

# MadJulia 0.03a – Manual

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## Keyboard Shortcuts

<b>TAB</b>	Switch between <b>Julia Set, Mandelbrot Set, Netwon</b>
← ↑ → ↓	Move the fractal view by 1 pixel adjusting <b>x, y</b> offsets
<b>ALT</b> + ← ↑ → ↓	Adjust <b>c<sub>1</sub></b> and <b>c<sub>2</sub></b> parameters (Julia set only)
<b>HOME</b>	Reset fractal view to center (sets <b>x = 0, y = 0</b> )
+	Increase the iteration count (adds more detail)
-	Decrease the iteration count (removes detail)
<b>Page Up</b>	Increase the hue shift (rotates color gradient in the range 0..359)
<b>Page Dn</b>	Decrease the hue shift
<b>F2</b>	Save fractal parameters with a timestamp to a text file <b>saved.txt</b> and create a <b>.png</b> screenshot saved in <b>screenshots</b> folder
<b>F3</b>	Toggle the screen overlay on and off
<b>SPACE</b>	Center the fractal view on the screen based on the mouse position
<b>ESC</b>	Exit the program

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## Mouse Shortcuts

<b>Left Mouse Button</b> and drag	Click and hold to drag the fractal image to a desired position – hold <b>SHIFT</b> while dragging to snap to 8 fixed angles (multiples of 45°)
<b>Mouse Wheel</b>	Roll the wheel to zoom in or zoom out

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## Reference:

[https://en.wikipedia.org/wiki/Mandelbrot\\_set](https://en.wikipedia.org/wiki/Mandelbrot_set)  
[https://en.wikipedia.org/wiki/Julia\\_set](https://en.wikipedia.org/wiki/Julia_set)  
[https://en.wikipedia.org/wiki/Newton\\_fractal](https://en.wikipedia.org/wiki/Newton_fractal)