

Crocodile Clips Elementary Edition Help Contents

[Start Here!](#)

[Draw Your Own Design!](#)

[Advanced Editing](#)

Start Here!

Follow the simple steps described in this section and by the end you will be experiencing real time physics simulation!

[Opening an Example Design](#)

[Using Controls in Crocodile Clips](#)

[Understanding the Animation](#)

Opening an Example Design

To learn how Crocodile Clips works, you will need to look at an example design. When Crocodile Clips starts, choose from one of the topics on the 'Home' window. You can go to the 'Home' window at any time by clicking on the 'Home' button. The 'Home' button is the button containing a picture of a house.

Using Controls in Crocodile Clips

The worksheets that you open have components which you can control while the simulation is running.

Toggle Switches

To operate the toggle switch, move the mouse pointer over the switch *button* and click the mouse key. The switch contacts close causing the lamps to turn on, and the button changes. Clicking again will open the contacts again.

Push-Button Switches

To use push-button devices, like the push-button switch, move the mouse pointer over the 'push' button and press the mouse key. The switch will close. The component will operate for as long as the mouse key is held down.

To release the push-button switch, release the mouse key.

Sliders

Sliders are used to change variable resistors.

To control sliders, move the mouse pointer over the slider's button and hold the mouse key down. Move the mouse up and down and the slider button will move with the mouse pointer.

Understanding the Animation

Crocodile Clips uses other forms of animation to illustrate what is happening in your designs.

Current Arrows

The current arrows on wires, which can be seen in the example design, indicate the direction of conventional current flow. If the current is zero or very small (less than 10nA, ten billionths of an amp), then no arrow is displayed.

Current arrows and other animation features can be selectively viewed. Have a look at the options on the Viewing menu.

Sound can also be turned on and off - use Mute on the Sound menu.

Advanced Editing

Read on to find out about these powerful advanced editing features:

[Undo and Redo](#)

[Linking a Number of Terminals at Once](#)

[Selecting More Than One Component](#)

[Dragging More Than One Component](#)

[Deletion of Links When Dragging Components](#)

[Copying, Cutting and Pasting](#)

[Labelling Your Designs](#)

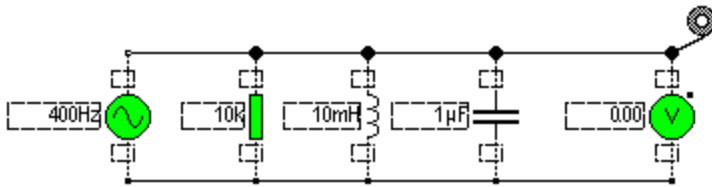
[Adding Your Own Pictures](#)

Undo and Redo

After making a change to a Crocodile Clips design, you can reverse the change by choosing Undo from the Edit menu. If you decide to make the change after all, you can bring it back by choosing Redo.

Linking a Number of Terminals at Once

To connect several electrical terminals which are in a line, run the linker across them and click on the final terminal. They will all be linked.



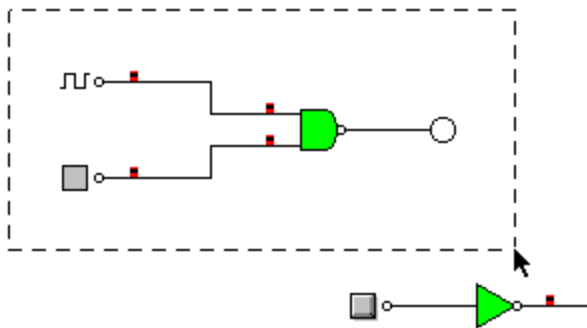
Wiring five terminals at once.

Click on the top terminal of the sine wave generator, and drag the pointer across to the voltmeter. Click on the voltmeter terminal to connect all the terminals that have 'blobs' on them.

Selecting More Than One Component

There are three ways of selecting more than one component at a time:

1. Choose Select All from the Edit menu. This selects everything in the design.
2. Click on individual components while holding down the shift key. Note that you cannot select links (wires) using this method. To deselect a selected component, click again on the component while holding down the shift key.
3. Lasso groups of components. To do this, first click down in space where you want the lasso to start. Next, drag the lasso loop to fully enclose all the links and components that you wish to select, and release the mouse button. You can hold down shift while lassoing to select more than one group.



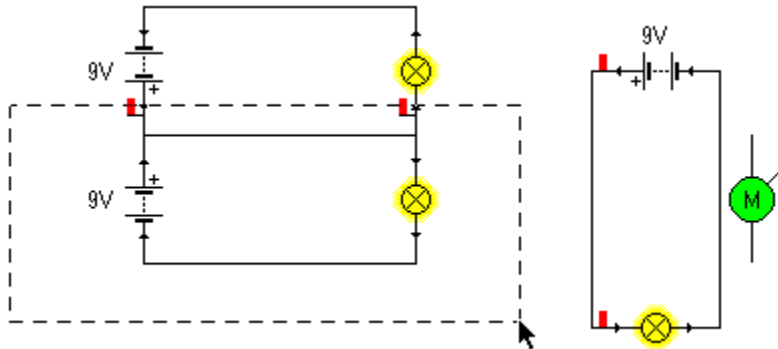
Lassoing components, before the mouse button is released. Everything fully enclosed by the lasso will be selected.

Dragging More Than One Component

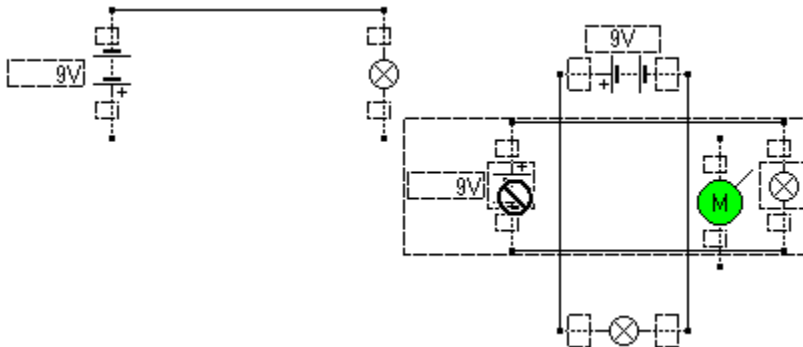
When a number of components are selected, they can be moved in much the same way as a single component is moved. To do this, click down and drag one of the selected components as you would for moving a single component. All the selected components will move with this component.

To drop them, release the mouse key at any point where the dragging pointer is shown. When you release the mouse key, links which cross other links will not connect. Links which touch terminals, however, will be connected to them.

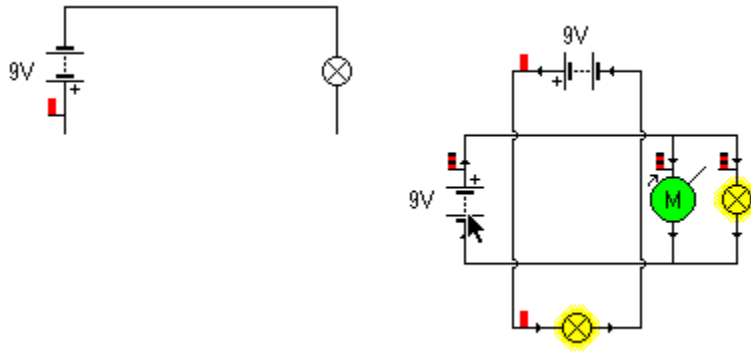
Example of Dragging Components



1. Using the lasso to select a number of components that are already connected. Note that only one battery and one bulb are fully enclosed and therefore selected.



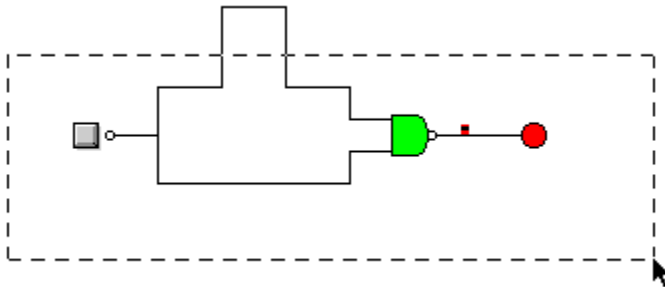
2. The selected components have been dragged, but cannot be dropped as one of the links is over a motor terminal. In this example the dragged components have a dotted box around them so that you can more easily see them.



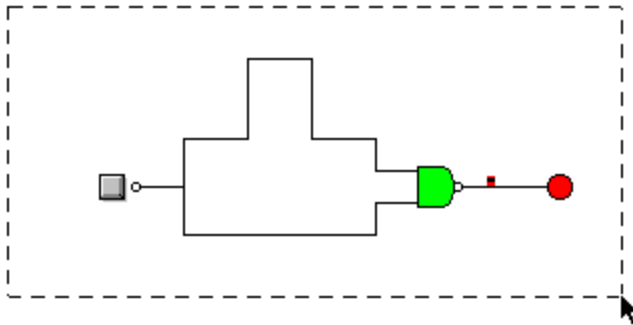
3. The dragged components have just been dropped. Note that the motor terminals have automatically connected and it is turning, and that the links that now overlap have automatically 'crossed over' without connecting.

Deletion of Links When Dragging Components

An important feature of dragging components is how the links to them are disconnected when they are moved. Components and links will only be selected if fully enclosed by the lasso. Any links that were completely within the lasso (or all links if Select All was used for selection) will remain intact when dragged:



There is a loop of wire outside of the lasso. If these components were dragged, this link would be deleted.



Everything is inside the lasso. Dragging this selection would drag everything, without deleting any links.

Copying, Cutting and Pasting

Use these commands to quickly duplicate components, copy components from one design to another, and make reports by pasting into word processing packages.

Copying

To copy any selected part of a design onto the clipboard use the Copy command in the Edit menu.

The Copy Design command copies the entire design to the clipboard. Remember to use the 'lasso' selection method or Copy Design if you want to copy links (wires) as well.

Cutting

The Cut command puts the selection on the clipboard, and also deletes it from the original design.

Pasting

To add components from the clipboard to a design, or to add images of components to other applications, use the Paste command.

Pasting into Crocodile Clips

Use Paste to copy parts of one design into another, or to duplicate components within the same design. When you paste components they will appear under the pointer as if you had just dragged them. For dropping them the normal placement rules apply.

Pasting into Other Applications

Pasting designs into word processing packages is useful if you want to produce a document which includes images of your designs. For example, you could produce a tutorial on a particular subject area.

Labelling Your Designs

To add labels to your designs, choose Text from the Add menu. Text labels are positioned in the same way as components. To alter the text click on it and type new text in the control bar. To move it just drag as normal.

When you increase the amount of text it cannot extend over other components, so you may have to reposition it to fit the text you want. Crocodile Clips remembers the last text you wrote and uses this as the default text for the next label - helpful when adding several similar labels.

Adding Your Own Pictures

To add a picture to your design, e.g. your school logo, choose Picture from the Add menu. Use the 'Open' dialog box that appears to choose the picture you want. Position the picture in the same way as a component.

When the design is saved, the name of the picture is stored in the design, not the picture itself. When the design is opened, Crocodile Clips will use the first picture found with that name searching in this order: The folder containing the design, any subfolder called 'Pictures' below the design's folder, and finally (if different) where the picture was chosen from. Pictures are bitmaps (.bmp) in Windows and PICT files on the Macintosh.

Draw Your Own Design!

This section takes you through the steps needed to draw circuits:

[Adding Components](#)

[Moving Components](#)

[Deleting](#)

[Linking Components Together](#)

[Disabling Editing](#)

Adding Components

A design is drawn by selecting components from the component library and then linking them together. You can add components the Main Toolbar. To add a component from the Main Toolbar simply drag the component you want to add into the circuit window.

To add a component by dragging

1. Move the mouse pointer over the component you want to add.
2. Press the mouse key and move the pointer downwards while keeping the mouse key pressed. The component will follow the pointer.
3. Release the mouse key at the place you want to leave the component.

There are some places where you are not allowed to place a component. You cannot place a component over the space occupied by another component, and you cannot place a component over links. The mouse pointer will change its appearance from a cross to a no-go sign if the place is not suitable:

Dragging pointer:  No-Go pointer: 

To place components only release the mouse key if the Dragging pointer is shown. To 'put back' (delete) what you're dragging, release the mouse key with the pointer above the toolbar.

Moving Components

To move a single component

1. Move the mouse pointer over the centre of the component symbol. Some components contain a user control as well as a symbol. For example, switches have button controls and variable resistors have slider controls. So be sure to point at the symbol and not at the control.
2. Press the mouse key and keep it pressed. A dotted line appears around the component symbol and the pointer changes to the dragging pointer.
3. Move the pointer and the component will move with it. The single dotted box is replaced with many dotted boxes showing you where all the bar voltmeters and component values are. Also, if wires are attached to the chosen component, they are automatically deleted.
4. Release the mouse key at the place where you want to leave the component.

Just as when adding a component, there are some places where you are not allowed to leave the component. The mouse pointer will change its appearance from the cross to the no-go sign if the place is not suitable.

To move more than one component

See [Advanced Editing](#) to learn how to select and move a group of components.

To change which area of the design you are viewing

Use the vertical and horizontal scroll bars.

Deleting

There are two methods of deleting. You can select one or more components or an entire design and then delete. You can also move the crocodile pointer over individual components and links you wish to delete and click on the mouse button.

Selecting and Deleting

To select a component

Move the mouse pointer over the centre of the component symbol and click the left mouse key. A dotted box appears around the component symbol to show that it is selected.

To select all of the components

From the Edit menu choose the Select All command. A dotted box is drawn around every component to show that they have all been selected.

To select groups of components

See Advanced Editing.

To de-select components

Click in a blank area of the circuit window. The dotted boxes disappear.

Delete components you have selected

Either

- Choose the Define command from the Edit menu.
or
- Click on the crocodile head in the toolbar.
or
- Press the delete key.

Crocodile Deleting

Deleting components by feeding the crocodile

Click on the crocodile button in the toolbar. The mouse pointer changes to a crocodile head with the jaws closed. If you move the mouse pointer over a wire or component the jaws will open to show that the crocodile is ready to eat (delete). Then to delete the component or wire, just click on the left mouse key.

Closed jaws pointer:  Open jaws pointer: 

To return the crocodile to its button

Move the crocodile up to the toolbar and it will disappear.

Linking Components Together




If the terminals (leads) of two components touch each other then the terminals are connected. To connect terminals which do not touch you must add links.

Electrical wires can connect:

- The end of a terminal and the end of another terminal
- The end of a terminal and a point on another wire
- A point on a wire and a point on another wire

Electrical wires are made up from horizontal or vertical wire segments.

Because connections between mechanical terminals are not wires the general word we use for connections between components is 'links'.

Linker (Reel-of-Wire):  Connection:  No-Go: 

Mouse pointers used during linking

To add an electrical wire

1. Move the mouse pointer to the end of a terminal or a point on a wire.
2. Click the mouse key. The mouse pointer changes to the Linker and all of the terminals are re-drawn as dotted lines. You can only wire from the *end* of a terminal or from *any point* on a wire.
3. Move the mouse away from the starting point and a wire is drawn from the point to the Linker. Since electrical wire segments can only be horizontal or vertical, draw in one direction first and then in the other direction.
4. To add more horizontal and vertical wire segments click the mouse. This puts a bend in your wire at that point.
5. Move the Linker pointer to a wire or terminal where you wish to make a connection. If you are allowed to make a connection, the Linker pointer changes to the Connection pointer.
6. To complete the wire, click on the mouse key.

Electrical wire junctions

You are not allowed to connect more than three wires at the same point. If a wire crosses another wire then a loop is drawn to show that the wires are crossing and not connecting.

To delete the link which you are drawing

Click on the mouse key twice at the same point.

To retrace the current link

Move the mouse pointer back along the wire to undo the linking.

If a No-Go pointer appears while linking

This means that at some point along the wire you are not allowed to place a wire. For example, this

happens if the wire crosses the value of a component. If you click the mouse key while the No-Go pointer is shown the wire will be deleted.

To delete a link

To delete a link, use the crocodile in the same way as deleting a component. See [Deleting](#).

Disabling Editing

Once a design has been made, further editing can be prevented. This is useful if you want others to experiment with your design without accidentally changing it. You can operate switches and sliders and graph quantities in the design, repair blown-up components, but you cannot change the design itself.

To disable editing, select 'Disable Editing' in the 'Options' menu. All components disappear from the main toolbar, leaving just the graph controls. Menu options which change the design are also disabled.

