

Tutorial Exercise 2

In this exercise, you'll work with the template interface.

We'll work with the database from exercise one, which contains the fields necessary for an Order/Entry application. In that exercise, the Application Wizard built all the "basics," according to the database structure.

You can think of the Application Wizard as an enormous "head start" for your development projects. Because once you've run the Wizard, the Application Generator allows you to add further customizations. And you don't have to write a single line of code if you don't want to.

The Customizations

Let's add some "finishing touches" to an application built on our Order/Entry database. We'll add a "line total" for each individual order, and a "grand total" for the line totals.

Clarion templates help you place user interface elements that already know how to implement a complete business solution. You don't need to attach the code that totals the records in the list. The template already contains the code. You just indicate what needs totalling by choosing from a list.

The Files

You'll use a dictionary based on the same database used in exercise 1. This time, however, it will include all the tables (five) and additional pre-formatting. For example, we've added descriptions for the keys. These descriptions are picked up by the Application Wizard, which places them on the tabs that select the sort order in a browse window. In the first exercise, when you saw these tabs, they had semi-cryptic prefix-key names, such as CUS:BYNUMBER.

You'll also work with an application file we've created for you. To save you time, we already generated the .APP file using the Application Wizard. We didn't customize it at all. You will, in this exercise.

Skills

In this exercise, you'll learn to:

- Use the Window Formatter.** You'll resize one control and add another to an existing window.
- Use the Listbox Formatter.** You'll add a new column to a listbox created by the Application Wizard.
- Customize Control Properties via the Template Interface.** You'll edit the actions of a browse listbox so that it places a total for one column in an entry box you'll place just below the list box.

- ❑ **Define a Data Variable.** You'll define two new variables, to keep track of the line total on an individual order, and the grand total for the order.

Reminder

We know it's difficult to switch back and forth between the development environment and this document. That's why we've provided another document with all these instructions, formatted to letter sized paper, ready to print. Open the document called D:\DOC\TUTOR02.PDF (where D: is your CD-ROM drive letter) by double-clicking it in Explorer or File Manager, then print it.

Alternatively, if you're viewing this in full screen mode, press ESC to reduce it to a regular window, so that you can ALT-TAB between this document and the Clarion for Windows development environment.

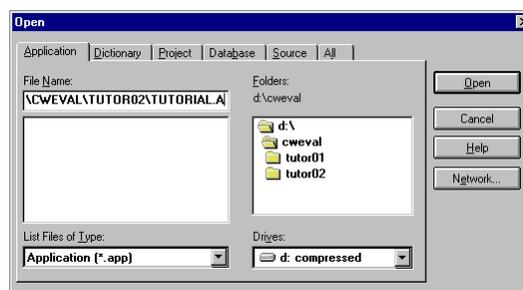
Start the Development Environment

If the development is not already running, open it by choosing it from the Start menu, or clicking on its Program Manager icon. It should look like this.



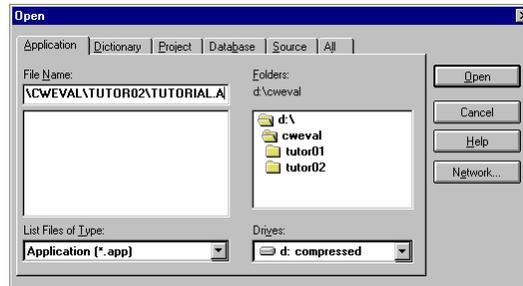
Open the Application File -1-

- ❑ From the development environment menu, choose File ► Open. In the Open dialog, click on the Application tab.
- ❑ Type \CWEVAL\TUTOR02\TUTORIAL.APP in the File Name box of the Open dialog. Then press the Open button.



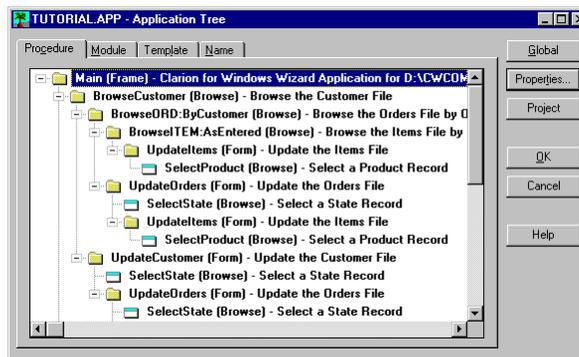
Open the Application File -2-

Note: You can optionally locate the directory called \CWEVAL\TUTOR02 in the folders list, walking the directory tree as necessary by double-clicking folders, and then type in the file name. It's important that you specify the correct subdirectory, because we already placed an application file there.



The Application File

The Application Tree dialog appears. You'll immediately notice a few differences from the previous application. You'll note browse windows, update forms, and reports for three additional tables, Items, Products, and States, in addition to the Customer and Orders tables.



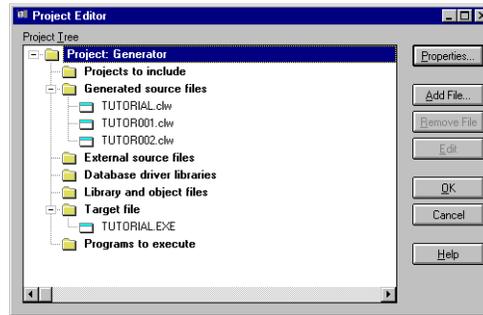
Set a 32-bit Target

As you recall, the default target Operating System for the compiler in the Evaluation Edition is 16-bit Windows 3.1. If you're using Windows 95 or Windows NT, you can change it with a couple of clicks.

If you're using Windows 3.1, [jump ahead](#) four topics.

Project Settings -1-

- Press the Project button. The Project Editor dialog appears, with the top level folder selected. The Project System stores the various compile options and pragma.
- With the top level folder selected, press the Properties button in the Project Editor dialog.



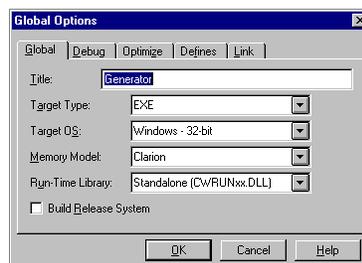
Target OS -2-

- ❑ In the Global Options dialog, choose Windows - 32 bit from the Target OS drop-down list. This specifies you want to compile an application to run on Windows 95 or Windows NT.
- ❑ The full edition of Clarion for Windows allows you compile everything into one single executable file. The Evaluation Edition default—Stand-alone—requires that CWRUNxx.DLL be present when the end user runs your app. Your executables will dynamically link to many functions in the .DLL at runtime. This option is actually helpful for settings where you expect your end user to have many Clarion-created applications on the hard drive; it can literally save megabytes of disk space.

Target OS -3-

This is how the Global Options dialog should look before you close it.

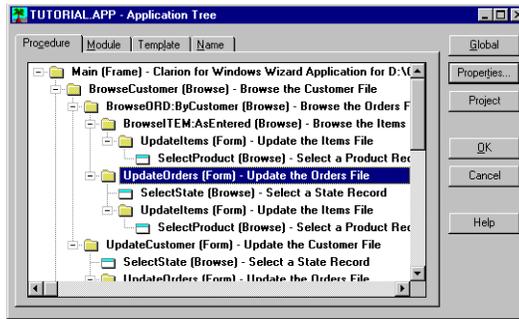
- ❑ Press the OK button to close the dialog box.



Adding a Data Variable

In preparation for adding a total to a browse listbox, you'll define a data variable to hold the running total.

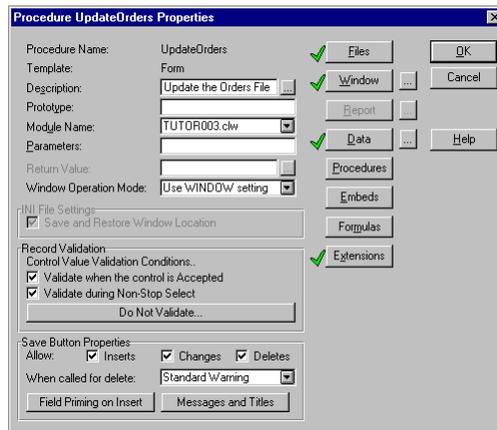
- ❑ Select the Update Orders form in the Application Tree (it should be the seventh procedure from the top, when all the folders are expanded).
- ❑ Press the Properties button.



The Procedure Properties Dialog

The Procedure Properties dialog provides access to all the resources, files, variables, template code, and source code for a procedure. You'll define a new data variable.

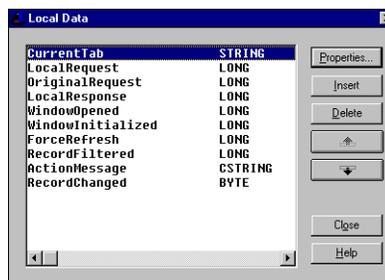
- ❑ Press the Data button.



The Local Data Dialog

The Local Data dialog appears. The template code already defined the variables you see listed. The variable names are self explanatory; for example, CurrentTab is the text on the tab of the sheet currently selected by the end user.

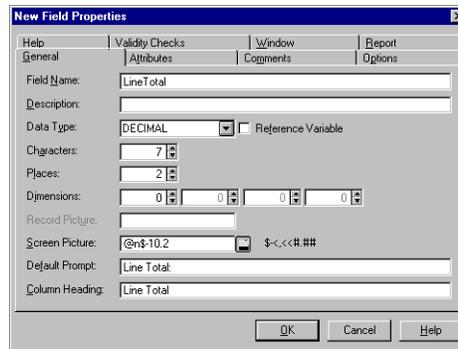
- ❑ Press the Insert button to define a new variable.



The New Field Properties Dialog

Name, type, and pre-format your variable:

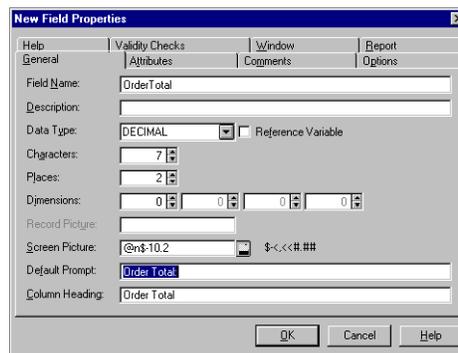
- Type LineTotal (one word) in the Field Name box.
- Choose Decimal from the Data Type list. Since this will hold a currency value, you want to use integer math.
- Type @n\$-10.2 in Screen Picture box. This adds currency formatting for window controls.
- Press OK.



Defining the Second Variable -1-

The New Field Properties dialog reappears, ready to accept a second variable:

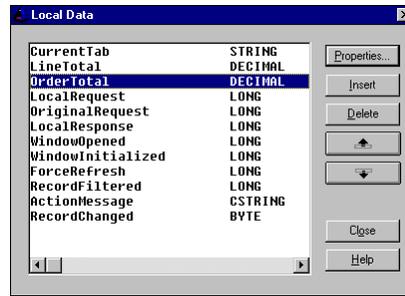
- Type OrderTotal (one word) in FieldName box.
- Choose Decimal from the data type list.
- Type @n\$-10.2 in Screen Picture box.
- Press OK.



Defining the Second Variable -2-

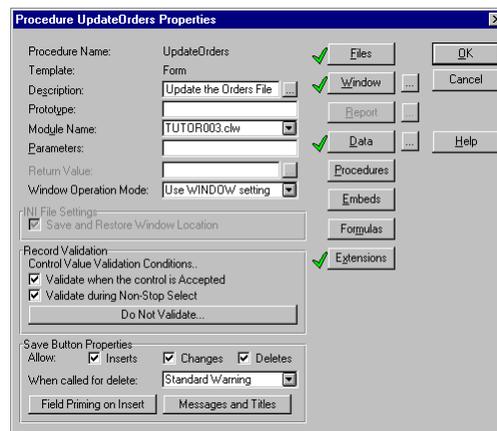
The New Field Properties dialog reappears, ready to accept another variable. Many of the dialogs that allow you to define files, fields or variables cycle to a blank dialog immediately after you define an element, to help you define a series of elements quickly.

- ❑ Press Cancel—you've defined all the variables necessary.



The Procedure Properties Dialog

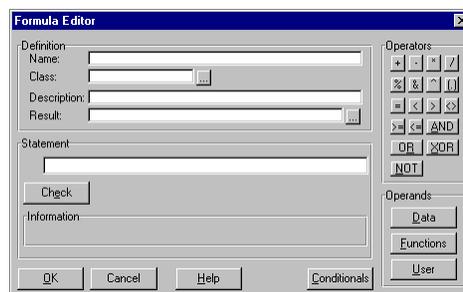
Press Close to return to the Procedure Properties dialog. A check next to the Data button indicates that the procedure includes variables that you've defined.



Defining a Formula

In this section, we'll create a formula to provide a calculated (derived) field in the Items listbox in the "Changing an Order Record" dialog. This shows you the formula editor, which can save you hand coding by automatically constructing Clarion language functions, including conditional structures.

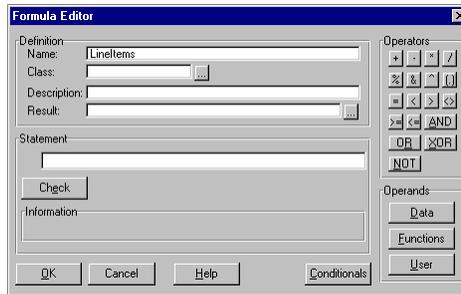
- ❑ Press the Formulas button to open the Formula Editor.



The Formula Editor -1-

You'll create a formula name, using a class that the browse listbox control template already understands how to handle:

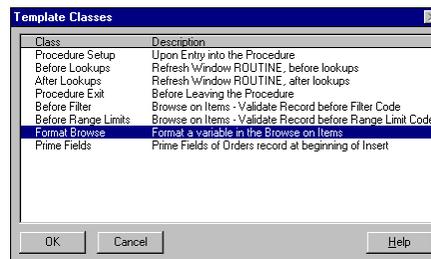
- Type Lineltems (one word) in the Name box.
- Press the ellipsis button (...) next to the Class box.



The Formula Editor -2-

There are several formula classes defined for use in the templates. The Format Browse class calculates a formula, and places the result in a variable for each record read into the browse.

- Select Format Browse.

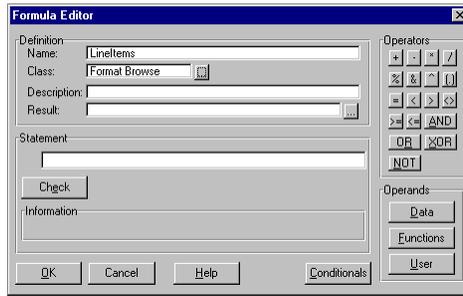


The Formula Editor -3-

- Press OK to close the Template Classes dialog.

Now you can indicate the variable that should hold the formula result for each record read.

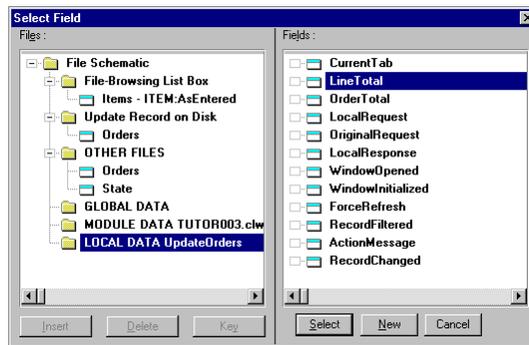
- Press the ellipsis button (...) next to the Result box



The Formula Editor -4-

Choose the variable you previously defined. Notice that you have access to all variables, files and fields in the Select dialog.

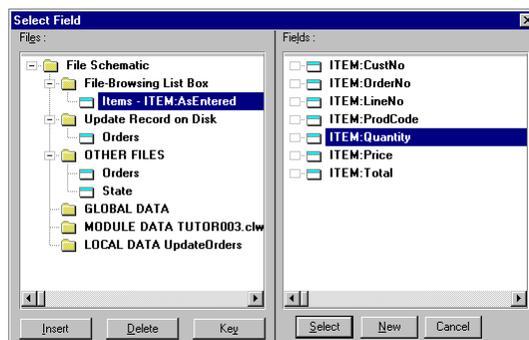
- Select Local Data from the Files list.
- Select LineTotal from the Fields list.
- Press the Select button.



The Formula Editor -5-

Now you can create the formula. The Line Total should be the Quantity of items times the Price per item. You can use the Select dialog to indicate the Quantity and Price, which are fields in the Items file.

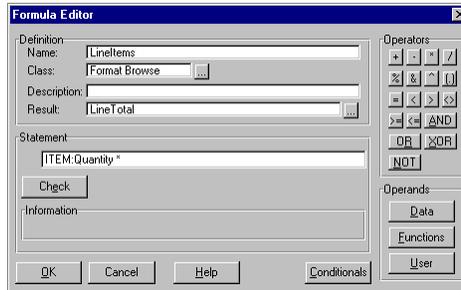
- Press the Data button (in the operands group).
- Select Items from the Files list.
- Select Item:Quantity from the Fields list.
- Press the Select button.



The Formula Editor -5-

You've now chosen one component of the formula. Now you can add the operator:

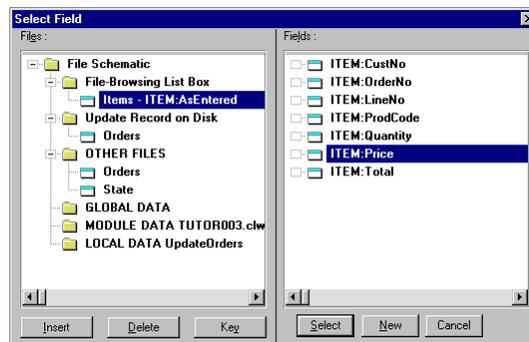
- Type space-asterisk-space.



The Formula Editor -5-

Now you can add the second part of the formula:

- Press the Data button.
- Select Item:Price.
- Press the Select button.

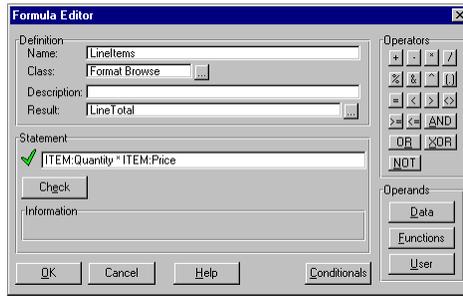


The Formula Editor -6-

Now you can use the Formula Editor to check the syntax of the statement you've constructed.

- Press the Check button.

A checkmark will appear next to the statement, to confirm that the syntax is correct.

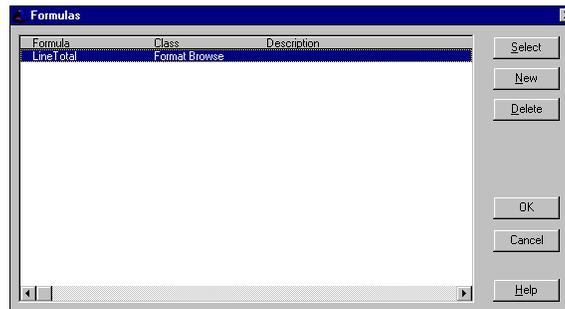


The Formula Editor -7-

- Press OK; you only wish to create the single formula.

You've finished the formula. The Formulas dialog will appear to allow you to enter a second formula.

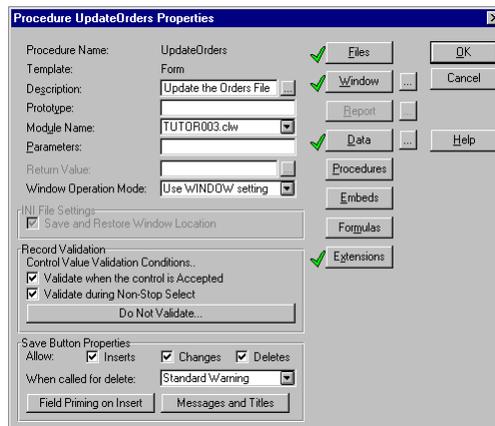
- Press OK.



The Formula Editor -8-

You can now close the Procedure Properties dialog.

- Press OK.
- Choose File ► Save, to save your work so far.



Editing a Window

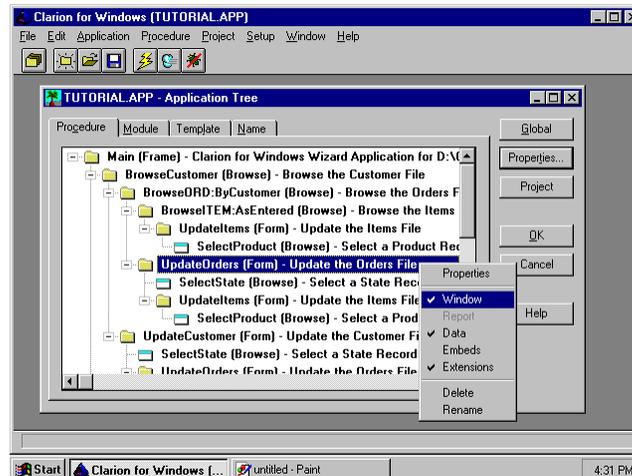
You'll now use one of the visual design tools—the Window Formatter—to edit and add controls to a window.

You'll add a line total column to the listbox in the “Changing an Order Record” dialog. You'll also add an edit box which automatically holds the grand total for this column. The edit box will appear below the listbox.

These controls will reference the data variables you just created.

Opening a Window

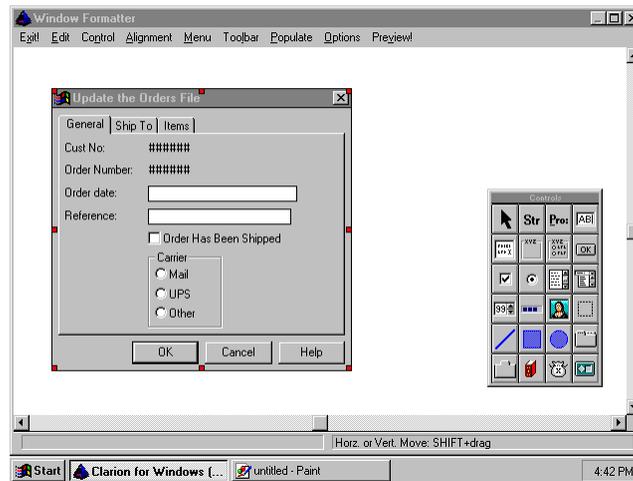
- Locate the Update Orders form in the Application Tree (it should be the 7th procedure from the top, when all the folders are expanded).
- Right-click on this procedure name, then choose Window from the popup menu. This allows you to edit the window contained within the procedure.



Editing a Window

When you first open the procedure, it should look something like the one below.

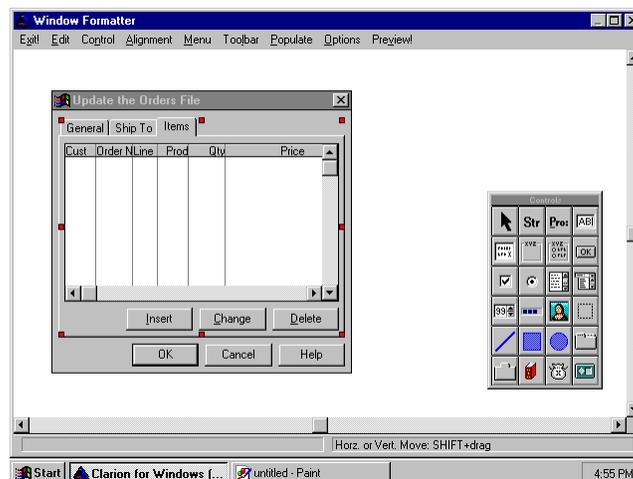
Notice the checkbox. This was provided by a pre-formatting option in the dictionary, for the Shipped field.



Select the Items Tab

This dialog is an update form for the Orders table. It includes a tab that displays related records in the Items table (the products that belong to this particular order, along with their quantity and price).

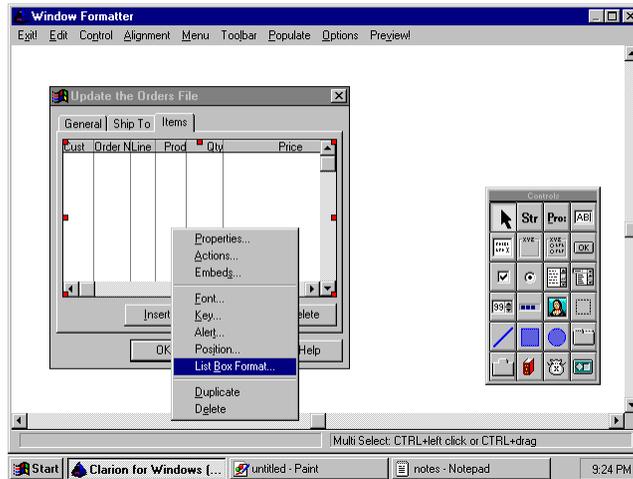
- Click on the Items tab, to bring it to the front.



Totaling a List Box -1-

First, you'll add a total for the price column.

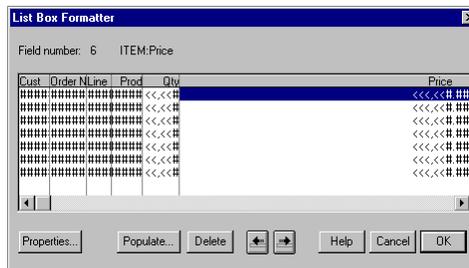
- Right-click the listbox, and choose List Box Format. This provides access to the List Box Formatter, which helps you populate and format fields and variables for the list box.



Totaling a List Box -2-

Place the line total field as the last field in the list box.

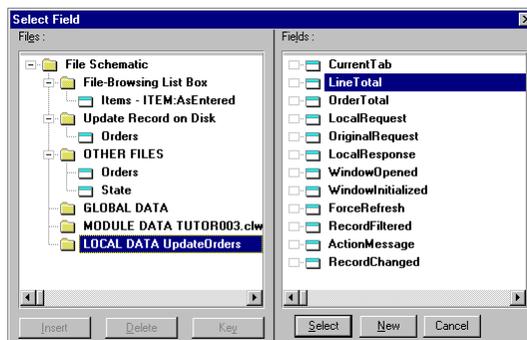
- Click on the first row of the last column (the Price column):



Totaling a List Box -3-

Choose the data variable you defined:

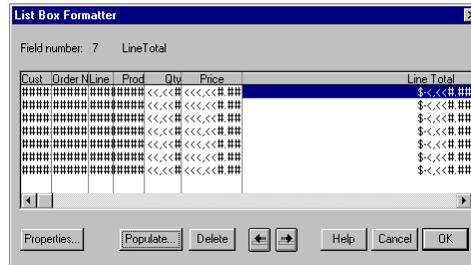
- Press the Populate button.
- Select Local Data.
- Select LineTotal.
- Press the Select button.



Totaling a List Box -2-

The listbox formatter also allows you to format the field. You can add resizable column lines, split a record to add a second “row,” set the listbox background color, and choose other options. For this exercise, just accept the field options set for the variable (currency formatting).

- Press OK to close the listbox formatter:



Editing the Window -1-

We need to resize a control in the window, to make room for another field.

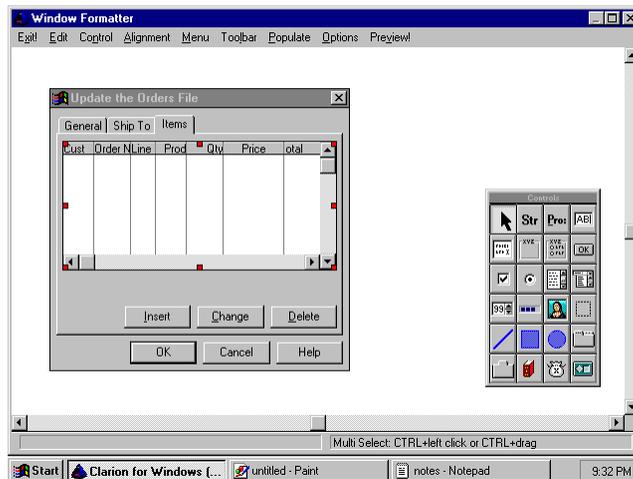
First, a word for developers who haven't spent a lot of time with visual design tools: you're going to spend a surprising amount of time “touching up” windows for size, alignment, and generally just “pretty-ing up.” This is just one of those “facts of life” related to windows programming, no matter what tool you use.

The great thing about Clarion for Windows is that the Application Wizard does so much more “real programming” that it frees you up for the “pretty-ing up” time.

Editing the Window -2-

You need to provide for a blank space below the list box, in which you'll place the Order Total field.

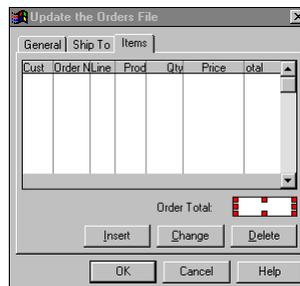
- Left click on the list box, and drag the center bottom handle up just a little bit—enough to fit an entry box.



Editing the Window -3-

Here's how you place a variable (or database field) in a window:

- Select the Dictionary Field tool from the tool box palette .
- Select Local Data.
- Select OrderTotal.
- Press Select.
- Click below the list box, in line with the left side of the Change (middle) button.



Editing the Window -4-

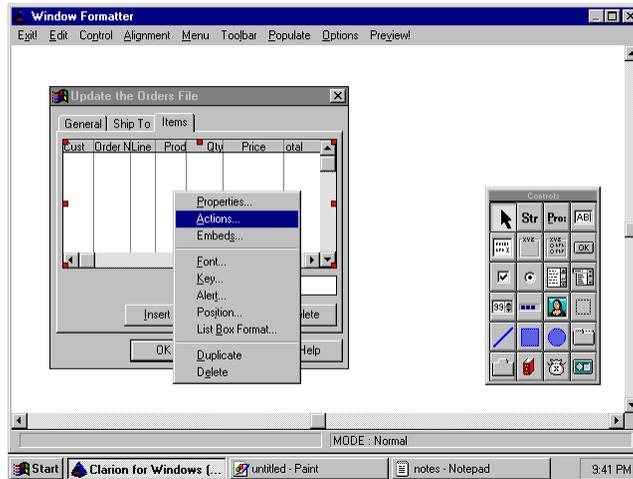
The Select dialog reappears, ready to place another field or variable.

- Press Cancel; you only need to place the one field.

The Template Interface -1-

Access the template interface for the browse list box control. It contains options which allow you to sum, count, or average any column in the listbox, and place the result in an edit box outside the list box.

- Right click the listbox.



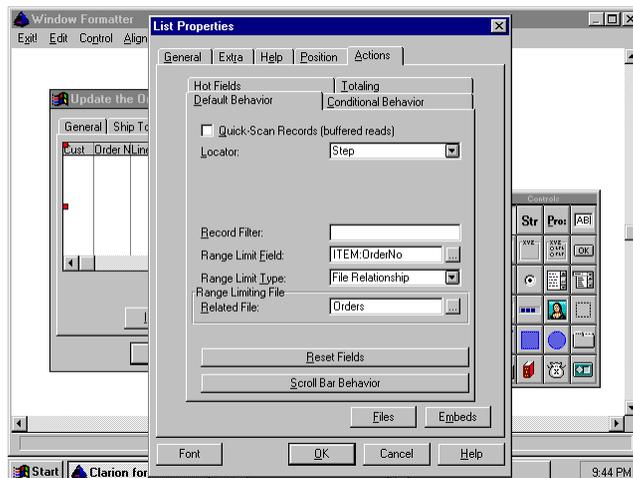
The Template Interface -2-

The Actions menu item displays the design-time user interface controls that the template writer included in the template to allow you to set the properties that direct the Application Generator to generate code to support the functionality you request. These controls appear on a property sheet which appears when you choose the menu item.

You can write your own templates. The Template Language Reference describes the various control structures, dictionary, and application symbols that you can access to intelligently generate code. It also describes the controls you can include in your own templates so that you or other members of your development team can choose exactly what code to generate.

The Template Interface -3-

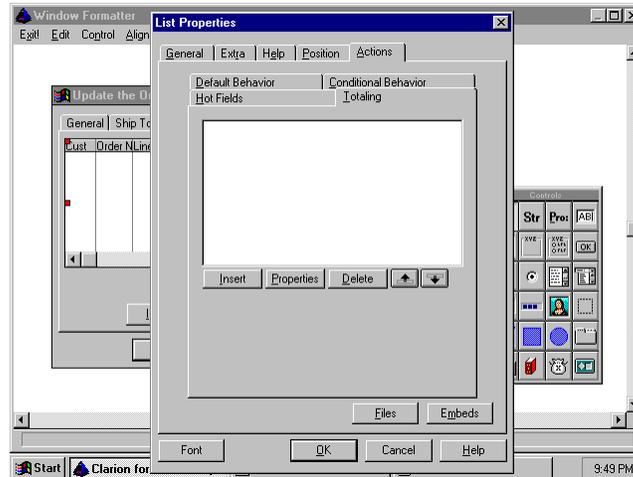
- ❑ Choose Actions.



The Template Interface -4-

To add a browse total, you need to access the controls on the Totalling sheet.

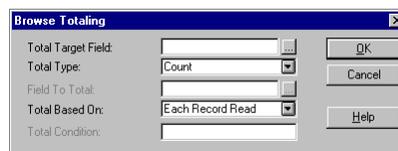
- Click the Totalling tab.



The Template Interface -5-

You can optionally total more than one column; to do so, you choose one at a time. For this exercise, you'll only choose one column to total:

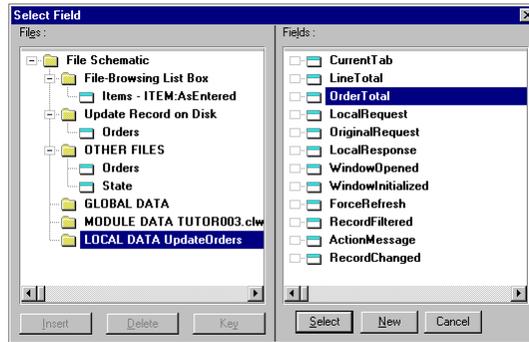
- Press Insert to open the Browse Totalling dialog. This dialog is part of the browse list box control template.



The Template Interface -6-

First you indicate the entry box to hold the total. You do this by selecting the variable that the entry box references, in this case, the Order Total field:

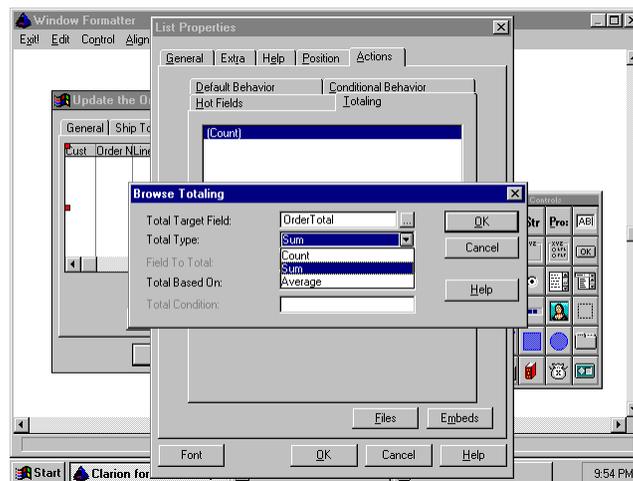
- Press the Ellipsis button next to Total Target field.
- Select Local Data from the Files list.
- Select OrderTotal from the Fields list.
- Press Select.



The Template Interface -7-

Next you indicate the type of totaling:

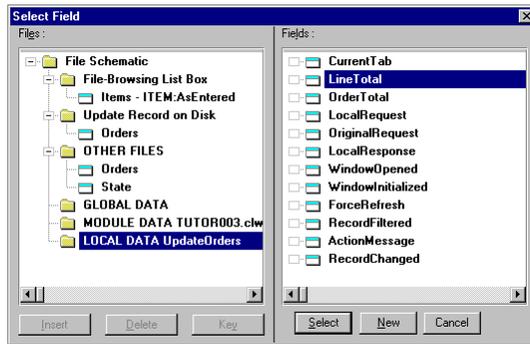
- Select Sum from the Total Type drop down.



The Template Interface -8-

Next, you indicate which column to total, referencing the variable the column contains, in this case, the Line Total:

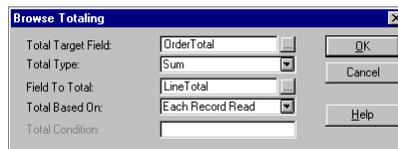
- Press the ellipsis button (...) next to Field To Total.
- Select Local Data.
- Select LineTotal.
- Press Select.



That's All Folks... -1-

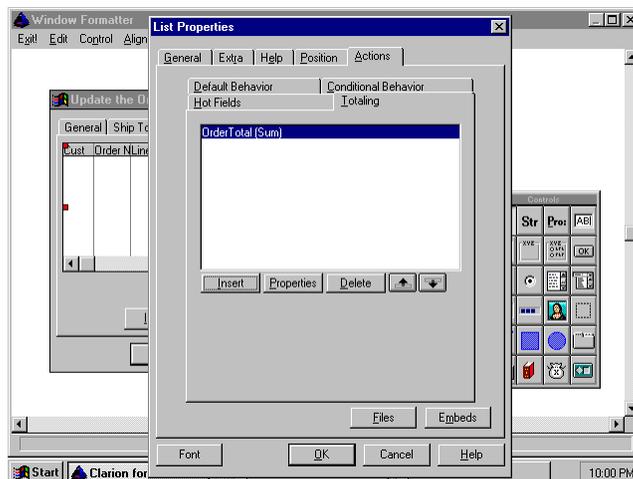
That's it. You're done. You're now an expert. You just have to close the dialogs and formatter windows, then recompile:

- Press OK to close the Browse Totaling dialog (this is a template dialog).



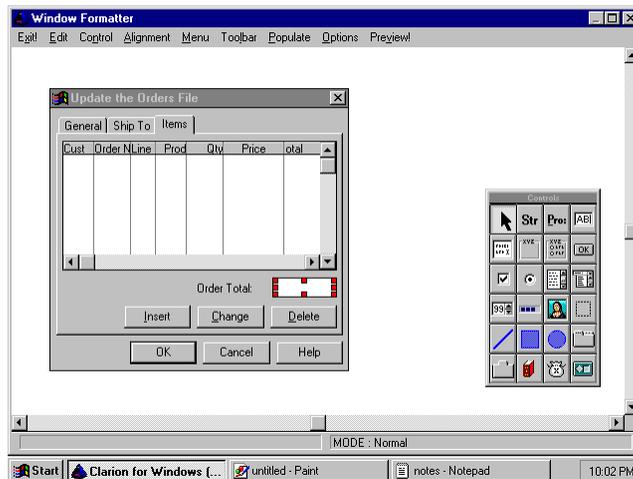
That's All Folks... -2-

- Press OK to close the List Properties dialog.



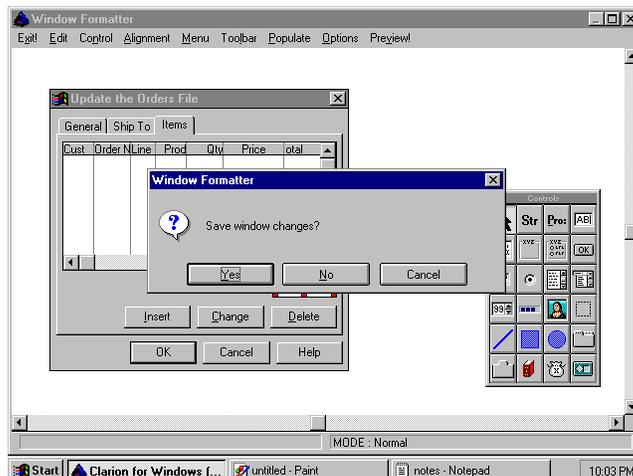
That's All Folks... -3-

- Choose Exit to close the Window Formatter:



That's All Folks... -4-

- Press Yes to save your changes to the Window structure:



That's All Folks... -5-

Save your file, then recompile and run the app!

- Choose File ► Save to save your work so far.
- Press the Make & Run button. This is an incremental compile, so only one module (the one containing the window) will be recompiled.

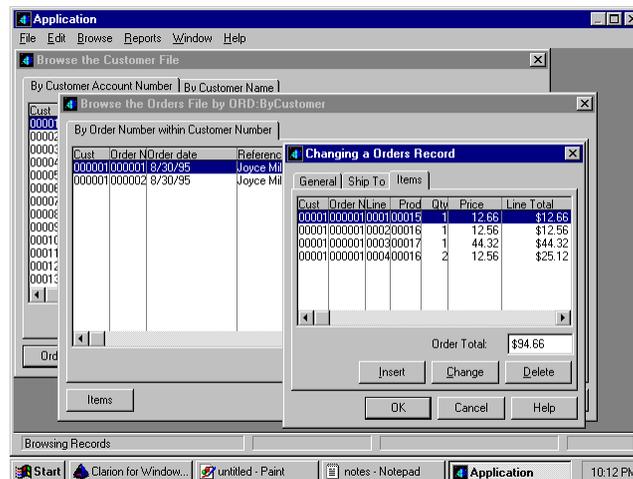
That's All Folks... -6-

Check your work. With the application running,

- Choose Browse ► Browse Customer Information File .
- Double-click on the first record in the list to display the Changing a Customer Record dialog.
- Click on the Orders tab to see the related Orders.
- Double-click on the first record in the list to display the Changing an Orders Record dialog.

That's All Folks... -7-

- Click on the Items tab to see the related Items. You'll find the Line Total and Order Total on this sheet.



Where to Go From Here -1-

Would you like to take a shot at creating an application from your own data files, now? Be sure to work with a copy of your database first, until you're more familiar with Clarion.

Do you have dBase or Clipper files? You can use the direct drivers. For Microsoft Access files, you can use an ODBC driver (note: you cannot use the Microsoft Office 4.x Access driver—it's designed **only** for use by Microsoft Office! Be sure your Access ODBC driver—ODBCJT16.DLL or ODBCJT32.DLL—is version 2.00.23.17 or higher. Select the driver in File Manager or Explorer and choose File/Properties).

Where to Go From Here -2-

If you'd like to continue doing exercises, we suggest reading the document containing the Getting Started manual. This is a 200 page book with a more comprehensive tutorial than the exercises you've followed here. You actually create the database, and build the application step by step.

There's no limit to the functionality you can include in a Clarion application. Be sure to look in your \CWEVAL\EXAMPLES subdirectories for several example apps. We included an icon in your Clarion program group for the **Tree** application, as a representative sample app.

Thank you for following the exercises.