Introduction

Welcome Mandelbrot explorer. This program follows in the long tradition of using the computer to make interesting images.

Make the first picture by pulling down the mandelbrot menu and selecting calculate. Stop the calculation at any time by pressing any key on the keyboard.

Zooming In
Mandelbrot Menu
Palette Menu
Accuracy Menu
Window Menu

Zooming In

The easiest way to zoom is to use the mouse: Move the mouse pointer to one corner of the rectangle you want to enlarge, press the left mouse button, drag the rectangle to the size you want, and then release the mouse button.   If the zoom rectangle is not where you want it, try again, or click in the window to erase the zoom rectangle.

Moving the Zoom rectangle

Once the Zoom rectangle is drawn on the screen you may move it around until it is in the position that you want. Move the mouse pointer over the rectangle until it changes into a hand. Press the select button on the mouse and drag the rectangle into the position that you want. Release the select button when you are done.

See also:

The other way to zoom in is to use the Mandelbrot | Set Type... menu selection.
Use Window | Create to make a new window. It will have the position data of the zoom rectangle.
Accuracy has an effect on the quality of the picture.

Mandelbrot Menu

The Mandelbrot menu has two selections:

Calculate tells the program to start calculating and drawing the Mandelbrot set. Stop the drawing at any time by pressing a key.
Set Type brings up a dialog from which you may set the variables that control the drawing.

SetType

Use this dialog to control the type, size and position of the drawing.
The <u>edit boxes</u> allow you to enter numbers that control the picture position.
<u>Combo boxes</u> allow you to set the type of picture drawn.
<u>Buttons</u> give speedy acces to common functions.

See also: <u>Zooming In</u>, <u>Accuracy</u>

Set Types Control Boxes

The edit boxes allow you to set the area that you want to draw.

Left X and **Top Y** specify the location of the top left corner of the drawing area.

Y Extent is how tall the image is.

Magnification is 1/Y Extent.

Max Iterations tells the program the maximum number of times to go through the chosen calculation. The smaller this number is the faster the calculation will run. Use small numbers at low magnification. The larger this number is the more accurate the picture will be. Use large numbers at high magnification.

Type and **Function** determine what picture is drawn. Click on the down arrow to pick from a list of choices. You can set a function type only for functions that have **fn** in the name.

See also: <u>Set Type</u>, <u>Buttons</u>, <u>Accuracy</u>

Set Types Buttons

Use the buttons to quickly set these optons.
Zoom 2 X doubles the magnification.
Zoom / 2 halves the magnification.
100 Max Iter sets Max. Iterations to 100.
900 Max Iter sets Max. Iterations to 900.
Move rt qtr adds a quarter of Y Extent to Left X.
Move lft qtr subtracts a quarter of Y Extent from Left X.
Move dn qtr adds a quarter of Y Extent to Top Y.
Move up qtr subtracts a quarter of Y Extent from Top Y.
OK accepts all the changes made.
Cancel rejects all the changes made.

See also: <u>Set Type</u>, <u>Boxes</u>, <u>Accuracy</u>

Palette Menu

The palette menu lets you select different colouring options

Choose different colouring schemes by picking from **Red**, **Blue**, **Red and Blue**, and **Stripes**. **Cycle** starts colour cycling where the colours are continually moved on the screen. **Stop Cycle** stops colour cycling.

Accuracy Menu

This program uses a quick method to draw the set. It starts by drawing a large rectangle. First it checks the colours around the outside edge of the rectangle. If all the colours are the same, it fills in the square with the colour that was around the edge. If any point on the edge of the rectangle is a different colour, then the rectangle is divided up into four smaller rectangles.

The accuracy menu sets how many tests are done along the edge of the rectangle. Following is the accuracy menu selection and the number of divisions along the edge of each side that are checked:
accuracy 1: 2 divisions
accuracy 2: 4 divisions
accuracy 3: 8 divisions
accuracy 4: 16 divisions
accuracy 5: 32 divisions
Calc all points: all points along the edges are checked until a different colour is found.

The higher the accuracy, the more accurate a picture is made, but the longer it takes.

See also: <u>Calculate</u>, <u>Set Type</u>

Window Menu

The window menu controls creation and display of the windows.

Use <u>Create</u> to make a new window. It uses the type and position data from the currently active window as its initial data.

Create Menu Item in the Window Menu

Create makes a new window. The position data that it starts with is dependent on the active window when you create the new window. If the active window has a <u>zoom</u> rectangle in it then the position of the new window will be determined by the <u>zoom</u> rectangle. Otherwise, the new window will start of with the same position data as the currently active window.

See also: <u>Set Type</u>, <u>Accuracy</u> , <u>Window Menu</u>