the question mark character (?) as the title of a keypress response. This is useful for responding to users when they press a key you haven't specified. Place the "?" icon after other responses so that correct keypresses are matched first.

The backslash character: If you want to allow the user to type a question mark as a response, put a backslash (\) before it. The backslash indicates that the character following it should be taken literally. You must also type a backslash to specify the "or" bar ("|") as an anticipated response. The backslash itself can be specified as an anticipated response by typing two backslashes.

Active If TRUE

Specifies that the keys are active only when the condition you enter is true.

To match a range of keys, use the `Key` variable in the Active If TRUE field. For example: `Key >= "a" & <= "z"` causes only the keys "a" through "z" to match the response.

Tries limit responses

Use a tries limit response when you want branching to go on after a certain number of tries, whether or not the user has correctly matched another response.

- Tries Limit Options dialog box

Tries Limit Options dialog box

[Click part of the illustration of the dialog box for more information.](#)

Tries Limit Options	
Maximum Tries:	Erase Feedback
<input type="text" value="6"/>	<input type="text" value="After Next Entry"/> ▾
<input type="button" value="Response Type..."/>	<input type="button" value="OK"/> <input type="text" value="Not Judged"/> ▾
<input type="button" value="OK - Edit Display"/>	<input type="button" value="Cancel"/> <input type="text" value="Exit Enteraction"/> ▾

Maximum Tries

Contains the number of tries or a variable representing the number of tries. This number is the number of tries the user can make before being branched to the icon connected to this tries limit response.

For example, with Maximum Tries set to 3, the user can respond once or twice without branching to the tries limit icon. If the user's third response matches an anticipated response with exit interaction branching, the tries limit will be ignored. Otherwise, the tries limit response is matched.

Tries limit responses are active for only one response, e.g., the third try in the example above. If you allow the user to make another entry, after matching the tries limit once, the tries limit will not be matched again.

To give the same message for every response entered after the first two, use a conditional response. For example, type "Tries >2" as the condition.

Time limit responses

Time limit responses are matched if a user has not matched another response by the time specified.

- Time Limit Options dialog box

Time Limit Options dialog box

[Click part of the illustration of the dialog box for more information.](#)

The image shows a dialog box titled "Time Limit Options". It contains several controls for configuring time limits and feedback options. The "Time Limit" is set to 60 seconds. There are checkboxes for "Show Time Remaining" and "Restart For Each Try", both of which are currently unchecked. The "Active If TRUE:" field is empty. Under "If Interrupted By Perpetual Interaction", the "Continue Timing" dropdown menu is selected. The "Erase Feedback" dropdown menu is set to "After Next Entry". At the bottom, there are buttons for "Response Type...", "OK", "OK - Edit Display", "Cancel", "Not judged", and "Exit Interaction".

Time Limit Options	
Time Limit: <input type="text" value="60"/> Seconds	<input type="checkbox"/> Show Time Remaining
Active If TRUE: <input type="text"/>	<input type="checkbox"/> Restart For Each Try
If Interrupted By Perpetual Interaction	Erase Feedback
<input type="text" value="Continue Timing"/> ▾	<input type="text" value="After Next Entry"/> ▾
<input type="button" value="Response Type..."/>	<input type="button" value="OK"/> <input type="text" value="Not judged"/> ▾
<input type="button" value="OK - Edit Display"/>	<input type="button" value="Cancel"/> <input type="text" value="Exit Interaction"/> ▾

Time Limit

Enter a time limit in seconds.

Show Time Remaining

Inserts an animated countdown clock in the interaction display, which graphically counts down for the user until the time is up. A separate clock appears for each attached time limit response and is set to show the time remaining. You can reposition the clock when editing the interaction display by dragging it. (You can also display the Time Limit Options dialog box by double-clicking the clock.)

Restart for Each Try

Restarts counting down from the specified time limit each time the user matches a response.

If Interrupted by Perpetual Interaction

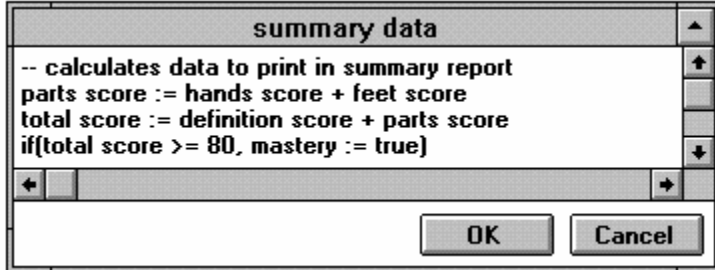
Allows you to turn off timed interactions when the user goes to another activity during the interaction. If the user leaps to a perpetual interaction (by choosing a command from a perpetual pull-down menu, for instance) during a timed interaction, you have the following timing options:

- Continue Timing—Timing continues during the leap to the perpetual interaction. This is the default option.
- Pause, Resume on Return—Stops timing during the leap to the perpetual interaction. Upon returning to the timed interaction, Star resumes counting down from the previously elapsed time.
- Pause, Restart on Return—Stops timing during the leap to the perpetual interaction. Upon returning to the timed interaction, Star restarts counting down from the specified time limit. Timing is restarted even if the time limit had already expired before the leap to the perpetual interaction.
- Pause, Restart If Running—Functions the same as Pause, Restart on Return except that, upon return from the perpetual interaction, timing is restarted only if the time limit was still counting down (had not expired) before the leap to the perpetual interaction.

If you have multiple time limit responses, be sure to set the feedback branching for all but the last time limit response to Try Again. The user will be able to continue responding to the interaction after receiving feedback from each time limit response. If part of a text response had been entered when a try again time limit was reached, the user can continue typing in a response by clicking the end of the text entry area.

Calculation icon

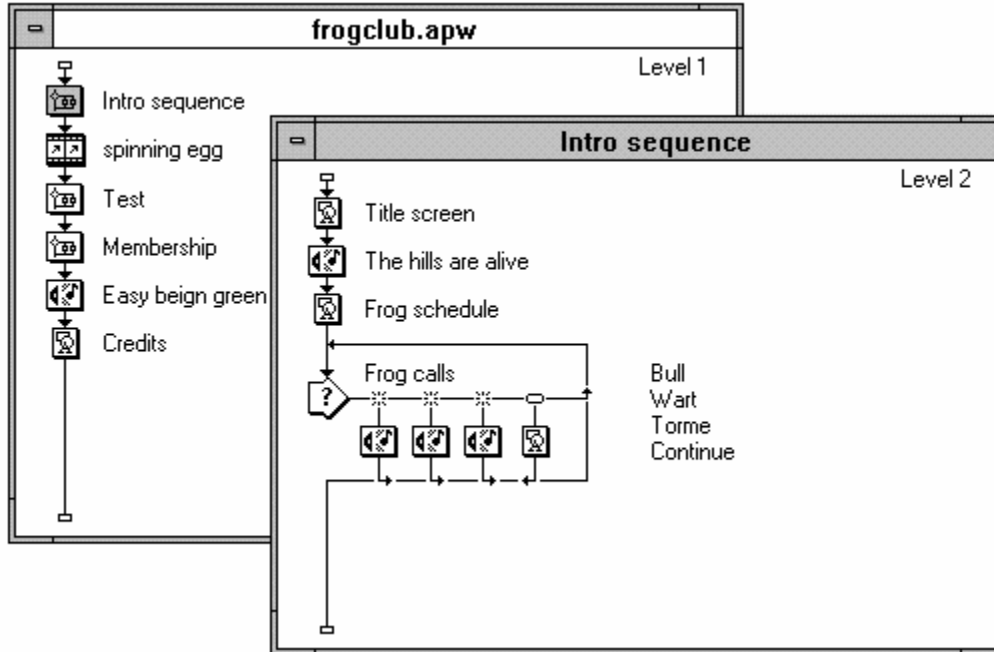
The calculation icon allows you to insert a calculation at any point on the flowline. Double-clicking a calculation icon opens a Calculation window. You can enter expressions and comments in this window.



Enter comments in this window by preceding them with two hyphens (--).

Map icon

A map icon represents a group of other icons. Double-clicking a map opens a window with its own flowline.



Double-click a map icon to see icons that are grouped within it. This example shows the flowline in the Intro sequence map.

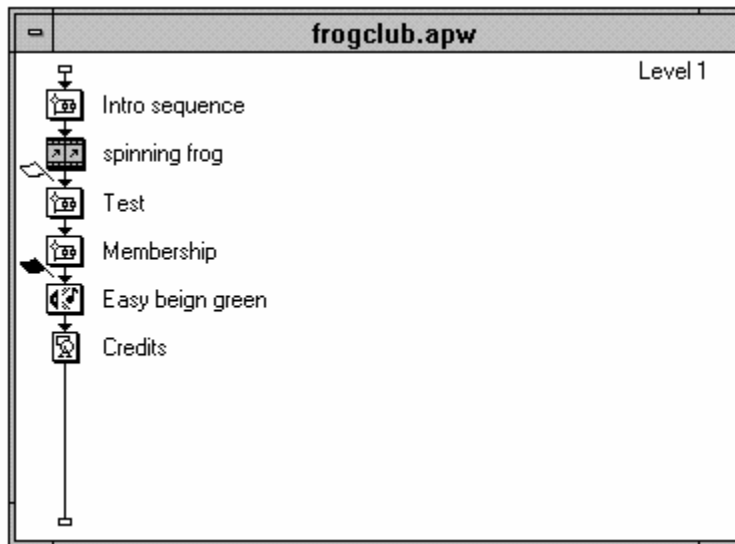
You can put continuous icons on the flowline into a map by selecting them and using the Group command from the Edit menu. Ungroup icons in a map by choosing Ungroup from the Edit menu.

Start and stop flags

Near the bottom of the icon palette are a white start flag and a black stop flag that you can place anywhere in your file design. These flags allow you to run selected parts of a file. They are provided for convenience only and are ignored when you package the file.

As your file gets larger, it's often helpful to place the start flag at the beginning of a sequence you're working on and the stop flag at the end of it. You can then use the Run from Flag command to present only the icons between the flags.

- When the start flag is positioned in your design, the Run from Flag command (Control-F) in the Try It menu becomes active. Choosing this command starts running your file from the position of the start flag. Star sets all variables to their initial values and clears the Presentation window just as if you had started running your file from the beginning. The first icon presented, however, is the one following the start flag.
- When the stop flag is positioned in your design, Star stops running the file when it encounters the flag. To continue running the file, choose Proceed from the Try it menu.



When you select Run from Flag, Star only presents the icons between flags, in this case Test and Membership maps.

Position the flags on the flowline just as you would any other icon, by dragging the flag from the icon palette onto the flowline. The flag snaps into place between icons. You can also place a flag between icons attached to an interaction or decision icon.

There is only one start and one stop flag. Once you place either of the flags on the flowline, it remains there until you move it or click its place in the palette (which returns it to the palette). To move a flag, drag it to a new position. If you forget where you placed a flag, click its position in the palette; the flag is removed from its current location and returned to the palette.

Movie icon

The movie icon allows you to import movies created with another application into your Star file.

You can display movies in one location or use an animation icon to move them. You can easily control a movie's options, such as the number of times it's played and for some formats the speed at which it's played.

A movie is either loaded internally or referenced externally, depending on the type of movie:

- Internally loaded movies are loaded into the Star file, increasing the size of the file.
- Externally referenced movies are not copied into the Star file. You must keep the externally referenced movie where Star has access to it when it encounters the movie's icon in the flowline. You must ship externally stored movies along with your packaged Star application. Star will look for external movies in directories specified in the content search path field of the File Setup dialog box or in the `SearchPath` variable in addition to looking in the same directory as the Star file.

You can use the following movie file types in Authorware Star for Windows:

- **Director Player for Windows** (.MMM) files, created with Macromedia Director. These movies are stored externally.

You must use the Gaffer to convert a Macintosh Director movie to an .MMM file before Authorware Star for Windows will recognize it. The Gaffer is a Macintosh application that ships with both Director Player for Windows and Authorware Professional for Windows.

To use Director Player for Windows movies, make sure that the Star APMMM.VDR driver file is installed in the same directory as ASW2.EXE. Make sure the correct version of MMPLAYER.DLL is installed in the Windows directory on your machine and on end users' machines.

Note: Star currently does not support interactivity created in Director files.

- **Microsoft Video for Windows** (.AVI) files. These movies are stored externally. Authorware Star for Windows supports using these files with DVI.

To use Microsoft Video for Windows movies, make sure that the Star APDGV.VDR driver file is installed in the same directory as ASW2.EXE. Also, make sure that the Microsoft Video for Windows software is properly installed on your machine and on end user's machines.

- **QuickTime for Windows** (.MOV) files. These movies are stored externally.

Macintosh QuickTime for Windows movies must be version 1.5 or later. To use QuickTime for Windows movies, make sure that the Star APQT.VDR driver file is installed in the same directory as ASW2.EXE. Also, make sure that the QuickTime for Windows player software is properly installed on your machine and on end user's machines.

- **Autodesk Animator** and **Autodesk Animator Pro** (.FLC, .FLI, and .CEL) files. These movies are loaded into the Star file.
- **Macintosh Movie Editor** (.MVE) files, created with the movie editor that shipped with earlier versions of Authorware Professional for Macintosh. These movies are loaded into the Star file.

Make sure that all Macintosh Movie Editor files use the .MVE file extension. Earlier versions of Star

gave these movies the .MOV file extension, which is now used by QuickTime for Windows movies.

- **PICS** movies loaded into Authorware Professional for Macintosh files are stored internally when the file is converted to Authorware Star for Windows. PICS movies cannot be loaded in the Authorware Star for Windows Load Movie dialog box.

- [Using movies in Star files](#)
- [Tips for using movies](#)
- [Movie Options dialog box](#)

Using movies in Star files

There are two main ways of using movies in Star:

- Overlay the movie on the screen. With this method, the movie plays over the entire screen or a section of the screen, and no other items are shown at the same time. Movies overlaid on the screen are generally rectangular and opaque.
- Integrate the movies into the screen display along with other display elements. With this method, the movie plays in a section of the screen while other items are displayed concurrently. Integrated movies are generally small and controlled by custom variables. If you are integrating movies into the display, keep them small for optimal performance.

Tips for using movies

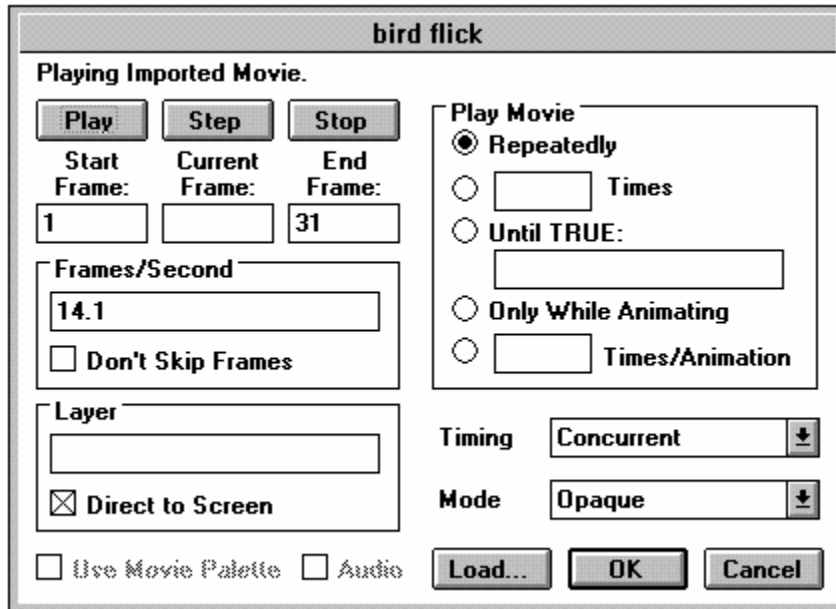
Click a movie icon with the right mouse button to preview the movie. Then click again to make the preview go away.

You can also use multimedia extensions functions to play external movie files.

Movie Options dialog box

Double-click a movie icon to display its options dialog box.

[Click part of the illustration of the dialog box for more information.](#)



When you first double-click a movie icon, or when you open a movie icon that has no movie loaded into it, the Load Movie dialog box appears.

- System variables

Play

Plays the movie from Start Frame to End Frame.

Step

Moves through the movie one frame at a time.

Stop

Stops playing the movie.

Start Frame/End Frame

Lets you select which movie frames you want to play. When you first load a movie, the numbers of the first and last frames in the movie file are shown in the Start Frame and End Frame fields. If you want to play only specific movie frames, type frame numbers, variable names, or expressions in these fields.

To play the scene backwards, enter the higher numbered frame in Start Frame and the lower numbered one in End Frame. You cannot play externally stored movies backwards.

Current Frame

Indicates which frame is displayed.

Frames/Second

You can make a movie play faster or slower if the movie format supports adjustable speeds. To speed up or slow down the movie, type a number, variable name, or expression. If the speed is too fast to display all frames at the selected rate, Star will skip frames to approximate the chosen speed, unless Don't Skip Frames is selected. If this field is blank, the movie plays as fast as possible. You cannot adjust the speed of externally stored movies.

Don't Skip Frames

Plays a movie as fast as possible without skipping frames but no faster than specified in the Frames/Second field. Using this option may result in the movie playing at different speeds on different systems, but it generally yields the most pleasing results.

Layer

Enter a number or variable in the Layer field to control which movie appears in front of or behind another when you are playing several movies or animations at once. Higher numbered layers appear in front of lower numbered layers. You can specify layer numbers for internal movies, animated objects, and displays. Movies play in front of stationary objects except while the display object is being animated or if its layer number is higher than 1. The lowest value a movie layer can have is 1; if you assign a value less than one, Star will move it to layer 1. Assign layer numbers to display objects by choosing Effects from the Attributes menu.

Direct to Screen

When selected, the movie will always play in the foreground, regardless of other objects in the same area of the screen. If you select Direct to Screen, any value in the Layer field is ignored. Direct to Screen is only available when the Opaque mode is selected. Externally stored movies are always played Direct to Screen.

Use Movie Palette

Determines whether or not to play the movie using its custom color palette. This option is not available for all movie formats.

Audio

Plays sound included in the movie file. If the type of movie you've loaded doesn't support sound, this option is dimmed.

***Note:** To hear audio, you must have an audio card and Windows 3.1 or Windows 3.0 with Microsoft's Multimedia Extensions.*

Play Movie

Controls the movie's repetitions.

- Repeatedly—Plays the movie over and over again until you erase it or stop it in some other way, such as by changing a variable's value.
- ___ Times—Controls how many times the movie plays.
- Until TRUE—Plays the movie repeatedly until the specified condition becomes true. For instance, you might insert the system variable `MouseDown` if you want the movie to play repeatedly until the user clicks the mouse button.
- Only While Animating—Places the movie's first frame on the screen, but only plays it while the movie is being moved by an animation icon or dragged by the user. This option is useful for special effects such as simulated walking or jumping—for example, you could show a figure's arm and leg movements with a movie icon while the user is dragging the figure. Not available for externally stored movies.
- ___ Times/Animation—Similar to the previous option, except it limits the number of times the movie will play during each repetition of the animation. For example, you could simulate the moon's orbit about the earth with a combination of a fixed path animation for the orbital path and a movie showing the moon's rotation.

Note that with ___ Times/Animation selected, Star adjusts movie playback speed to complete the indicated number of plays during each animation repetition regardless of the value in the Frames/Second field. In the previous example, if you decreased the animation time to 10 seconds, Star would ignore the value in the Frames/Second field and increase the movie playback speed in order to complete the moon's rotation during the shorter "month." Not available for externally stored movies.

Note: All movie formats can be animated, however external movies and movies played direct to screen may not animate smoothly.

Timing

Controls when the movie is played, in relation to other factors:

- Wait Until Done—Star waits until the movie is done playing before proceeding to the next icon on the flowline.
- Concurrent—Star activates the movie and proceeds immediately to icons following the movie, so other icons are presented while the movie plays.
- Perpetual—The movie can be activated after Star exits the movie icon. Star monitors the variables specified in the Movie Options dialog box; if the values change, Star immediately presents the movie icon.

For instance, you might enter a custom variable called `begin` for Start Frame field and one called `end` for End Frame and set their values in a calculation icon. You might also enter a custom variable in the Frames/Second field to control the movie's playback speed. If you choose Concurrent or Wait Until Done, the movie plays according to the values of the variables when the movie icon is encountered. If you choose Perpetual, and a variable's value changes, playback of the movie changes to reflect the new value.

Mode

Controls how the movie looks in relation to other objects on the screen. Only the Opaque mode is available for external movies.

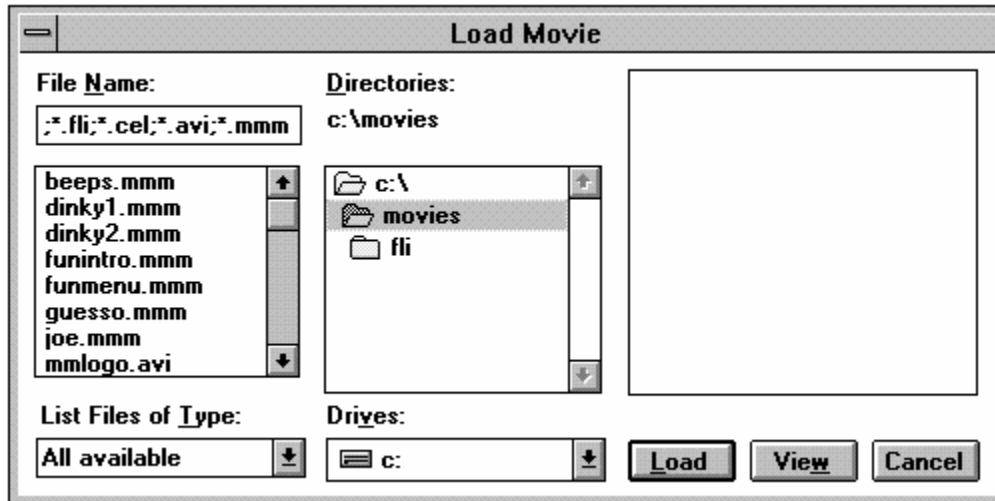
- Opaque draws all frames completely, with no pixels drawn transparently. This lets the movie play faster and take up less space.
- Matted places an opaque matte behind the movie's frame. The shape of the matte for each frame matches the shape of the movie image. White pixels are trimmed from the edge of the frames for Macintosh Movie Editor and PICS movies; black pixels are trimmed from the edge of the frames for Autodesk Animator movies.

When you first select Matted, a message "Creating mattes" is shown while Star builds the irregularly shaped mattes for each frame.

- Transparent allows other objects to show through the movie's frames. Objects show through the white pixels for Macintosh Movie Editor and PICS movies and the black pixels for Autodesk Animator movies.
- Inverse turns pixels in the movie frames from white to black and black to white as necessary to allow objects below to show through during playback. If a color movie is set against a colored background, this effect displays frames in the movie's inverse color, which can produce unexpected results.

Load

Click the Load button to make the Load Movie dialog box appear. This dialog box also appears automatically whenever you open an empty movie icon. The file type drop-down list lets you restrict the types of files that are shown.



Click the View button to preview a selected movie.

You can load internally stored movies with full frames rather than change frames. Movies loaded with full frames use more memory, but they may play much faster backwards or one frame at a time. To load an internal movie in full frame mode, Shift-click the Load button in the Load Movie dialog box. Star will ask you to verify that you want to load the movie with full frames. Click OK. Star will then process the frames so that they are each full frames. This may take a minute.s

System variables

The `MoviePlaying` variable in the General category is true if a movie is currently playing. This variable is useful if you want to play a movie concurrently with other events, but want to ensure that the movie is done playing before moving beyond that sequence.

Sound icon

Sound icons allow you to integrate a variety of sounds to make your Star applications more interesting and effective. You can quickly and easily place sound icons anywhere in your file, load sounds from various sources, and adjust the playback options to suit your needs.

Your Star package includes sample prerecorded music and sound effects. You can integrate these sounds into your Star applications and experiment with them.

- Using sound in Star files
- Sound Options dialog box

Using sound in Star files

To play sounds for use in Star, you'll need the following:

- An audio card installed in your computer and in end users' computers
- Windows 3.1 or Windows 3.0 with Microsoft's Multimedia Extensions.

For more information, consult your Windows documentation.

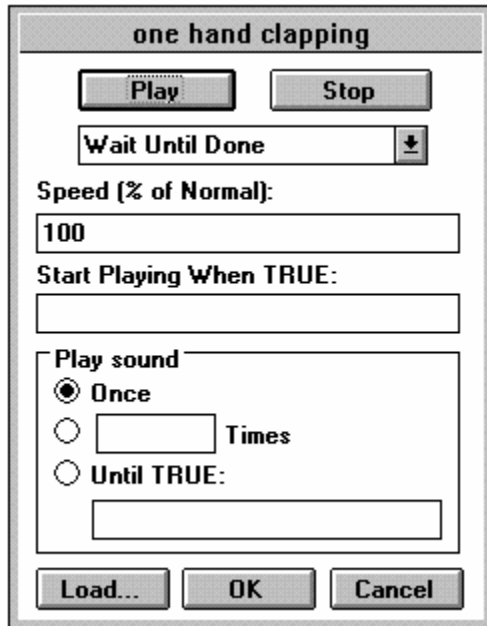
Tip: You can preview a loaded sound at any time without opening its icon. Just click the sound icon with the right mouse button. The sound plays once.

You can also use multimedia extensions functions to play external waveform audio files, CD audio files, and MIDI files.

Sound Options dialog box

Double-click a sound icon to display the Sound Options dialog box.

[Click part of the illustration of the dialog box for more information.](#)



- System variables

Play

Plays the sound you have loaded according to the other options you've selected in the dialog box. Sounds may not play back if their format is not compatible with the sound card. Eight-bit monophonic 11- and 22-kHz uncompressed sound files can be played on all MPC-compatible sound cards.

Stop

Stops playing the sound.

Concurrency

Controls when the sound is played in relation to the other things that are happening in your file.

- **Wait Until Done**—Star waits until the sound is done before proceeding to the next icon on the flowline.
- **Concurrent**—Star activates the sound and then begins presenting the icons following the sound, so the sound is played while other icons are presented. This feature is useful for playing a sound to accompany an action on the screen.
- **Perpetual**—The sound can be activated after Star exits the sound icon. Star monitors the variables specified in the sound options fields; if a variable's value changes, the sound is activated. For example, you could select Perpetual and enter a condition in the Start Playing When TRUE field. When the condition becomes true, Star immediately presents the sound icon.

Speed (% of Normal)

Controls the speed at which the sound is played. The normal value (100%) plays the sound at its recorded speed; values less than 100% play slower, and values greater than 100% play faster. You can type a number or a variable name in the text entry field. Most sound cards do not support variable-speed playback.

Start Playing When TRUE

Begins playing the sound whenever the variable or conditional expression you enter changes from false to true.

Play Sound

Controls how many times the sound is played.

- **Once**—By default, the sound plays once.
- **__ Times**—To play the sound multiple times, type a number or variable name in the text entry field.
- **Until TRUE**—If you select Perpetual, you can play the sound repeatedly by typing a variable name or expression in the text entry field.

Load

Displays a standard file dialog box that lets you load a previously recorded sound into your Star file. Select the sound file you want to load. You can load .WAV and .PCM files.

System variables

The `SoundPlaying` variable in the General category is true if a sound is currently playing. This variable is useful if you want to play a sound concurrently with other events, but want to ensure that the sound is done playing before moving beyond that sequence.

Video icon

The video icon allows you to play video in your applications from a laserdisc player. Connect a laserdisc player to your computer, and then place a video icon in your Star file where you want the sequence to play.

The Video Setup dialog box, described in Chapter 5, allows you to specify overlay drivers and players. That section also includes information on supported overlay cards and players and Star video drivers.

- Video displays
- Video Options dialog box

Video displays

You can incorporate video into Star in two basic ways:

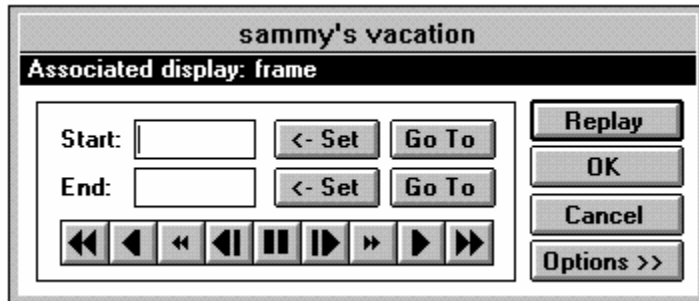
- Use an external monitor. If you play video on an external monitor, simply connect the video device to the computer and to the monitor. No special video overlay hardware is required.
- Install a video overlay card. Installing an overlay card in your computer lets you display video on the screen that displays the rest of your Star application. This allows you to integrate video sequences into an application—for example, you might play video in one section of the screen while you ask the user questions about it in another part of the screen.

To use this option, you must install a video overlay card in each computer on which your application will be presented and connect the video player to the overlay card and the computer's serial port. You also need to select other options, such as where the video will play on the screen.

Video Options dialog box

Double-click a video icon to display the Video Options dialog box.

Click part of the illustration of the dialog box for more information.



The four pushbuttons on the right advance the video and the four on the left reverse the video. The controller advances forward and backward at four rates: the fastest possible, at regular speed, at the slowest possible, and one frame at a time.

- System variables and functions

Associated display (for use with video overlay cards)

If you are using a video overlay card to have video appear on your computer screen, you need to associate the video with a display object on the screen. This will let Star know where to overlay the video. To do this, add a display icon before the video icon in the flowline; then open the video icon and click the display object in the Presentation window. You may need to move the Video Options dialog box to see the associated display object. When you run the file, the video will appear only when the display object is on-screen. The video will scale to the boundaries of that object, and it will appear where the object matches the chroma key color. For more information on video overlay cards and the chroma key color, see "File Setup" in Chapter 5.

Start and End

Let you select the frames you want to play. Video frames are numbered consecutively. You can choose to play one frame or a series of frames.

The Start field specifies the first frame of the sequence you want played, and the End field specifies the last frame. You can type a number, variable name, or expression in either text entry field.

Clicking the Set button next to either field enters the number of the currently displayed frame in the corresponding box. A quick and easy way to specify a video sequence is to use the controller buttons to move to the first frame you want played, click the Set button next to Start, move to the last frame you want played, and click the Set button next to End.

If the Start number is greater than the End number, the video sequence plays in reverse. To display one frame, enter its number in both fields.

To move to the start or end frame, click the appropriate Go To button. You can use the controller buttons to play from that point.

Replay

Plays the video sequence specified by the Start and End frame numbers according to the other options you have selected.

Options

Click the Options button and the dialog box displays additional options.

The image shows a dialog box titled "sammy's vacation" with a subtitle "Associated display: frame". The dialog contains several controls for video playback:

- Start:** A text input field followed by "<- Set" and "Go To" buttons.
- End:** A text input field followed by "<- Set" and "Go To" buttons.
- Navigation:** A row of seven buttons: two left-pointing arrows, a double left-pointing arrow, a vertical bar, a double right-pointing arrow, and two right-pointing arrows.
- Control Buttons:** A vertical stack of four buttons: "Replay", "OK", "Cancel", and "Collapse".
- Timing:** A dropdown menu currently set to "Wait Until Done".
- Playback:** A dropdown menu currently set to "Normal Speed (3)".
- Freeze:** A dropdown menu currently set to "Last Frame Shown".
- Until:** A text input field.
- Options:** A list of checkboxes:
 - User Control
 - Frame Numbers
 - Audio Channel 1
 - Audio Channel 2
 - Video On
- Stop At End Frame Or:** A section with two checkboxes:
 - When TRUE: [text input field]
 - When Any Key Is Pressed

Timing

Controls whether other icons are presented while the video is playing:

- Wait Until Done—Star doesn't present additional icons until the video is done playing. Previously started perpetual or concurrent actions may continue while Star presents the video icon.
- Concurrent—Star continues to present additional icons while the video plays.

Playback

Allows you to select one of five speed settings for playing your video sequence. The speed you select applies whether the video is playing forward or backward. If you select the User Control checkbox, users can override the playback speed you choose here.

The numbers in parentheses correspond to the setting of the `VideoSpeed()` system function.

Freeze

Lets you specify what remains on the video screen after the video is done playing. You can also specify how long it remains:

- Last Frame Shown leaves the last video frame that was shown displayed on the screen when the sequence stops playing or the user closes the controller.
- No Frame removes all video frames from the screen either at the end of the sequence or when the user closes the controller.
- End Frame displays the frame specified in the End field. If the user closes the controller while another part of the sequence is playing, the player moves to the end frame and displays it.
- If you enter a condition in the Until field, the frame specified in the Freeze drop-down list remains on the screen until the condition becomes true. If you don't enter a condition, the specified frame remains on the screen until Star encounters the next video icon, the overlay object is erased, or the user exits your file.

Stop At End Frame Or

Lets you include a condition to stop playing the video:

- When TRUE—Enter a condition; the video will stop playing when the condition becomes true regardless of whether or not the sequence you chose has finished playing.
- When Any Key Is Pressed—The video stops playing when the user presses any key on the keyboard.

User Control

Provides the user with an onscreen remote control to freeze frames, back up, play slowly, and otherwise control the video sequence you've specified. If you check User Control, Star displays a controller on the user's computer screen when it encounters the video icon in your file. The user can move the controller by dragging it.

The User Control checkbox is dimmed if Concurrent is chosen in the Timing drop-down list.



The buttons on the user controller operate in the same way as those on the controller in the Video Options dialog box. To close the controller and continue with the application, the user must click the controller's close box. (The controller also appears when you run your file while authoring if you have a video device connected; click the controller's close box to proceed.)

***Tip:** Users may not know how to operate the video controller. Be sure to give them instructions for using the buttons and closing the controller.*

Frame Numbers

Displays frame numbers on the screen for the user.

Audio Channel 1 and 2

Checking Audio Channel 1 plays the sound on channel 1 of the video player, while checking Audio Channel 2 plays the sound on channel 2. Some video players and disks have alternate sound on each channel, so make sure you select the correct channel.

Video On

Displays the video image on the video screen or in the onscreen area if overlay is being used. If you don't check this option, no image appears when you play the video. This is useful if you only want to play the sound on either or both audio channels.

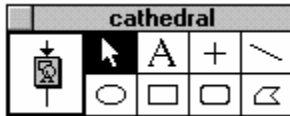
System variables and functions

When you choose the Show Functions or Show Variables command, the dialog box contains a Video category.

Toolbox

The Star graphics toolbox allows you to create and modify text and graphics in the Presentation window. In many cases, you'll also want to import graphics from other sources or use one of the powerful graphics editors available.

[Click part of the illustration for more information.](#)



Icon display

The icon display in the toolbox shows an image of the icon you're editing. The title of the icon is at the top of the toolbox. The icon display allows you to perform functions related to the icon just as you would when working with icons on the flowline.

Double-click an icon to select all of its display objects.

Change branching for response paths by pressing the Control key while you click the branching symbol at the bottom of the icon display for an attached response.

Access the response options dialog box by double-clicking the response type symbol in the icon display.

Pointer

To move an object, select the pointer and drag the object to a new location. For fine adjustments, click the object once with the pointer to select it, and then press one of the arrow keys on the keyboard. Each keystroke moves the object one pixel in the corresponding direction.

If you click an object and hold the mouse down without moving the object, the cursor changes into a grabber hand. The grabber hand allows you to view the contents of an object as you move it. With the regular pointer, only the outline of an object is shown as you drag it, which allows the screen to update more quickly as you reposition the object.

If you press the Shift key while dragging an object, movement is constrained to vertical, horizontal and 45° angles. If you press the Shift key while moving a handle of an object, the object resizes and maintains its shape. This prevents a circle from turning into an oblong oval, for example.

Text tool

The text tool is used to create and edit text. You can also cut and paste text using commands in the Edit menu.

- Margins
- Tabs and margins
- Scrolling text fields

Margins

As you type text, margins are indicated by the text width line, which has adjustment handles at each end. The left margin is set wherever you click to begin typing, and the right margin extends to the right edge of the screen. Unless you adjust the right margin away from the edge of the screen, it is automatically reduced to fit the longest line typed when you finish entering the text.

To change the margins of a text object you've already typed:

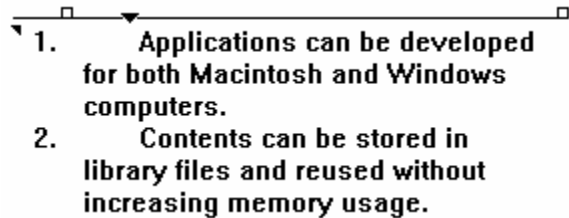
1. Click the text object to select it.

2. Drag one of the adjustment or selection handles.

Release the mouse button when the margin is where you want it.

Tabs and margins

Tabs are represented by triangular-shaped markers on the text width line. To add one, click anywhere on the line. Move the tab to the right or left by dragging it. To remove a tab, drag the marker to the right or left margin and release.

- 
- 1. Applications can be developed for both Macintosh and Windows computers.**
 - 2. Contents can be stored in library files and reused without increasing memory usage.**

A text block with tabs and adjusted margins

Normal tabs are represented by a solid triangle and decimal tabs by an unfilled triangle. Decimal tabs are useful for aligning numbers or the right edges of words. To change a normal tab to a decimal tab or vice versa, click the marker.

The indent handle lets you adjust the indent (or outdent) of the first line of paragraphs in the text object. The indent handle can be moved to the left or the right of the left margin.

Tabs from some word-processing applications are recognized, but you'll have to set tabs in Star to format your text appropriately. Tabs are not created automatically when you paste the text.

Scrolling text fields

Create scrolling text field by selecting Scrolling Text from the Text menu. For more information, see "Text menu" in Chapter 5.

Straight line

The straight line tool draws horizontal, vertical, or 45° diagonal lines. Lines created with this tool maintain a horizontal, vertical, or 45° angle when moved or edited.

Diagonal line

The diagonal line tool allows you to draw a straight line between any two points. Pressing the Shift key while using this tool makes it behave like the straight line tool.

Oval

The oval tool draws ovals and circles. To draw a circle, hold down the Shift key while drawing.

Rectangle

The rectangle tool allows you to draw rectangles with square corners. If you want a square, hold down the Shift key while drawing.

Rounded rectangle

The rounded corner rectangle tool draws rectangles with curved corners.

Polygon

The polygon tool allows you to draw multisided objects. You create polygons by clicking to add points. Polygons can be either closed or open.

To draw a polygon:

1. **Click the polygon tool, position the cursor at the polygon's starting point, and click.**

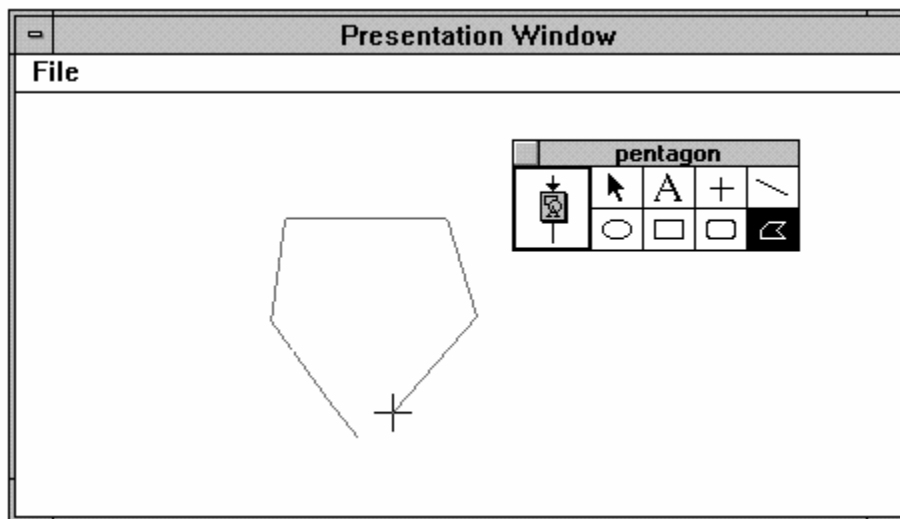
A movable line attaches to the crosshairs cursor.

2. **Position the cursor at the next desired corner point of the polygon and click.**

Keep clicking to define each side of the polygon.

3. **Complete the polygon.**

To close the polygon, position the crosshairs cursor on top of the starting point and click. The first and last sides of the polygon join and selection handles appear.



To create an open polygon, double-click when adding your last corner point. Selection handles appear.

4. **Resize the polygon.**

Select the polygon with the pointer tool and drag handles to resize the polygon. Press the Shift key while resizing the polygon to retain its proportions.

Chapter 5 Menu Reference

This chapter is a complete reference to every command you can choose from an Authorware Star menu. It is organized by menu, from left to right.

Icons and the options dialog boxes associated with them are explained in Chapter 4, "[Icon Reference](#)."

- Control menu
- File menu
- Edit menu
- Data menu
- Libraries menu
- Attributes menu
- Text menu
- Try It menu

Control menu

The Control menu is the drop-down menu in the upper lefthand corner of the Authorware Star window. In it is one command specific to Star: Author Menus On/Off. The rest are standard Windows commands.

- Author Menus On/Off

Author Menus On/Off

The Author Menus On/Off command (Control-Spacebar) is active while you are running a file and the Presentation window is as large or larger than your screen. The author menus are automatically displayed while you're editing in the Design window or the Presentation window.

Whenever you need access to the author menus while running your file, choose Author Menus On from the Control menu. The author menus appear in the Presentation window title bar, and the command in the Control menu changes to Author Menus Off.

The author menu also appears whenever Star encounters an empty icon, such as a calculation icon with nothing in it or a display icon with no objects.

File menu

The File menu includes options found in most Windows applications. All are related to your current file except for Video Setup, which affects all Star files you open.

- New File
- Open File
- Import Graphics
- Close
- Save
- Save As
- File Setup
- Video Setup
- Package
- Page Setup
- Print
- Print Screen
- Exit
- About Authorware

New File

New File creates a new untitled file. If a file is currently open, it is closed before you can create the new one. You are asked to save changes if any have been made to the file that is already open.

Open File

Open File (Control-O) allows you to open previously created Star files. If a file is currently open, it is closed before the newly selected one opens. You get options to save changes if any have been made to the file that is already open.

Import Graphics

Import Graphics allows you to import graphics files directly into displays or interactions.

You can import graphics created in other applications if they produce supported file types. Supported graphics types include:

- Encapsulated PostScript files (file extension .EPS) with TIFF headings
- Metafile (file extension .WMF)
- Paintbrush files (file extension .PCX)
- TIFF files (file extension .TIF)
- Windows and OS/2 bitmapped graphic files (file extensions .BMP, .DIB, and .RLE)
- MacPaint files (file extension .PNT)
- Macintosh PICT files (file extensions .PIC and .PCT).

Star supports both object-oriented and bitmapped graphics. They can be mixed freely, regardless of their source, and edited right in the Presentation window. You can edit object-oriented graphics individually, as well as enlarge and reduce groups of objects or the whole graphic. Enlarging and reducing bitmapped graphics, however, tends to distort them.

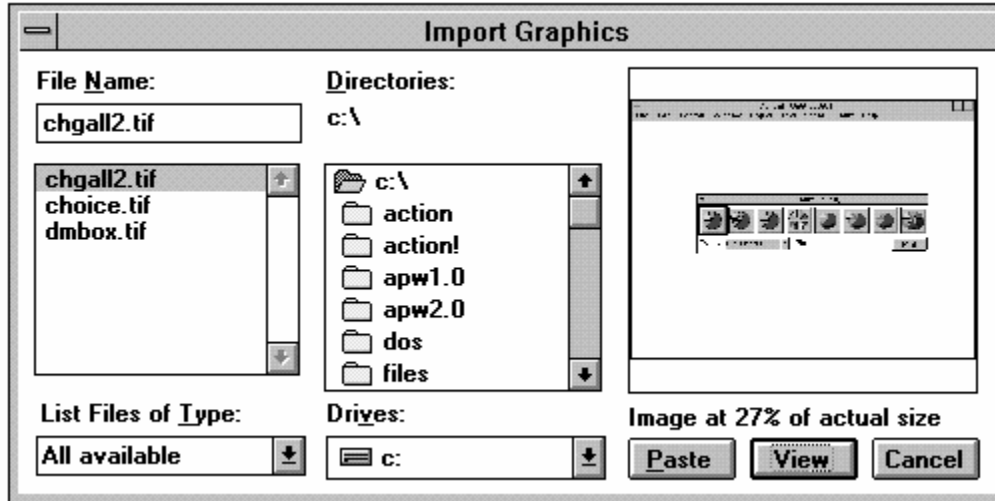
The Star installer program installs graphics filters (with file extension .IMP) in the same directory as ASW2.EXE. If these filters are missing, you will not be able to import graphics into Star.

- Importing graphics

Importing graphics

1. Open a display or interaction icon to bring up the Presentation window and graphics toolbox.
2. Choose Import Graphics from the File menu.
3. A standard directory dialog box appears.

Open directories or change drives if necessary, select the file containing the graphics you want to import, and click Open. A drop-down list at the lower left corner of the dialog box lets you limit the types of files shown.



4. Click the View button to see the contents of the file.

If necessary, the graphic is resized to fit in the window, and the sizing percentage appears below the graphic.

5. Click Paste.

The selected graphic appears in the display you're editing. Selection handles allow you to reposition it immediately using the pointer or the arrow keys. By default, bitmapped objects are set to Opaque mode when pasted.

Close

Close closes the current file. Star gives you the chance to save if you have not already done so.

Save

Save (Control-S) writes your changes to the disk file and performs an integrity check of your file. If the file you are saving is new and hasn't been previously saved, you are asked to name the file and give it a directory location.

Save often.

Save As

Save As allows you to copy the entire file you've been working on, together with the changes you have just made, into a new file you create by saving to a different name. The original file remains unchanged since the last time you saved and is automatically closed. The new file you just created using Save As is open and includes your most recent changes.

When you use the Save As command, Star removes unused space in the file, resulting in a file that uses less disk space.

File Setup

File Setup includes settings that apply to your entire file, such as the file title, wait button title, Presentation window options, and controls for user restarts and resumes.

[Click part of the illustration of the dialog box for more information.](#)

File Setup

File: 160K in 31 icons, 1 var Memory: 18,160K

Title:
Presentation to investors

Wait Button Title:
Continue

Content Search Path:

When User Returns to the File
 Restart at Beginning Resume

Presentation Window
Variable ▾

User Menu Bar Title Bar
 Overlay Menu Bar

Background...
Chroma Key...

Palette... **OK** **Cancel**

Disk space and number of icons and variables in file

Star displays the amount of disk space this file takes up as well as the number of icons and variables in the file. It also displays the amount of free memory (RAM or RAM and swap space in Windows enhanced mode).

Title

The Title option provides a text entry field for entering the title of your file. The title you enter here will display in your packaged file unless you deselect the Title Bar option in the File Setup dialog box.

The title defaults to the name of the file without the extension. You can specify a new title by typing one. Changing the title does not change the filename.

***Tip:** The title you enter is automatically stored in the system variable `FileTitle` and can be displayed to the user at any location in your file.*

Wait Button Title

This option allows you to enter a name for all wait buttons throughout your file. When you first create a file, "Continue" is the default name in this field. To specify a new wait button title, just type one.

To use a wait button, check the Show Button option in the Wait Options dialog box or in the Interaction Options dialog box. When you run the file, Star displays a button with the name specified here when it encounters the icon on the flowline. The button is automatically sized to the length of the title you entered.

Content Search Path

Star applications can use content and movies from external movie files. When you load a movie, Star remembers the location of the external file and looks there first when it later tries to use the file. When you package a file, Star uses the information in the Content Search Path field to determine where to look for movies and other externally stored content.

Use semicolons to separate multiple search paths. Don't include extra spaces between entries. For example, if you want Star to search for external files at the main level of drive C: and then search in the Graphic subdirectory of the ASW directory of drive D:, you would write the search path as follows:

```
C:\;D:\ASW\Graphic
```

In addition to looking for an external file in its original location and in directories specified in the Content Search Path, Star always looks in the directory that contains the Star application (ASW2.EXE), the Windows directory, and the Windows System directory.

Any relative paths given are relative to the location of the Star file.

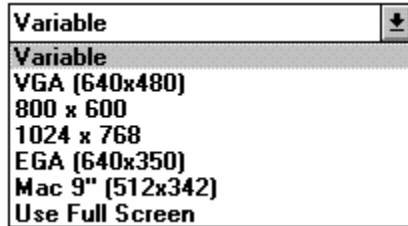
Restart/Resume options

This option lets you select where users return when they quit your packaged file and later return to it. Depending on the option you choose, users either restart at the beginning of the file or resume at the exact location where they quit.

- Restart at Beginning—Restarts the file at the beginning when the user returns. Upon restarting, the values of all user and system variables are set to their initial values. This is the default option.
- Resume—The file resumes where the user quit. Star records users' locations in the file and the values of all variables when they quit, and stores this information in a user records file. A user records file is created for every Star file; the file is assigned the application file's name plus .REC file extension. The file is stored in the ASW_DATA directory in the Windows directory.

Presentation Window Size

This option lets you set the size and aspect ratio of the Presentation window for your file. It's important to author using the Presentation window size that works best on the smallest monitor on which your file will eventually be presented.



- Variable allows you to size and move the Presentation window as you want. To resize it, select Run from the Try It menu and drag any corner of the Presentation window to the desired position. Once you change the Presentation window size, it remains that size until you change it.
- VGA through Mac 9" set fixed Presentation window sizes. The numbers (such as 640 x 480) refer to the number of pixels the Presentation window uses. The Mac 9" option is used in some files created with Authorware Professional for Macintosh.
- Use Full Screen expands the Presentation window to the full size of your current monitor. With this option selected, the display will use the full screen of whatever monitor your file is being developed or presented on. Screens larger than your current screen will expand to the right and downward.

If you switch from a large screen to a smaller screen with the Use Full Screen option, parts of the text and graphics you created on a larger screen might not appear. Objects that extend beyond the standard right and bottom screen edges will be cut off or not visible at all. This same effect will occur if your file is presented to users with smaller monitors.

User Menu Bar

By default, Star includes a user menu bar at the top of the Presentation window. The default menu bar contains a File menu with a Quit command. You can choose not to display a user menu bar by deselecting this option. Keep in mind, however, that if you don't display the File menu and Quit command, you need to provide some other way for the user to quit the application. Even if a menu bar is not displayed, users can quit by pressing Control-Q, but you need to tell them this. Also, any custom pull-down menus that you create with the interaction icon don't show up if you deselect User Menu Bar.

Using the `ShowMenuBar()` function overrides the User Menu Bar setting.

Overlay Menu Bar

With this option on, the menu bar overlays the top of the Presentation window. With this option off, the menu bar appears above the Presentation window, as it did in version 1.0 of Authorware Star for Windows.

***Note:** The Overlay Menu Bar option affects the ShowMenuBar() and ResizeWindow() system functions.*

Title Bar

If the Presentation window is as large or larger than the screen, you can use the Title Bar option to turn the title bar on or off. If the Presentation window is smaller than the screen, it will always have a title bar.

Background

The default background for the Presentation window is white. The Background Color option allows you to select a color to use as the background for your Presentation window.

Clicking the Background button brings up a color palette. Click the color you want and then click OK. The selected color appears in the box next to the button.

Chroma Key

This option applies if you're using a video overlay card and the card supports a chroma key color. If the card provides a chroma key color, video will display on the screen wherever the chroma key-colored object is placed. Clicking the Chroma Key button brings up the color palette. Click any color. Then click OK. The selected color appears in the box next to the button.

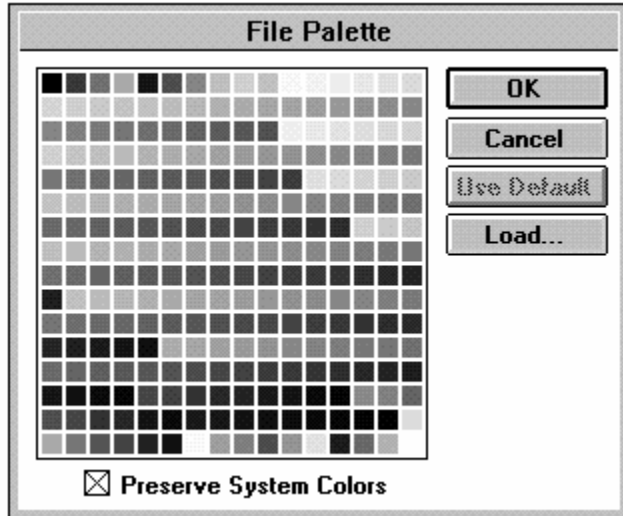
The chroma key color is indicated in all color palettes with the letter C in the inverse of the color.

The default chroma key color is set to magenta. Some video overlay cards work with limited chroma key colors:

- The IBM M-Motion overlay card *only* works with a magenta chroma key.
- The VideoLogic DVA 4000 overlay card only allows chroma keying with the first 64 colors in the palette. So on a system with 256 colors, the default chroma color, magenta, is out of range.

Palette

Click the Palette button to control which colors appear in the Background Color palette, the Chroma Key palette, and the Color palette selected in the Attributes menu.



You can load other color palettes. This lets you create your application using a different array of colors. You can load palettes from the following types of files:

- Microsoft RIFF palettes (.PAL)
- Windows .DIB files
- Windows .BMP files.

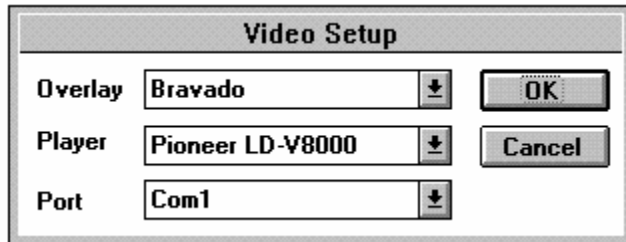
The default color palette mimics the 256-color palette used in Authorware Professional for Macintosh, with the first 10 and last 10 colors reserved for the Windows System colors. Click Use Default to return to this configuration.

Select Preserve System Colors if you want to retain the first 10 and last 10 colors; these are the Windows System colors, used by Windows. Preserving System colors ensures that all Windows icons, title bars, window borders, and objects in the background will maintain their colors.

Video Setup

The Video Setup command lets you select video hardware options.

Click part of the illustration of the dialog box for more information.



The screenshot shows a dialog box titled "Video Setup". It contains three rows of configuration options, each with a label, a text field, and a dropdown arrow:

- Overlay:** The text field contains "Bravado".
- Player:** The text field contains "Pioneer LD-V8000".
- Port:** The text field contains "Com1".

On the right side of the dialog box, there are two buttons: "OK" and "Cancel".

If you don't select these options or if your selections don't match the hardware configuration, the system displays an error message when you (or an end user) try to run a file that contains a video icon, at which point you or the end user can specify your video configuration.

Overlay

To play video on your computer screen, you need to install a video overlay card in your computer and select the card in the Video Setup dialog box. The Overlay drop-down list shows all supported cards:

- TrueVision Bravado uses the APBRAVO.VDR driver.
- VideoLogic DVA-4000 uses the APVLOGIC.VDR driver.
- IBM M-Motion card uses the APMMOTN.VDR driver.
- New Media Graphics Super VideoWindows uses the APVSVW.VDR driver.
- Creative Labs VideoBlaster uses the APVBLAST.VDR driver.

Cards only appear in the Overlay drop-down list if Star driver files are present in the directory containing the ASW2.EXE file. You can reinstall these files using the Star Installer.

Also, be sure that you have installed the video overlay card software. Video overlay cards vary greatly in their capabilities. For a description of capabilities, contact the card manufacturer.

Video overlay cards use a chroma key color, so that video shows through in regions where the chroma key colored object is placed on the screen. In this case, you can use Star to control the video by animating the display containing the chroma key object.

If you will be displaying video on an external monitor connected directly to your video player, you do not need an overlay card.

Player

The Player drop-down list shows supported video players:

- Pioneer LD-V8000 uses the APPIONER.VDR driver.
- Pioneer LD-V6000 uses the APPIONER.VDR driver.
- Pioneer LD-V4200 uses the APPIONER.VDR driver.
- Sony LDP-1000A/2000 uses the APSONY.VDR driver.
- Sony LDP series (other than the LDP-1000A and the LDP2000) uses the APSONY.VDR driver.

Players only appear in the Overlay drop-down list if Star driver files are present in the directory containing the ASW2.EXE file. You can reinstall these files using the Star Installer.

Port

Select the port on your computer to which the video player is connected.

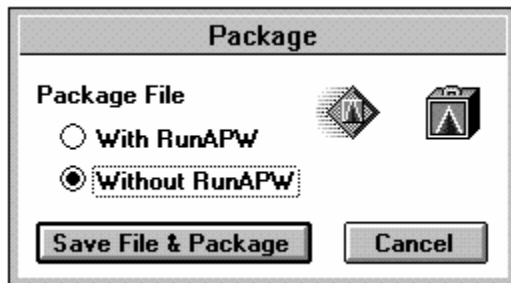
If you don't select the correct video options or don't connect the hardware properly, Star displays a message when it encounters a video icon while running your file or while you are editing video icon options. The user sees a similar message if the video player has not been properly connected to his or her computer.

Package

Package provides options for creating a finished version of your application.

Packaging an application is easy. First figure out what you want to deliver, including video drivers, external movies, and DLLs.

1. **Open the file you want to package.**
2. **Choose Package from the File menu.**
The Package dialog box appears.



3. **Click the Save File & Package button.**
Star prompts you to name the package. You probably want to use the current filename and the .EXE extension. Change the name if you wish. Don't replace the original Authorware Star file, though. Star cannot reopen a file once it's been packaged. You need to save the original file to make changes.
4. **Place all Star movie and video drivers, if needed, in the same directory as the packaged application.**
If your application uses movie or video, be sure to send end users the appropriate Star drivers. See "[Video setup](#)" in this chapter, and the "[Movie icon](#)" section of Chapter 4 for information on Star drivers.
5. **Place all externally stored movies in the same directory as the packaged files.**
The following types of movies are not stored in Star files:
 - Director Player for Windows (.MMM files)
 - Microsoft Video for Windows (.AVI files)
 - QuickTime for Windows (.MOV files)
6. **Place required DLLs or UCDs in the same directory as the packaged files.**
7. **Make sure that all end users who are running Windows 3.0 have the SHELL.DLL and COMMDLG.DLL files installed in their Windows System directory.**
These files ship with Windows 3.1. The Star installer puts them on your computer if they don't exist. Mention these files in installation instructions you send to end users.
8. **Take the packaged file to another computer and try it out there.**
You may discover issues with fonts, monitor size, RAM limitations, or missing files that you can fix before you distribute the application. Better to address these issues and repackage now.
9. **Write installation instructions if needed and include them on your disk.**
If you are including drivers or external movies that need to be stored in a particular location, mention this to the user. You can include instructions in a separate file or in the first screen of your application.

If your application tracks user progress, you may want to tell users about the user records file and the ASW_DATA directories and warn them not to delete these. These are described in the following section.

- User records

User records

As you move through any Star file, whether you're authoring or running the file, the program continually tracks your current location within the file and stores data in a user records file if you have selected Resume in the File Setup dialog box. No user records file is maintained for files set to Restart at Beginning in the File Setup dialog box.

User records contain data such as the values of custom variables and display information at your current location in the file. If in the File Setup dialog box a file is set to resume when the user returns to it, Star uses information from the user records file to resume at the correct location with current custom variable values.

User records files are stored in a directory called ASW_DATA, located in the Microsoft Windows directory (such as WIN31). If this directory does not exist on the user's system, Star automatically creates it when the user first runs a Star application. All user records files are assigned the extension .REC.

When you distribute packaged files that are set to Resume in the File Setup dialog box, be sure that the user's hard disk contains enough space for the ASW_DATA directory. The amount of space needed depends on the number of files, the number and contents of custom variables, and the number and type of objects appearing in the Presentation window when the records are saved. We recommend that you reserve about 100K for the ASW_DATA directory.

Page Setup

Page Setup presents standard Windows printer and page formatting options for printing your file.

Print

Print prints all or portions of your file. Star provides options that allow you to print a variety of information about your file.

[Click part of the illustration of the dialog box for more information.](#)

Print to: **Apple LaserWriter II NTX on LPT1:**

Copies:

Pages: All From: To:

Print File: cinema.apw

Print Options

<input checked="" type="checkbox"/> Design Windows	<input checked="" type="checkbox"/> Display Text and Graphics
<input checked="" type="checkbox"/> Icon Options	<input checked="" type="radio"/> Crop <input type="radio"/> Full Size
<input checked="" type="checkbox"/> Index	<input type="checkbox"/> Include Thumbnails
<input checked="" type="checkbox"/> Cross-reference Custom Variables	<input checked="" type="checkbox"/> Print as Screen Image
	<input checked="" type="checkbox"/> First Movie Frame Only

For Selected Icons Only

Design Windows

Prints the main flowline and all map icon flowlines as they appear on the screen.

Icon Options

Prints the options you have set for each icon in the file.

Index

Prints a list of each icon in your file, including the icon title and its page number in the printout.

Cross-reference Custom Variables

Prints a summary of the custom variables the file contains. Star prints the variable description and initial value, along with a list of each icon in which the variable is used.

Display Text and Graphics

Prints text and graphics contained in the file. You can choose to crop the graphics or print them full size.

- Crop economizes on space by trimming off extra white space surrounding the graphics in each display. When you select the Crop option, Include Thumbnails becomes available. This option prints a small Presentation window for each display to show where the graphics are positioned on the screen.
- Full Size prints each display in the size it appears in the Presentation window. If your monitor displays images larger than can be printed on the paper size you have selected, the image will be reduced as needed to fit. This option uses a lot of paper; use it with For Selected Icons Only to print only a specific display.

Include Thumbnails

With this option selected, graphics are printed at a reduced size.

Print as Screen Image

This option causes movies and displays to print exactly as they appear on the screen. When this option is not selected, movies and displays plot directly to the printer, which is usually faster, but the appearance might not match the screen image because the printer may use different fonts.

First Movie Frame Only

Allows you to print only the first movie frame rather than all the frames included in the movie icon, thereby saving a lot of time and paper.

For Selected Icons Only

Prints only selected icons instead of the whole flowline.

Print Screen

Print Screen prints a single copy of whatever is currently displayed on the screen.

Exit

Exit (Alt-F4) closes Star and any open Star files.

About Authorware

The About Authorware command displays the version number for the copy of Authorware Star you are using. Click the display or press any key to make this information go away.

Edit menu

The Edit menu includes standard Windows cut, copy, and paste commands, as well as commands for grouping objects and icons, finding and changing text, and getting information on icons.

- Undo
- Cut
- Copy
- Paste
- Clear
- Group
- Ungroup
- Select All
- Find/Change
- Find Again
- Get Info

Undo

Undo (Control-Z) reverses your last operation.

Cut

Cut (Control-X or Shift-Delete) removes the selected item and puts it on the Clipboard. The selected item can be one or more icons in the flowline or one or more objects selected when editing a display or interaction icon.

Copy

Copy (Control-C or Control-Insert) makes a copy of the selected item and puts it on the Clipboard. The selected item can be one or more icons in the flowline or one or more objects selected in the Presentation window.

Paste

Paste (Control-V or Shift-Insert) inserts a copy of the Clipboard at the location you choose. Paste items as many times as you want; however, once you copy or cut another object, the previously cut or copied item is replaced.

To position objects as they are pasted in a display or interaction icon, first click in the center of the area where you want the objects to appear in the Presentation window. When you paste, the objects will be centered on the point of your click. After you paste, the objects are immediately selected so you can move or edit them. To paste icons at a specific location in the flowline, click and a paste hand appears, indicating where the icons will be pasted.

Clear

Clear removes the selected item as does Cut but does not put the item on the Clipboard. The Delete key performs the same function as the Clear command.

Group

To group icons, select all the icons you want to place in a map icon and choose Group (Control-G) from the Edit menu. All the icons you selected are placed within the new map icon. The icons must be contiguous.

To group objects in a display, select them and choose Group. The icons become a single object that moves as one and can have formatting applied to it.

Ungroup

To quickly take a set of icons out of a map and place them on the flowline in place of the map, select the map icon and choose Ungroup (Control-U) from the Edit menu.

You can also ungroup a previously grouped object in a display or interaction icon. Select the object and choose Ungroup (Control-U) from the Edit menu. If the object was previously grouped, it is broken into its previous pieces.

Select All

Select All (Control-A) selects all the icons on the flowline or all the objects in a display.

Find/Change

Star provides automatic search capabilities for finding and changing text contained in display text objects. Using the Find/Change and Find Again commands, you can specify the characters or words you want found and/or changed and where you want Star to search for them. You can also search repeatedly for all instances of the characters and make changes throughout your file.

[Click part of the illustration of the dialog box for more information.](#)

Find/Change

Find:

Change To:

Search
 ▾

Icon Titles Whole Word
 Display Contents Case Sensitive
 Backwards

Find

Type the text that you wish to locate.

Change To

Type the text that you wish to replace the found text with. In the illustration above, when the word "Camera" is found, you have the option to click the Change button to change the word to "Shutter".

Search drop-down list

- This File—Search all icons in the entire file.
- This Map—Search only icons in the currently open Design window and all maps in that window.
- From Paste Hand—Search all icons below the paste hand (or above the paste hand in a backwards search) in the Design window. This option is only available if you've positioned the paste hand in a Design window.
- Between Flags—Search all icons between the start and stop flags. This option is only available if you've placed at least one flag in a Design window.
- Selected Icons—Search only the selected icons.

Icon Titles

Search through icon titles.

Display Contents

Search inside display and interaction icons for text in text blocks.

Whole Word

Search for whole words only that match the characters you specified in the Find text field. (If you type "resident", Star won't match "president".) If you don't select this option, Star finds all instances of the characters you specified, even if they are part of another word.

Case Sensitive

Search for characters that match the characters and capitalization you specified. If you type "President" Star won't find "president". If you don't check this option, Star ignores capitalization when searching for the characters.

Backwards

Search backwards. If your search location is "this file," for example, Star begins the search with the last icon in the file.

Change All

If you want to change all matches, click Change All. Star finds the text and changes it automatically, without first showing you where the text appears. You can cancel this process by pressing the Esc key, although any words that have already been changed will not change back after you press Esc.

You can use the "*" and "?" wildcard characters. Type an asterisk (*) to substitute for an entire word or any missing part of a word. Type a question mark (?) to substitute for any single character which may be missing.

Find Again

Find Again (F3) searches again for the items specified in the Find/Change dialog box.

Get Info

Get Info displays information about a selected icon.



The icon's name is shown in the title bar. At the top of the Get Info dialog box is the icon's size and the date the icon was last modified.

You can also get information for an icon by pressing the Alt key while clicking the icon on the flowline.

Click the Preview button to see the icon without opening the Presentation window. Click the preview to make it go away. Sounds are previewed through the speaker if you have sound hardware. You can also preview an icon by clicking the icon on the flowline with the right mouse button.

Data menu

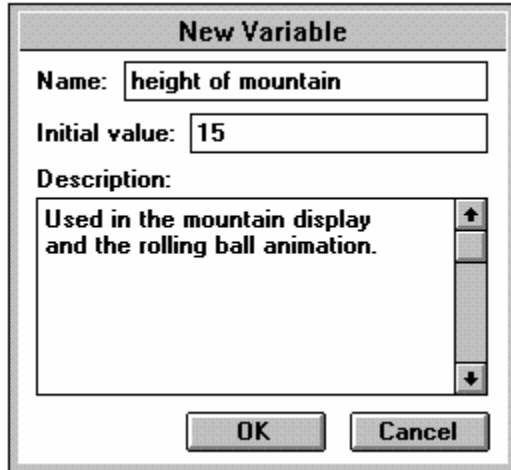
For more information about variables, functions, and calculations, see the "Using data" section of Chapter 2.

- [New Variable](#)
- [Show Variables](#)
- [Show Functions](#)
- [Load Function](#)
- [Number Format](#)
- [Calculations](#)

New Variable

New Variable (Control-N) brings up options for creating a new variable with the name you specify.

Click part of the illustration of the dialog box for more information.



The image shows a dialog box titled "New Variable". It contains three input fields: "Name:" with the text "height of mountain", "Initial value:" with the number "15", and "Description:" with the text "Used in the mountain display and the rolling ball animation." The description field has a vertical scrollbar on its right side. At the bottom of the dialog box are two buttons: "OK" and "Cancel".

Name

The name of your variable must be unique, 40 characters or less, and it must start with a letter or "_".

Initial Value

Sets a value that the variable has when the application is first run. The variable's value does not change until it encounters a calculation.

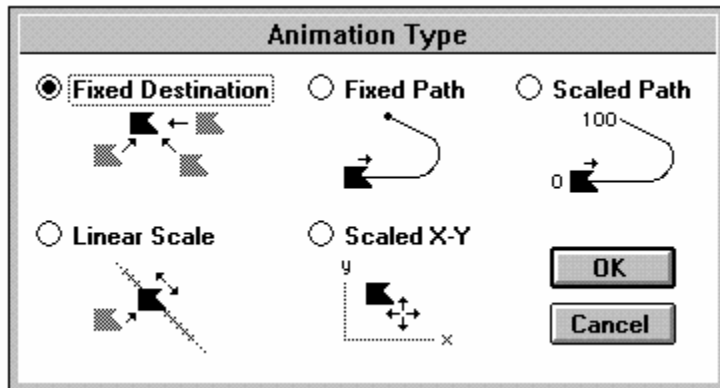
Description

Use this field to write a description of what this variable is for and how to use it. It will appear in the Description field of the Variables dialog box.

Show Variables

The Variables dialog box lets you view system or custom variables and display this information for any variable: initial and current value, description, and icons in which the variable is used. In this dialog box, you can also create, rename, and delete custom variables, change their initial and current values, jump to an icon that uses a selected variable, and paste a variable into a field.

[Click part of the illustration of the dialog box for more information.](#)



Category

This drop-down list allows you to select a category of variable. Custom variables are listed at the bottom, with variables in the current application listed by filename. When you select a category, the scrolling field displays only the variables in that category.

Initial Value

Displays the initial value of the selected variable. This can be changed only for custom variables.

Current Value

Displays the current value of the selected variable. You can only edit this field for custom variables in the open file category.

Referenced By

This field lists all icons in the current application that use the selected variable. Click Show Icon to jump to that icon on the flowline.

Description

This field provides a brief description of what the variable does and how it can be used. This can be changed only for custom variables.

New

Brings up the New Variable dialog box, prompting you to create a custom variable.

Rename

Allows you to change the name of a custom variable.

Delete

Deletes the selected custom variable. This is only available if there are no references to the variable in the application.

Paste

Pastes the selected variable into your application at the insertion point.

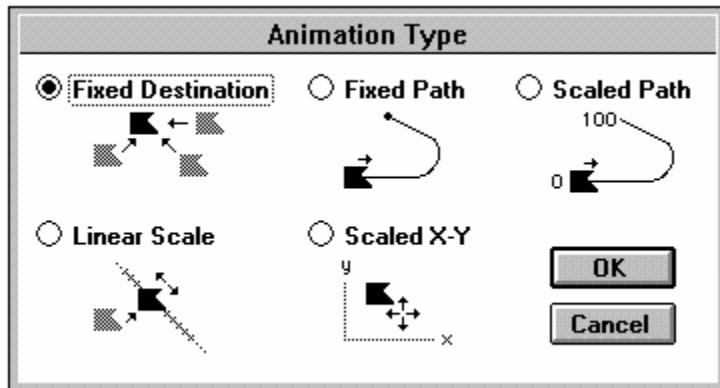
Done

Click Done to exit the dialog box.

Show Functions

The Functions dialog box lets you list all system or custom functions and display any function's description and a list of icons in which the function is used. In this dialog box, you can also load, rename, and delete custom functions, jump to an icon that uses a selected function, and paste the function into a field.

[Click part of the illustration of the dialog box for more information.](#)



Category

This drop-down list allows you to select a category of function. Custom functions are listed at the bottom, with functions in the current file listed by filename. When you select a category, the scrolling field displays only the functions in the category.

Referenced By

This field lists all icons in the current application that use the selected function. Click Show Icon to jump to that icon on the flowline.

Description

This field provides a brief description of what the function does and how it can be used. This can be changed only for custom functions.

Load

Brings up the Load Function dialog box, prompting you to load a dynamic link library (DLL) or user code document (UCD).

Rename

Allows you to change the name of a custom function.

Unload

Unloads the selected custom function. This option is only available if there are no references to the function in the application.

Paste

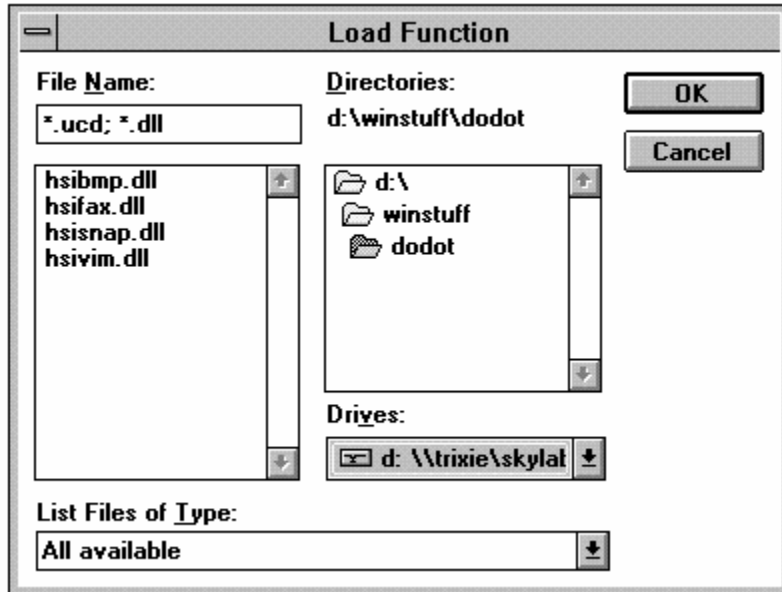
Pastes the selected function into your application at the insertion point.

Done

Click Done to exit the dialog box.

Load Function

Choosing Load Function provides a way for you to incorporate code written in dynamic link libraries (DLLs) into your Star file.



Number Format

[Click part of the illustration of the dialog box for more information.](#)

The image shows a dialog box titled "Number Format". At the top, it displays "Example 99,998.77". The dialog is divided into two main sections: "Decimal" and "Before Decimal".

Decimal Section:

- Show Numbers After Decimal
- Use Local Standard . ,
- Include Digits to Right of Decimal
- Include Trailing Zeros

Before Decimal Section:

- Leading Zeros to Places
- Show Thousands/Millions Separator
- Use Local Standard . ,

At the bottom of the dialog are two buttons: "OK" and "Cancel".

The Number Format dialog box lets you control how numerical variables embedded in display text are formatted.

Decimal

The Decimal group determines how variables with decimal places are displayed. You can choose to round off numbers to a specified number of decimal places. Include Trailing Zeros with 2 digits to the right would display "1" as "1.00."

You can also specify period (.) or commas (,) as the decimal character, or use the decimal character specified in the Windows International control panel (Local Standard).

Before Decimal

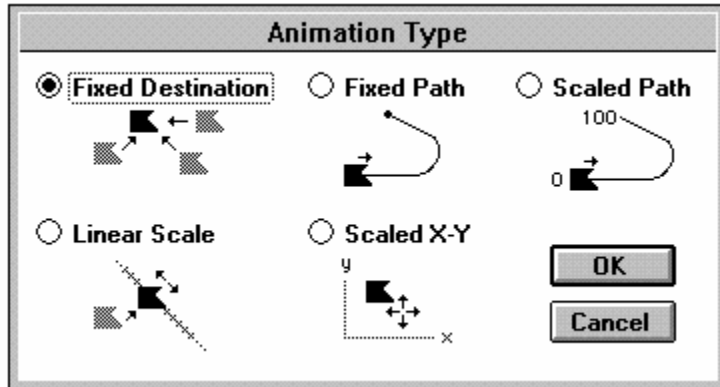
The Before Decimal group addresses formatting large numbers. Leading Zeros is like Trailing Zeros in the Decimal group: it adds zeros in front of short numbers. So if you selecting Leading Zeros to 3 Places, "7" appears as "007" and "45" appears as "045." This is useful if you want all displayed numbers to have the same number of digits.

You can also specify period (.) or comma (,) as the thousands/millions separator character, or use the character specified in the Windows International control panel (Local Standard).

The text tool supports decimal tabs, making it easy to align the values of displayed variables.

Calculations

The Calculations command (Control-W) allows you to attach calculation expressions to any icon. Select or open the icon before choosing this command. When you choose this command, a Calculation window opens and you can type or edit calculation statements.



The title bar of the calculation window reflects the title of the icon to which it is attached.

When you attach calculations to an icon, a small equal sign (=) appears over the left corner of the icon in the Design window.

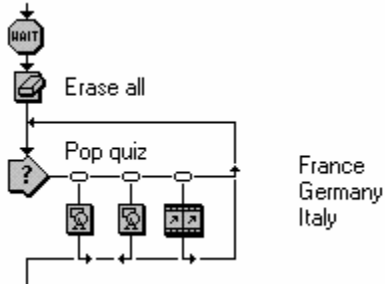


Choosing this command for a calculation icon opens the icon.

Libraries menu

The Libraries menu provides the commands for working with models.

Star allows you to store segments of a file design as models. Models are stored in external files. Each model contains one or more icons on a flowline.



Select icons on the flowline and use the Create Model command in the Libraries menu to store the icons as a model.

When you paste a model, a copy of the model's contents is inserted into your application file. You can then edit the model's icons and options as you normally would. The original model remains in its file, ready to be used again.

Models are like imported graphics. You copy the contents of a model into the Star file. In addition, you also copy structure for models with multiple icons.

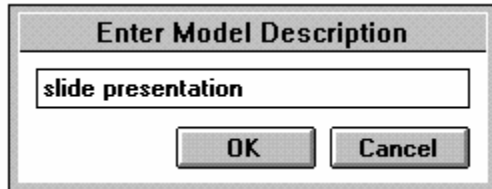
Once a model has been saved as a file, it can be loaded into the Libraries menu using the Load Model command.

If the icons you select to become a model contain custom variables, the variables are created automatically upon pasting the model into a new file. When you create a model, you can select an option that will rename custom variables when the model is pasted into a file that has custom variables with those names.

- Create Model
- Load Model
- Unload Model
- Paste Model

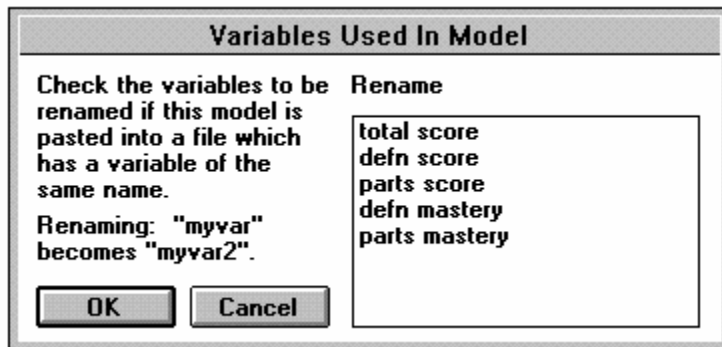
Create Model

In order to create a model, you must first select the icon or group of icons you would like it to contain. Then choose Create Model. A dialog box appears, asking you to enter a model description. This description lets you include more information than may be allowed in the model filename, and it will appear in the Paste Model submenu. You can also see model descriptions in the [Load Model dialog box](#).



Click OK. The Create New Model dialog box prompts you to select a filename and directory location for the model.

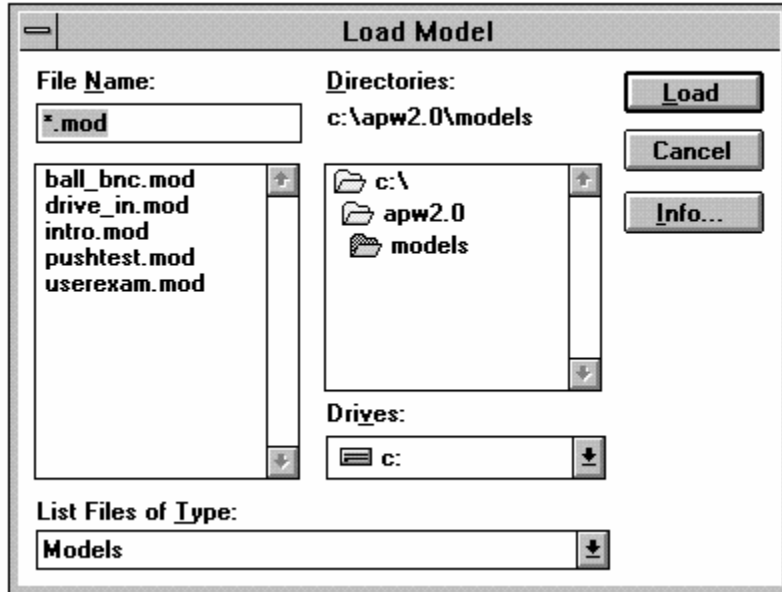
When you create a model that contains calculation icons or attached calculations that use custom variables, you are asked whether custom variable names should be renamed when loaded into a file that already includes variables with those names.



The icons you stored as the model still appear in your application. A copy of those icons is now stored in the model file you created. Whenever you open Star, the model you created will be listed under the Paste Model submenu in the Libraries menu. The Paste Model submenu is only active in the Design window.

Load Model

To paste a previously created model in your file, you must first load the model. Choose Load Model. Star prompts you to select a file to load.

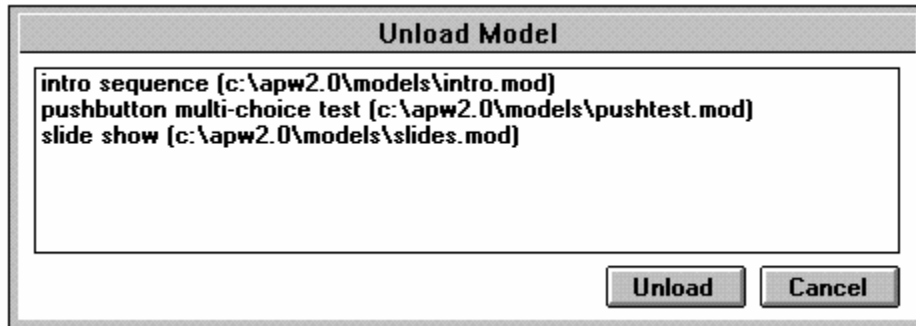


Click Info to see the description of a selected model.

Once you click Load, the model appears in the Paste Model submenu.

Unload Model

Unloading a model removes it from the Paste Model submenu. You may want to unload models that you don't plan to use often or that you want to replace. The model isn't deleted from the system, but only from the Paste Model submenu—you can reload the model whenever you want.



The Unload Model dialog box displays the descriptions and filenames of all models currently loaded and listed in the Paste Model submenu.

Paste Model

To paste a model into your file, you must first load or create the model so that it appears in the Paste Model submenu in the Libraries menu. Then choose the model you wish to paste.

The model is pasted below the paste hand. If you are pasting the model in a decision or interaction icon, and the model contains decision or interaction icons or more than one icon, the model is automatically placed in a map.

Attributes menu

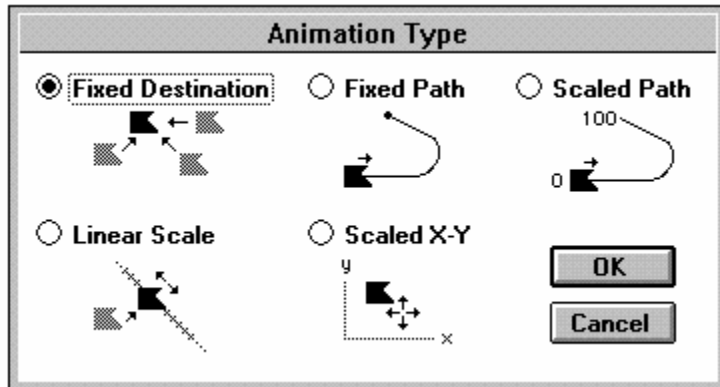
The Attributes menu is available whenever you're editing a display in the Presentation window with the graphics toolbox visible or when an icon that can have an effect applied to it is selected on the flowline.

- Effects
- Lines
- Fills
- Modes
- Color
- Bring to Front/Send to Back
- Show Grid
- Snap to Grid

Effects

When you choose the Effects command (Control-E), the Effects dialog box appears. The options at the top control the presentation of text and graphics, while the remaining options affect display positioning.

Click part of the illustration of the dialog box for more information.



Effects apply to displays, interactions, and movies.

Effect drop-down list

Provides special effects that control how text or graphics in the display icon will be placed on the screen. The erase icon uses the same effects as the display icon, except they are used when erasing a display.

When you select an effect in the menu, Star immediately shows you how the effect will look. For example, the Mosaic effect causes the display to gradually appear in a mosaic pattern while Iris In expands the display from its center.

When you assign a special effect to an icon, the effect applies to all text and graphics in the icon. If you want special effects to apply to a single text or graphic object, put the object in its own icon. Create the text and/or graphics in the icon before assigning an effect to it, since this allows you to preview how different effects will look as you select them.

Consecutive displays and erases with the same effect are displayed in one operation. Externally stored movies can be erased but they ignore effects applied to them.

***Tip:** Effects are best when applied to fairly small display objects. In general, the smaller the object, the smoother the effect. Effects also have the greatest impact when used sparingly and consistently. Use them only when you want to draw special attention to a display, amuse the user, or demonstrate the relationship among objects in a special way. Repeatedly using an effect can have a negative impact.*

Prevent Automatic Erase

Protects the display or movie from being erased by interactions that automatically erase response icons and by branching structures that automatically erase displays.

For example, if you select this option, a display icon presented when a user responds to an interaction will not be erased by the interaction—even if the interaction's erase feedback option is set to automatically erase all feedback. The only way to remove an erase-protected display is by using an erase icon.

Update Displayed Variables

Relates to the variable values displayed in text objects. If this option is checked, variables displayed on the screen are automatically updated whenever the values change, until the display is erased. You might use this option to display information that changes throughout an application, such as the user's score or the time.

This feature can simplify designs; however, continually updating displays can slow down performance.

Erase Previous Contents

Provides a simple way of erasing all displays in the Presentation window at one time. When you select this option for a display icon, all previously displayed objects at the same layer or below this one are removed from the screen before the contents of the current display icon are placed on the screen.

Layer

Layering determines the relative position of objects on screen. Higher layer numbers are closer to the front.

By default, displays are placed in layer 0. By giving a display an appropriate layer number, you can position it above or below other objects. Objects in layers greater than 0 are optimized for erasing and animation. If you notice a jerkiness at the beginning of an animation, try setting the layer to greater than 0. Performance may degrade if too many objects are in layers greater than 0.

Calculate Initial Position

Most display objects do not have calculated positions: they appear on screen where you first place them. Selecting On Area or In Path allows you to define the object's position relative to an area or path. You can draw the path or have it calculated by a variable or expression.

When you select either radio button, the Effects dialog box expands, directing you to drag the object. For more detail on positioning an object, see "[Positioning in an area](#)" and "[Positioning on a path](#)" in Chapter 3.

The screenshot shows a dialog box titled "red rubber ball". The "Drag display to base position" tab is selected. It features two input fields for variables: "target position X" and "target position Y". The "Positioning" section has radio buttons for "Base" (selected), "Current", and "End". Below are two rows of input fields with values 0, 0, and 100. The "Calculate Initial Position" section has radio buttons for "No", "In Area" (selected), and "On Path". The "Movable" section has radio buttons for "No" (selected), "Freely", and "In Positioning Area/Path". There are "OK" and "Cancel" buttons at the bottom.

In area positioning: an object is positioned in an area, based on the values of the variables target position X and target position Y

The screenshot shows the same dialog box titled "red rubber ball", but with the "Drag display to create path" tab selected. It includes "Path Editing" buttons for "Undo" and "Delete Point". The "Positioning" section has a "Variable/Expression" input field containing "bounce". Below are "Base:" and "End:" labels with input fields containing 0, 0, and 100. The "Calculate Initial Position" section has radio buttons for "No", "In Area", and "On Path" (selected). The "Movable" section has radio buttons for "No" (selected), "Freely", and "In Positioning Area/Path". There are "OK" and "Cancel" buttons at the bottom.

On path positioning: an object is positioned along a path, based on the value of the variable bounce

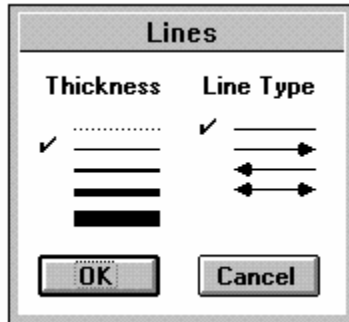
Movable

Most objects on screen can't be moved by the user. When you want to make an object movable, select Freely (so that user can drag the object anywhere, including off the screen) or In Positioning Area/Path, which is used in conjunction with Calculate Initial Position. This is often used with movable object responses, where the user drags an object to a target area. For more information, see "Allowing the user to move a display" in Chapter 3.

***Note:** You can reposition all objects about the Presentation Window while authoring (before the application is packaged). The Freely and In Positioning Area/Path options apply to the end user's ability to move objects.*

Lines

The Lines command (Control-L) lets you set line thickness for all objects except text and bitmaps. You can also set arrow endpoints for lines. To change the line settings, double-click either of the line tools in the toolbox or choose the Lines command from the Attributes menu. If an object is selected, the Lines selection only affects the object; if no object is selected, the default setting is changed.

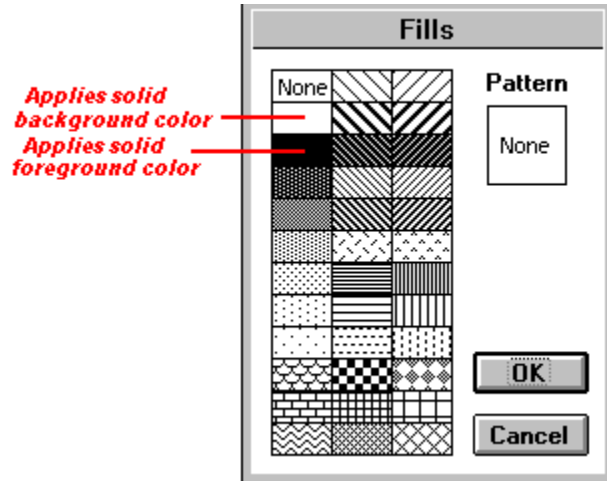


The thickness setting affects not only line objects, but the border of ovals, rectangles, and polygons as well.

Choosing the dotted line at the top of the dialog box produces an invisible line and eliminates the border line surrounding ovals, rectangles, and polygons.

Fills

With the Fills command (Control-D), you can set a fill pattern for any object except text, bitmaps, and lines. To change the fill pattern of an object, select the object and choose the Fills command from the Attributes menu. Double-clicking the polygon, rounded rectangle, rectangle, or oval tool also displays the Fills dialog box. If an object is selected, the Fills dialog box selection only affects the object; if no object is selected, the default setting is changed.

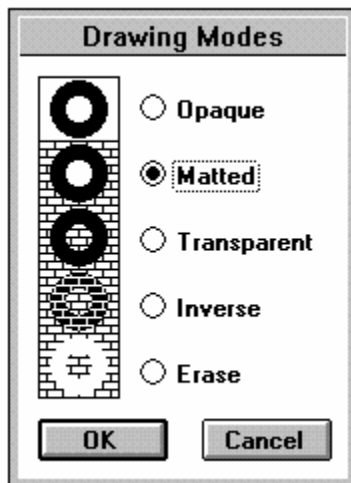


Fills are based on two colors, a foreground color and a background color. The foreground and background colors of a fill pattern can be changed using the Color dialog box. The foreground color is shown as black in the Fills dialog box, and the background color is shown as white.

Modes

Drawing modes determine the effect of overlaying one display object on another or over a background. You can select drawing modes by double-clicking the pointer or by using the Modes command (Control-M) in the Attributes menu.

[Click part of the illustration of the dialog box for more information.](#)



These modes use objects' display layers and foreground and background colors. Set object layers with the Bring to Front and Send to Back commands. Set foreground and background colors with the Color command from the Attributes menu.

Opaque

In opaque mode, an object covers whatever is underneath it. The colored parts of the object show up as color and white areas show up as white.

***Note:** Bitmapped objects in opaque mode can display twice as quickly and use up half as much memory as in other modes. Opaque is the default mode for bitmapped objects.*

Matted

Matted mode is similar to the opaque mode. However, for bitmapped objects, all white space is removed from the edges of the object. White space in the interior of the object is preserved.

Transparent

In transparent mode, an object displays colored parts and lets whatever is underneath show through the white areas.

Inverse

Inverse mode draws an object normally if it is on a white background. But wherever objects underneath are colored, colored parts of the front object are inverted and white parts are transparent.

***Tip:** When you place an object directly over an inverse copy of itself, the objects disappear.*

***Note:** The inverse mode does not select an exact optical inverse of a color. The color chosen is based on both the object color; the color of the object directly underneath, the video driver, and the color palette. Different inverse colors may be selected on an Authorware Professional for Macintosh file when it is converted for use in Windows.*

Erase

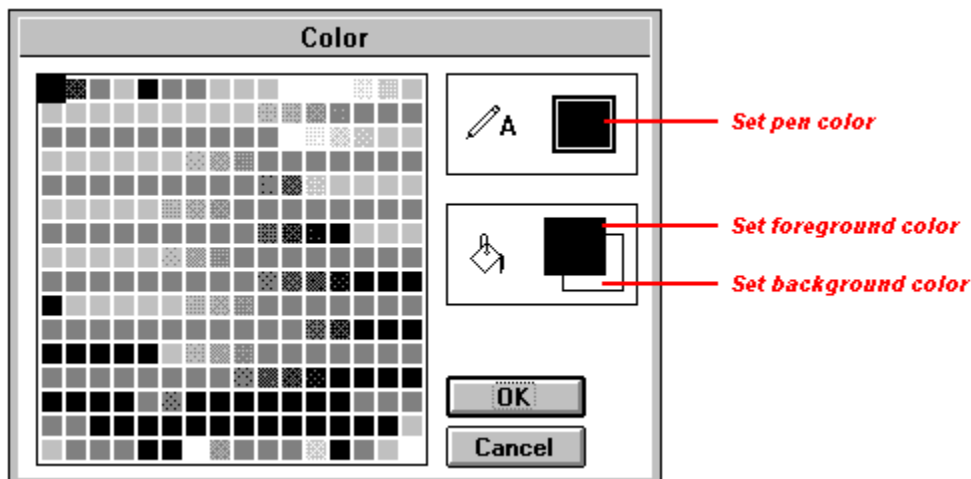
Erase mode makes an object invisible if it is displayed on the file's background color, but where the background is different than the file's background color, the foreground parts of the object appear as the file's background color and the background parts are transparent.

Erase mode produces unpredictable results for color bitmapped objects.

Color

You can assign colors to both the insides and borders of ovals, polygons, rounded rectangles, and rectangles. You can also color text and user text responses. Combine a color with any of the fill patterns. You can also specify colors for lines, monochrome bitmaps, and any range of characters within a text object.

To select a color for an object, select the object and choose Color (Control-K) from the Attributes menu. The Color dialog box appears, showing the colors available. The right side of the dialog box contains squares that represent the pen, foreground, and background colors. Foreground and background colors are set in the Fills dialog box.



- The pen color is used for lines; the frames of rectangles, rounded rectangles, ovals, and polygons; and for text.
- The foreground and background colors apply to the interior of rectangles, rounded rectangles, ovals, and polygons. They also affect imported monochrome bitmapped graphics. The background color also shows up behind text.

Note: The colors in the default Authorware Star for Windows 256-color palette are closely matched to those in the Macintosh system palette, to ensure color consistency across platforms. If you're designing cross-platform applications that will be delivered on 16-color VGA systems, you'll probably want to turn on the Use VGA Palette option in the Authorware Professional for Macintosh File Setup dialog box. You can also load a custom palette in Authorware Star for Windows. See "[File Setup](#)" for more information.

Bring to Front/Send to Back

In Star, objects are automatically layered within a display according to the order in which they are drawn, pasted, or imported. You can change the layering order using the Send to Back and Bring to Front commands.

- If you want an object to appear on top, select it and choose Bring to Front.
- If you want an object to appear on the bottom, select it and choose Send to Back.

Show Grid

You can display a reference grid in the Presentation window to help you position objects. Grid lines are spaced 32 pixels apart.

The grid lines don't appear in the end user's application.

Snap to Grid

With Snap to Grid selected, any object you move will automatically snap to the nearest grid intersection or the nearest intersection of horizontal and vertical lines spaced 8 pixels apart.

Text menu

The Text menu contains options for text objects. This menu is active whenever you are editing a display. You can mix fonts, styles, and sizes within text objects. To choose an option, choose the command in the Text menu.

You can easily change the attributes of existing text by selecting the characters you want to change and then choosing new settings. With the text tool selected and no objects selected, you can choose default settings for each attribute. Once you choose new text attributes, any characters you type use these settings.

- Font
- Size
- Style
- Justification
- Scrolling Text

Font

The fonts that appear in the Font submenu depend on the fonts currently installed on your system.

If you have more fonts installed than will fit in the Fonts submenu, Star will list the most recently used fonts and an Other category will appear at the bottom of the menu. Choose Other to choose a font not listed in the Font submenu.

You can also apply the Font command to the text entry field of an interaction display, affecting text the end user enters.

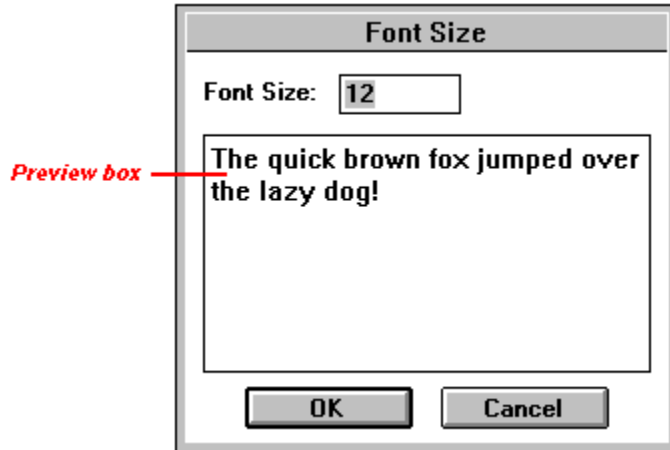
Size

For bitmapped fonts, the Size submenu shows sizes available. For scalable fonts, the Size submenu shows a selection of standard sizes. Use the Other command to specify a custom size. If you specify a custom size, a checkmark appears next to the Other command in the Size menu.

Scalable font sizes can range from 1 point to 10,000 points. For bitmapped fonts, if you select a font that is not available, Star will use the nearest available size or whole multiple of an available size.

Other

Displays a dialog box for specifying a custom font size. In this dialog box, the Font Size field controls the text's size, and the box below displays text in the selected size. Type in a font size and wait to update the text size preview box. Click in the preview box to change the preview text.



You can also apply the Size command to the text entry field of an interaction display, affecting text the end user enters.

Style

The Style submenu offers several style options for your text. Select as many of these options as you'd like, except that Subscript and Superscript can't both be selected at once.

You can also apply the Style command to the text entry field of an interaction display, affecting text the end user enters.

Justification

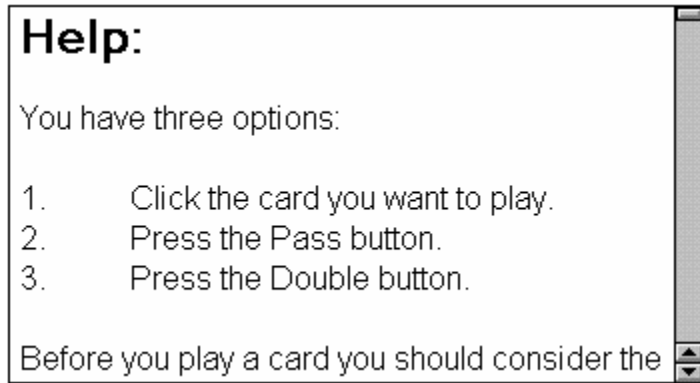
The Justification menu provides three choices that affect an entire text object:

- Left Justify aligns the text to the left.
- Center centers text.
- Right Justify aligns the text to the right.

Scrolling Text

You can display a text object as scrolling text by selecting the object and then selecting Scrolling Text from the Text menu.

Scrolling text fields are useful for displaying large or variable amounts of text.



A scrolling text field

End users may not always choose to scroll through large amounts of text. You may consider using a series of display icons separated with wait icons in place of a scrolling text field.

Scrolling text in transparent, inverse, or erase modes may scroll slowly, depending on what is behind the text.

Try It menu

The Try It menu allows you to see how the file you are building will appear to the user. One of the most useful features of Star is the ability to change a file while you are running it.

- Run
- Run from Flag
- Pause/Proceed
- Show Current Icon
- Jump to Icons/Jump to Display

Run

Choosing Run (Control-R) from the Try It menu starts running your file from the beginning of the flowline. The Presentation window appears and is cleared of any text and graphics that may have been in it. Additionally, variables are reset to their initial values.

You can choose the Run command while editing in either the Design or Presentation window.

Run from Flag

Run from Flag (Control-F) runs your file from the position of the white start flag. This command is available when you have placed the start flag somewhere in your design.

Pause/Proceed

Pause and Proceed (Control-P) stop and resume file presentation. If you pause at an interaction containing active response areas, the response areas appear outlined.

Show Current Icon

Show Current Icon (Control-I) displays and highlights the last icon that was shown in the Presentation window. If necessary, the Design window containing the icon is opened. This option is available from either the Design or Presentation window.

Jump to Icons/Jump to Display

To switch between editing in the Design window and editing in the Presentation window, choose the Jump to Icons/Jump to Display command (Control-J) in the Try It menu. This is useful when the Presentation window takes up the full screen.

