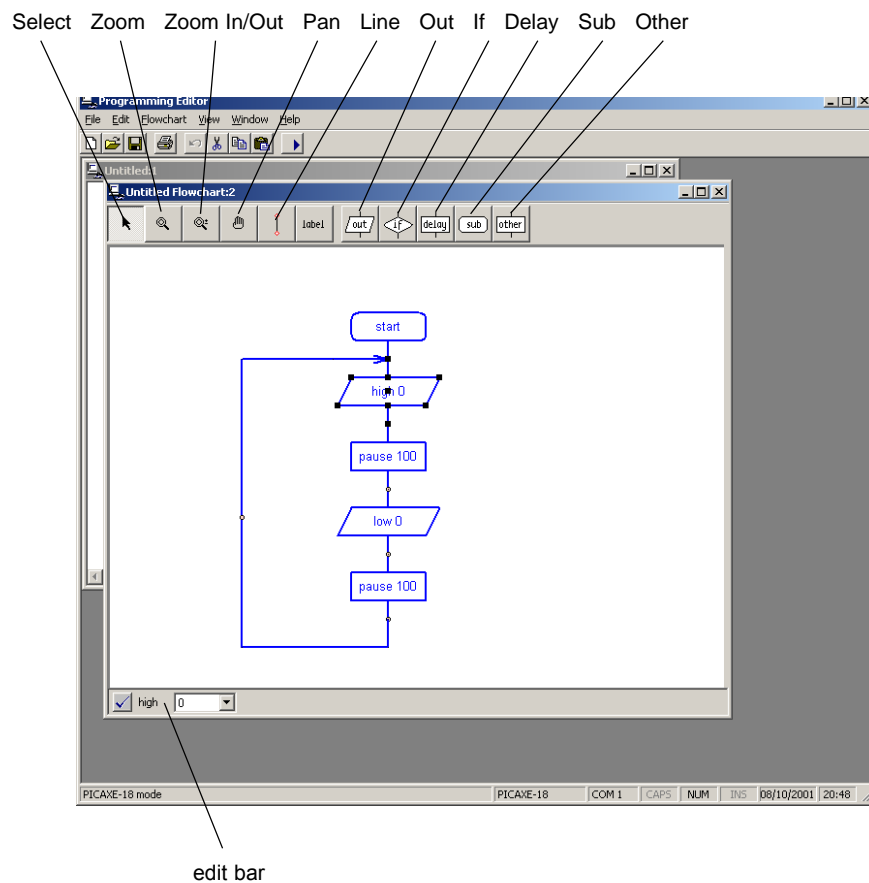


# DRAWING FLOWCHARTS

The Flowchart Editor allows flowcharts to be drawn and simulated on-screen. The flowchart can then be automatically converted into a BASIC program for downloading into the microcontroller.

## Flowchart Screen



### Select Tool

Use this to select and move shapes. When a single shape is selected its BASIC code can be edited in the edit bar at the bottom of the window.

### Zoom

Use to zoom in to an area of the graph. Right click to zoom out.

### Zoom In/Out

To zoom in click and move the mouse up. To zoom out click and move the mouse down.

### Pan

Use this tool to move around the flowchart.

**Line Tool**

Use this tool to draw lines between shapes. Corners can be added by clicking once. When the line is near to a shape it will 'snap' to the connection point.

**Label Tool**

Use this tool to add descriptive labels or titles to the flowchart.

**Out / If / Delay / Sub / Other**

Click on these buttons to move to the command sub-menu to select commands.

**Drawing Flowcharts**

To draw a flowchart click on one of the command menu buttons (out / if / delay / sub / other) on the toolbar to move to the appropriate command sub-menu. Select the appropriate command and then click on the screen where the shape is required. Do not try to locate the shape precisely at first – just drop it in the general area and then use the select tool to move the shape to the correct position.

Once the shape is in position click on it so that it is highlighted. The BASIC code for the shape will then appear in the edit bar at the bottom of the screen. Edit the code as required, and then press the 'tick' button to save the changes.

For further information about each command see the 'BASIC Commands' help file. Note that some unique commands (e.g. servo for the PICAXE28) will only appear when the software is in the appropriate mode (View>Options menu).

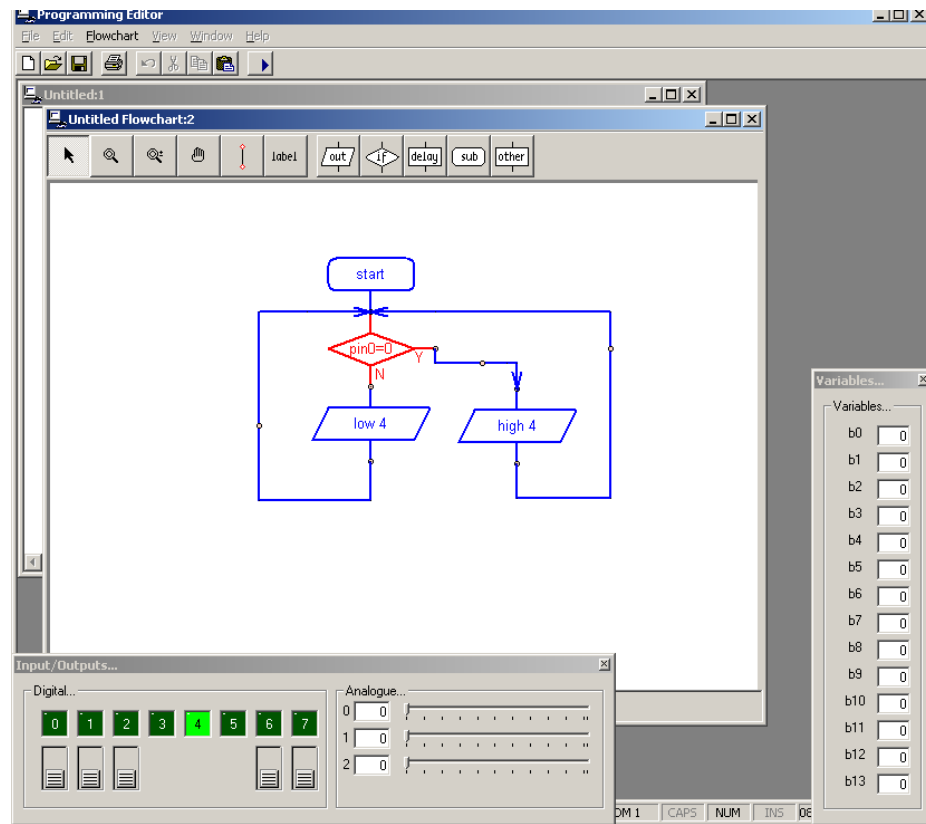
**Joining Shapes**

Shapes are joined by moving them close together until they 'snap' together. Alternately lines can be drawn between the shapes using the 'line tool' from the main toolbar. Note that it is only possible to join the bottom (side) of shapes to the top of other shapes. Only one line is allowed out of the bottom of each shape.

To enable neat diagrams, corners to the lines can be added by clicking with the mouse. When a line moves close to a connection point it will snap into position and then a click will finish the line.

Lines cannot be moved. If you try to move a line it will be deleted and a new line must be created.

## On Screen Simulation



To simulate the flowchart, click 'Simulate' from the Flowchart menu. The program will then start to run on-screen.

As the program runs each cell is highlighted red as it is carried out. The 'Inputs/Outputs' and 'Variables' windows also appear when a simulation is being carried out. To adjust the input values click the on-screen switch or slide the analogue input slider.

The time delay between shapes can be adjusted via the Flowchart options (View>Options>Flowchart menu).

Note that certain commands have no on-screen simulation equivalent feature. In this case the command is simply ignored as the flowchart runs.

## Downloading Flowcharts

Flowcharts are not directly downloaded to the microcontroller. First the flowchart is converted into a BASIC program, which is then downloaded.

To convert a program select 'Convert' from the Flowchart menu. The BASIC program for downloading will then be created.

Shapes that are not connected to the 'start' or 'sub' shapes in the flowchart are ignored when the conversion takes place. The conversion will stop if an unconnected shape is found. Therefore always use a 'stop' shape or line to complete the flowchart before simulation or conversion.

Note that it is possible to quickly convert and then download a flowchart by pressing the shortcut key <F5> twice.

## Using Symbols

Inputs, Outputs and Variables can all be renamed using the 'Symbol Table' from the Flowchart menu. When a symbol is renamed the new name appears in the drop-down menus on the edit bar. Note that you should not use commands (e.g. switch or sound) as a symbol as this will generate errors in your converted BASIC program.

## Saving and Printing Flowcharts

Flowcharts can be saved, printed and exported as graphic files (for adding to word processor documents) via the File menu. Flowcharts can also be copied to the Windows clipboard (for pasting into other applications) via the Edit menu.