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Welcome to Widget Workshop

Using Widget Workshop

What *Is* Widget Workshop, Anyway?

Widget Workshop is your very own mad scientist's laboratory. It's a special place inside your computer that you can go to play with all sorts of parts and pieces and hook them all together to see what happens.

What's a Widget?

A widget is anything you build in your Widget Workshop! Widgets can be puzzles, experiments, silly machines, strange inventions or anything else you can think of. There are hundreds of parts and pieces in the workshop—you can build *millions* of different Widgets.

What Can I Do with Widget Workshop?

You can solve the pre-built Widget puzzles – and make up your own puzzles to stump your friends. You can create Widgets to carry out experiments to solve science problems. You can create your own weird and wondrous Widgets that do almost anything (or nothing at all)! You can just play with science and have fun.

And you can save your Widgets in a special way so they will run on your friends' and your school's computers – even if they don't have Widget Workshop.

Hey! Wait a Minute! Fun with Science???

That's right! Widget Workshop lets kids (well, OK, grownups, too) have fun playing with science. We've all heard people say that science is too hard−or just plain boring. But those people are wrong! They just don't know what science is really about.

Science is about all these things and a lot more:

Rockets	Soil erosion
Ecology	Explosions
Bugs and germs	Slime and worms
Plants and Animals	Dinosaurs
Airplanes and helicopters	Computers
Brains	Machine
Thoughts and dreams	Numbers and math
Nurses and doctors	Climate and weather
Planets and stars	Rocks and minerals
Strange sounds	Waves and vibrations
Movie monsters	Video games

But above all, science is the *real* magic in our world. And science is fun−if you look at it right. And the most fun way to look at science is from the point of view of a mad scientist.

What's all that Other Stuff in the Box?

There are a number of different tools and toys in the box to play and experiment with. They can be used by themselves, or along with computer widgets. An explanation of all the tools and toys — and some fun ways to use them — can be found in the Widget Workshop Activities and Experiments Book.

The Widget Screen

{ewc D2HTools, D2H_256Color, help0001.bmp}

There are five areas in your Widget Workshop for Windows:

The Title Bar at the top shows the name of the Widget and holds the buttons for maximizing, minimizing and closing the window. Click and drag the title bar to move Widget Workshop around on your screen (if it's not maximized).

The Menu Bar is where you access the menus.

The Work Area is where you build your widgets.

The Control Box (with the Stop, Go, light and speaker buttons) lets you start and stop widgets and control sound and lighting.

The Tooltray (the other thing with all the buttons) lets you select the different parts for your Widgets, and choose the different tools to move, connect and remove the parts.

The Control Box

The Control Box lets you start and stop widgets and control sound and lighting.

{ewc D2HTools, D2H_256Color, help0002.bmp}

Click and drag the top bar to move the Control Box around the screen.

Click GO to make your Widget GO!

Click STOP to make your Widget STOP!

Click the lightbulb to switch the background between light and dark.

Click the speaker to turn the sound on and off.

The Tooltray

The Tooltray lets you select the different parts for your Widgets, and choose the different tools to move, connect and remove the parts.

{ewc D2HTools, D2H_256Color, help0003.bmp}

Click and drag the bar at the top to move the Tooltray around the screen. If you point to something with your mouse, its name will appear in the bar.

Click {ewc D2HTools, D2H_256Color, help0004.bmp} to activate the Pointer tool for selecting, placing, moving and connecting different parts.

Click {ewc D2HTools, D2H_256Color, help0005.bmp} to activate the Cut tool, for removing different parts and connections.

Click {ewc D2HTools, D2H_256Color, help0006.bmp} to activate the Move tool to move the Work Area around so you can see it all.

Click on the buttons along the top to see the different types of parts.

Click on the arrows on the right to see more parts.

If you ever need to know what a part is called, or what a button does, just point at it with the mouse, and look at the top of the Tooltray. You don't even have to click!

The Menus

File Menu

New starts a brand-new widget. If you already have a widget on the screen, you will be given the chance to save it to disk before the new one takes over.

Open... lets you load a widget that has already been saved to disk into Widget Workshop. If you already have a widget on the screen, you will be given the chance to save it to disk before another one is opened.

Load Puzzle opens the Puzzle dialog box so you can pick a puzzle to puzzle over.

Save saves a copy of the widget that is on your screen to disk. If it hasn't been saved before, you will be asked to name your widget. If you save a puzzle, it will turn into a regular widget.

If you save a widget that is too large to be shared with a friend who has the Macintosh version of Widget Workshop (larger than 720 x 540 pixels), you will be asked if you want to have Widget Workshop automatically squeeze it so it will fit on a Macintosh.

Be sure to save your widgets to disk often!

Save As... lets you rename a widget as you save it, and/or save it to a different disk, folder or directory.

Revert is a go-back. If you're working on a widget, and decide you like it better the old way, choose Revert. Widget Workshop will change the widget to the way it was the last time you saved it. If you haven't saved it yet, you can't revert.

Import a Stand-Alone Widget lets you load a Stand-Alone Widget into Widget Workshop to change it. When you are done changing it, if you want the fixed-up widget to be a Stand-Alone Widget, then be sure to choose **Save Into a   Stand-Alone Widget.** If you just choose **Save** or **Save As...** it will be a regular widget that will only work on computers with Widget Workshop.

Save Into a Stand-Alone Widget lets you save a widget as a complete program that will run on your friends' or your school's computers even if they don't have Widget Workshop.

If you save a Stand-Alone widget that is too large to be shared with a friend who has the Macintosh version of Widget Workshop (larger than 720 x 540 pixels), you will be asked if you want to have Widget Workshop automatically squeeze it so it will fit on a Macintosh.

Stand-Alone widgets will only work on the same kind of computer they were created on, so if you have a Macintosh, it will only work on Macintoshes, and if you have Windows, it will only work on computers with Windows.

Page Setup... lets you print out your widget. If you can, set your printer to print the widget sideways (sometimes called Landscape). That way, the whole widget will fit on one page.

Print... prints out the widget that is currently loaded into Widget Workshop.

Quit ends Widget Workshop. If you are working on a widget and haven't saved your most recent changes, you will be given the chance to save it to disk before Widget Workshop quits.

Edit Menu

Undo lets you backtrack one step. For instance, if you delete a part by accident, you can choose **Undo** to

bring it right back without searching for a new part in the Tooltray.

Clear Work Area removes all parts and connections from the Work Area.

Be careful with this one! If you choose Clear Work Area by accident, open the Edit menu and select Undo right away!

Remove All Connections deletes all the connections between all the parts in the Work Area, but leaves the parts there.

Remove All Joints deletes all the blue joints from all the connections on the screen. All the connections and parts will stay where they are.

Fit Work Area... opens a dialog box that lets you choose a screen size. After you choose the screen size and click OK, Widget Workshop will move all the parts of the widget so they'll fit into the screen size you chose. No parts are removed. When the parts are moved, all the connections remain intact, but labels and stickers may need to be tidied up by hand.

This menu item is useful if you get a widget from someone else who has a larger screen, if you want to give a widget to someone who has a smaller screen, or if you just want Widget Workshop to squeeze all your parts together so they'll all fit on your screen.

Options Menu

This menu lets you choose different backgrounds for Widget Workshop. A checkmark shows which background has been chosen. Each background will change when you click on the Light button in the Control Box.

Plain Background chooses a plain white background or a plain black background.

Metal Waves chooses a light-colored wavy metal background or a dark-colored wavy metal background.

Noise chooses a light speckled background or a dark speckled background.

Steel chooses a metallic (corrugated steel) background or a dark tile background.

Help Menu

About Widget... brings up a small window that gives important information about Widget Workshop and lists all the people who helped to create it.

Contents opens the Windows on-screen help system to the table of contents, so you can easily look up anything you want to know.

Widget Troubleshooting

Widgets can be very complicated, and sometimes they don't work the way you expect or want them to. If you have problems getting your widgets to behave, look through these questions and answers. They may solve your widget problems.

Why won't the Three-Digit Constant or the Numeric Keypad let me change their numbers?

You can only change these numbers *while the widget is running.* You can double-click on these parts to open their information windows so you can set their beginning numbers, but you have to click GO in the Control Box and start the widget before you can change their numbers by clicking on them.

I used parts to make sounds in my widget, but I don't hear sounds. What's wrong?

First, you can only hear sounds if you have a sound card that is capable of playing digitized sounds properly installed in your computer.

If you have a sound card installed and you still don't hear them, then be sure you hooked up a speaker to the parts that make sound. You can't hear sounds without a speaker.

If all else fails, make sure the volume is turned up on your card. See the manual that came with your computer or your sound card for instructions on adjusting the sound volume.

Three-Digit Display doesn't display what it should. What's going on?

The Three-Digit Display only displays whole numbers, from negative 99 to positive 999. It won't show decimal points. Fractions and decimals will be rounded off to the nearest whole number. If a number is lower than -99 or bigger than 999, a red X will appear over the display to let you know something is wrong.

There is a weird number with a letter "E" in it on the Ten-Digit Display. What happened?

When numbers are too big or too small to be completely displayed in the Ten-digit display, then the numbers will be converted to *scientific notation.* The "E" stands for *exponent.* See Step 15 in the Mad Scientists Guide for more information on scientific notation.

Why is there a red "X" over a part on the screen?

If there is something in your widget that confuses the computer, a red "X" will appear over the part that is causing the confusion.

Things that confuse the computer include:

- Trying to use a number that is too big or too small for a part, like trying to make the Three-Digit Display display four digits, and

- Undefined or invalid mathematical operations, like dividing any number by zero. Nothing confuses a computer more than trying to divide a number by zero.

So any time a part gets confused, it will output a zero and display a red "X," until the confusion stops. Sometimes as the widget runs and you adjust numbers the red "X" will go away by itself, but sometimes you will have to fix your widget.

Also, if you use the Transformer to change the pitch of a sound, and it is too high or too low in pitch for the speaker to play, a red "X" will appear over the Transformer.

Why is a part icon grayed out in the Tooltray?

If lots of part icons are grayed out, then you are probably in puzzle mode. In puzzle mode, many parts are grayed out and unavailable to make the puzzles more of a challenge. This also happens when you don't have enough memory to add any more of these parts to your widget. Sound parts in particular need a lot of memory to work, so these are usually the first to go.

I'm building a big widget, and I can't fit all the parts onto the screen. What do I do?

First, remember that on many computers, there is more room in the Work Area than shows on the screen. Use the Hand tool to move the Work Area around so you can use all the corners and edges.

Another way to save space is to overlap parts on the screen. You can put parts on top of each other and they'll still work--just be sure that all the connections are right and that the parts you'll need to click on while the widget is running are on top.

The Mini Three-Digit Constant is another good way to save space. It can be used instead of the (regular) Three-Digit Constant as long as you don't need to change it while the widget is running.

Widgets can be tricky! They won't always do what you want or expect them to do right away. But if you think about it and keep trying, you can create some wonderful widgets!