User Manual

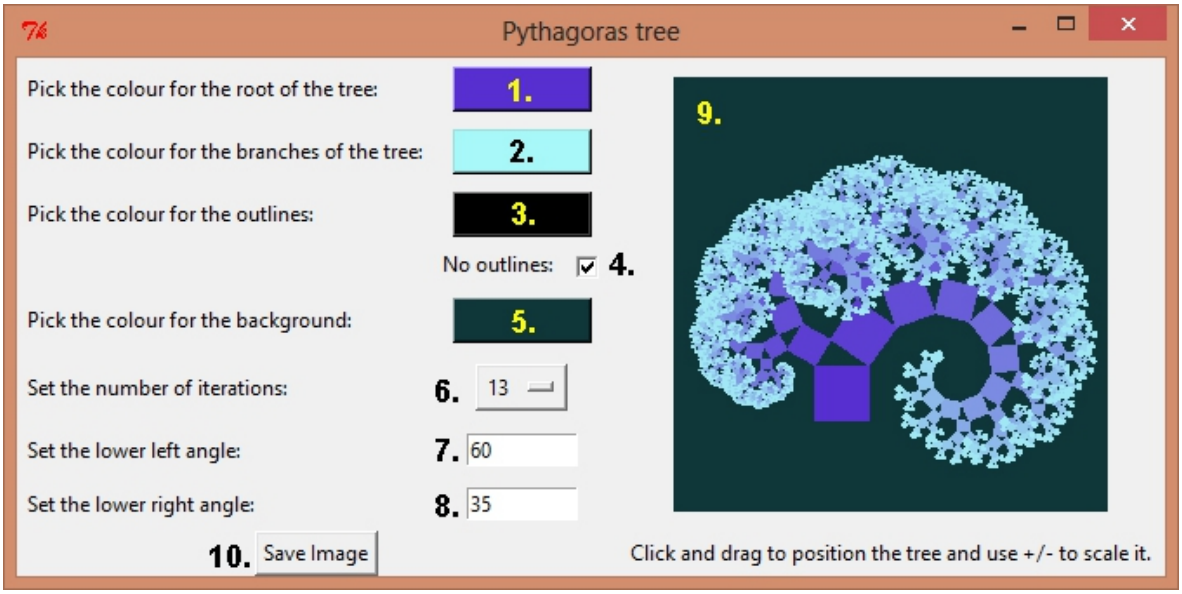
Running the programs:

This project consists of two programs. One for creating a Pythagorean tree, and one for creating a Hilbert curve. To run the program for creating a Pythagorean tree, run the file pythagoras_tree.py. To run the program for creating a Hilbert curve, run the file hilbert_curve.py. Both programs support python 2.6 and require Python Imaging Library and Tkinter.

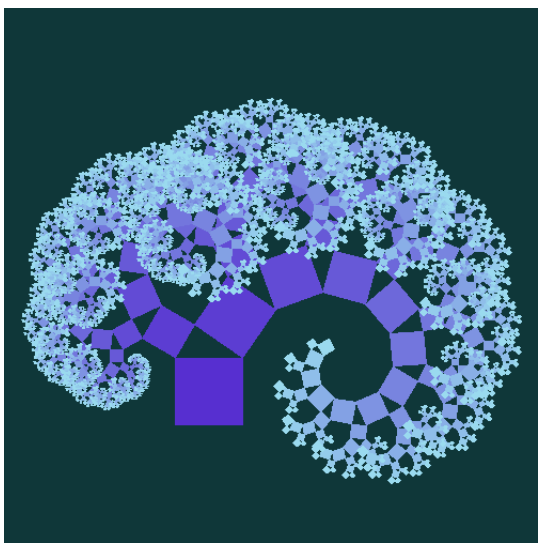
http://www.pythonware.com/library/index.htm

Pythagoras Tree:

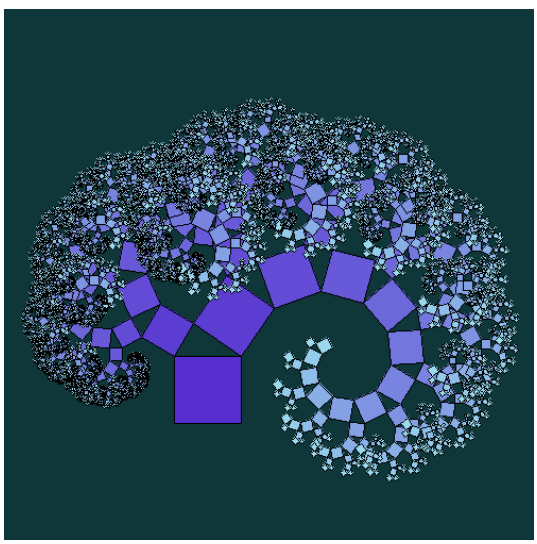
After the file pythagoras_tree.py is run, a window similar to the one below is opened.



1. Clicking this button allows the user to pick the colour for the root of the tree.
2. Clicking this button allows the user to pick a colour for the branches of the tree. The colour of the tree will gradually change from the root colour to the branch colour.
3. Clicking this button allows the user to pick the colour for the outlines of the tree. If the check box 4. is checked, the tree will have no outlines.
4. If this check box is not checked, the squares in the tree will have an outline of the colour specified in 3. If it is checked, the squares will have no outlines. The images below display the different results.



No outlines checked



No outlines not checked

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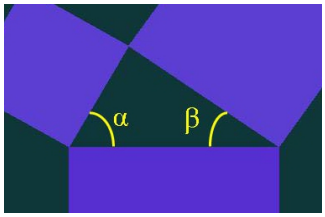
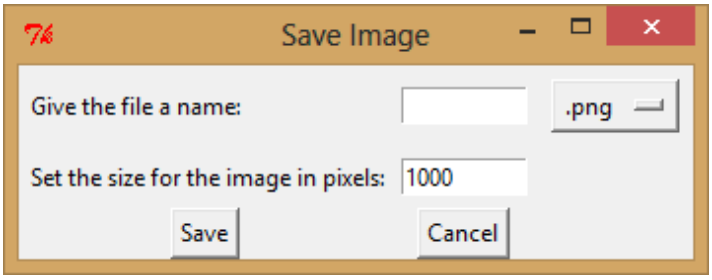
5. Clicking this button allows the user to pick the colour for the background of the image.
6. When clicking this button a menu opens up, where the user can choose how many iterations he wants for the tree, i.e. how many levels he wants the tree to have.
7. This entry field allows the user to type in the angle he wants to give the lower left corner in the triangle that forms between three squares in the tree. This is angle α in the picture.

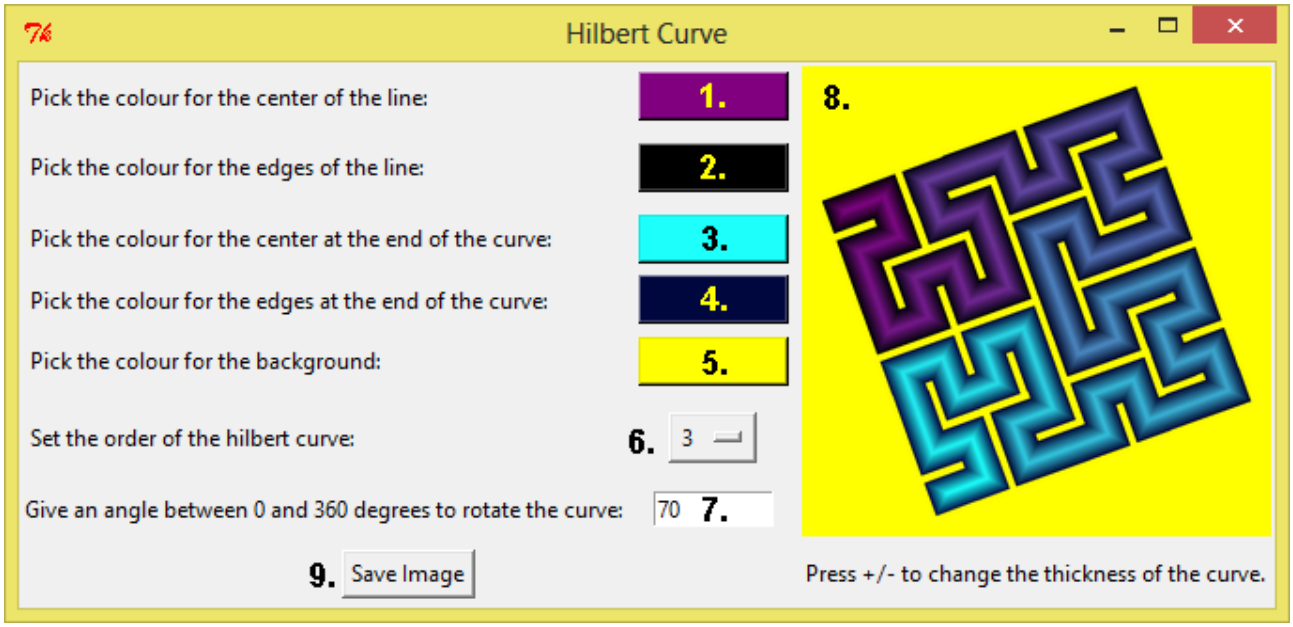


8. This entry field allows the user to type in the angle he wants to give the lower right corner in the triangle that forms between three squares in the tree. This is angle β in the picture.
9. This is a thumbnail image showing what the result image will look like. The positioning of the tree in the image can be changed by either clicking and dragging over the thumbnail, or by pressing the arrow buttons on the keyboard. The size of the tree can be changed by pressing + and -.
10. Pressing this button opens up a window where the name and size can be specified for the image that is being saved. The user can choose if he wants to save the image as a PNG, JPG, BMP or GIF image. The image will be saved in the folder the program was run from. An image of the save window is shown below.



Hilbert Curve:

After the hilbert_curve.py file is run, a window similar to the one below is opened.



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1. Clicking this button allows the user to pick the colour for the center of the line at the beginning of the curve.

2. Clicking this button allows the user to pick the colour for the center of the line at the beginning of the curve.
3. Clicking this button allows the user to pick the colour for the center of the line at the end of the curve.
4. Clicking this button allows the user to pick the colour for the center of the line at the end of the curve.

The colours will change gradually from the beginning to the end of the curve and from center to edges.

5. Clicking this button allows the user to pick the colour for the background of the image.
6. When clicking this button a menu opens up, where the user can choose the order of the Hilbert curve.
7. In this entry field the user can type in how he wants the curve to be rotated. The curve will be rotated clockwise by the given degrees.
8. This is a thumbnail image showing what the result will look like. The thickness of the curve can be changed by pressing + and -.
9. Pressing this button opens up a window where the name and size can be specified for the image that is being saved. The user can choose if he wants to save the image as a PNG, JPG, BMP or GIF image. The image will be saved in the folder the program was run from. The save window looks the same as for the Pythagorean tree (see above).