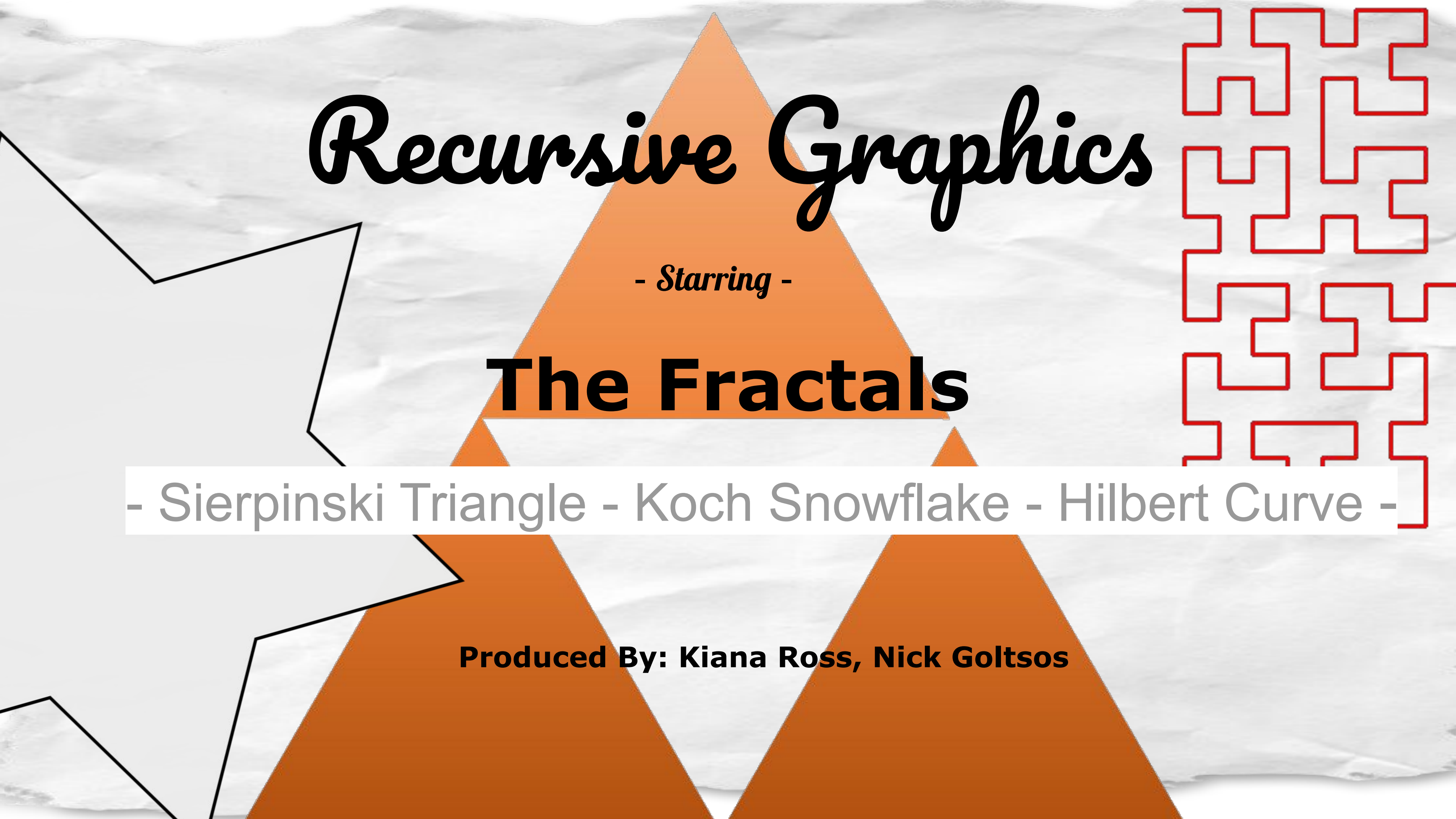


Recursive Graphics

- *Starring* -

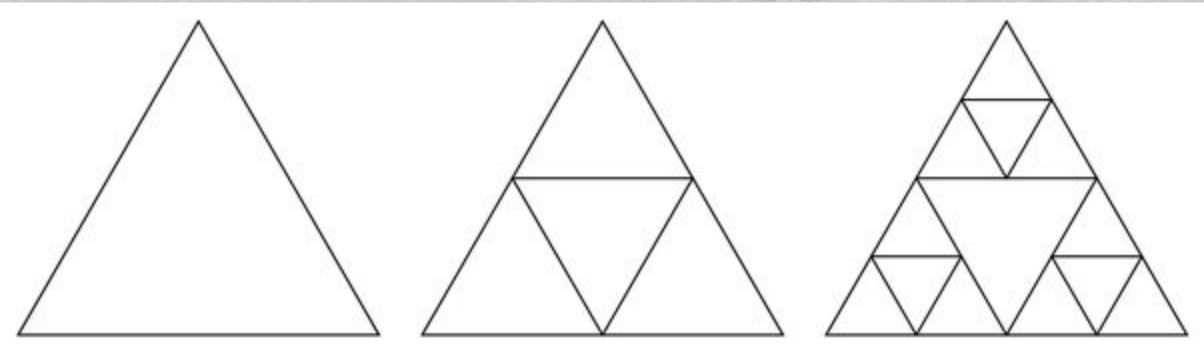
The Fractals

- Sierpinski Triangle - Koch Snowflake - Hilbert Curve -

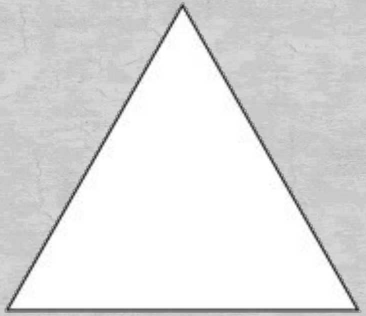
Produced By: Kiana Ross, Nick Goltsos

What is a Fractal?

A fractal is a never-ending, recursion driven dynamic pattern created by repeating. simple process over and over in an ongoing feedback loop. These fractals in very in complexity; from simple to complex. Recursive graphics are created by repeatedly drawing the same image in different sizes and angles, and layering them



Sierpinski Triangle



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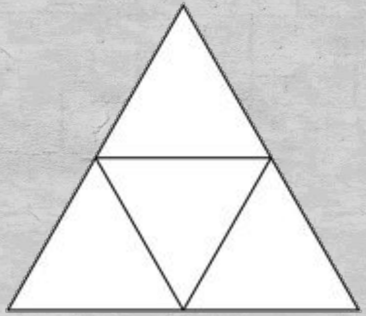

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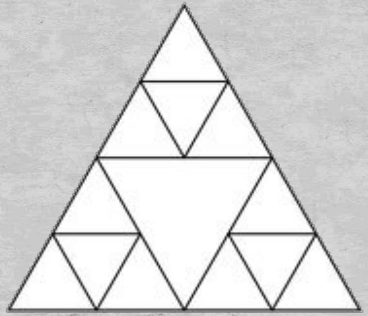

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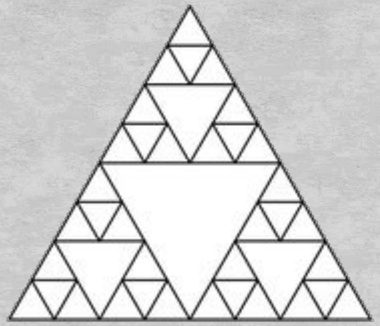
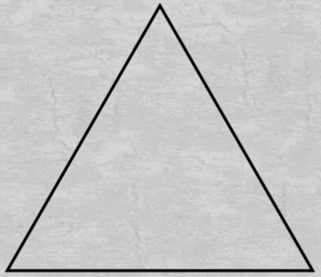


Order 4

Koch Snowflake



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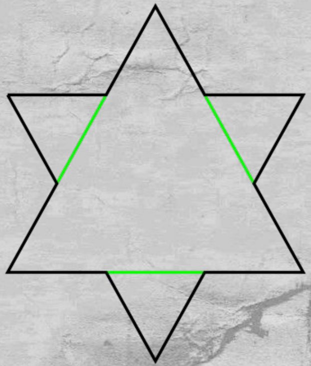

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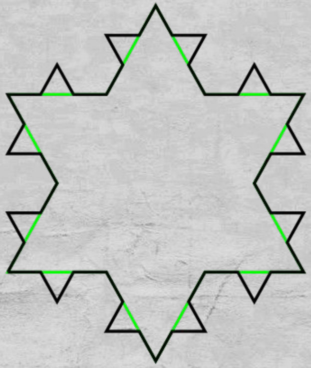

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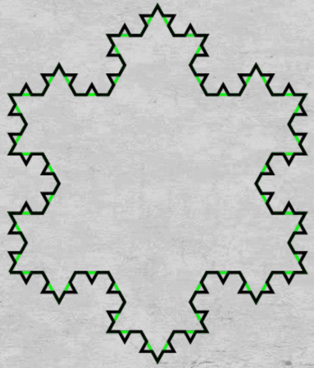
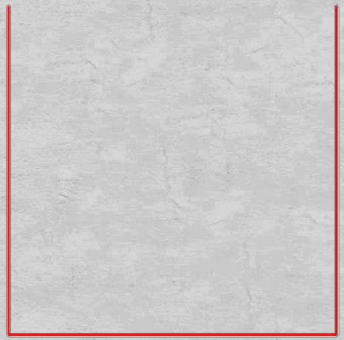
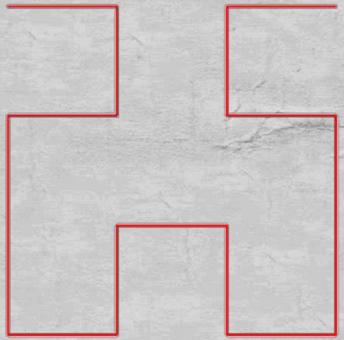


Order 4

Hilbert Curve



Order 1



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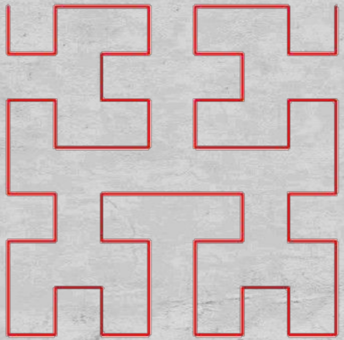

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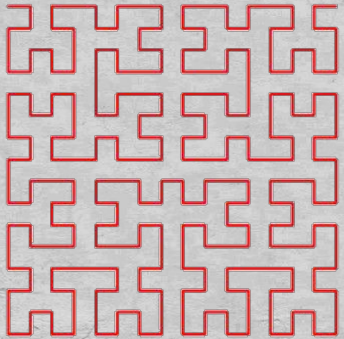

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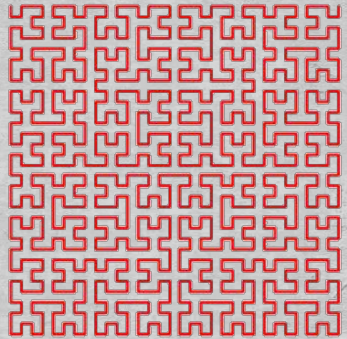
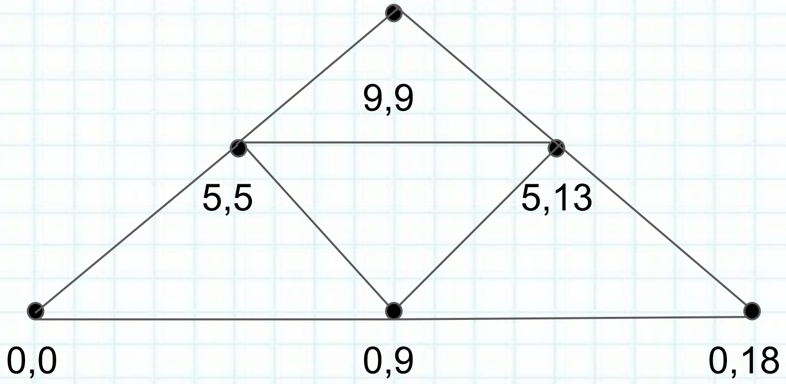


Order 5

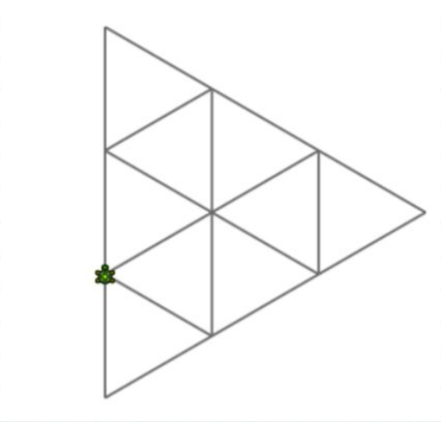
How To Draw The Fractals?

Option 1: Use coordinate points like on a graph or grid to mark vertex’s of the fractals and then have lines drawn between them



How To Draw The Fractals?

Option 2: Use L-Systems, a process of creating instructions which state - print a line - turn to the left - or turn to the right by some degree. Operates by having a “turtle” walk in a space knowing its current position and orientation, as well as the next instruction



L-System Rules

- F : draw forward
- + : right turn by certain degree
- - : left turn by certain degree

Why Not Both?

Put our produced images from the code

The Python Script

Recursion

Shape ✓ Method Of Drawing ✓ Recursion ✗

Simple example of Recursion

Sierpinski Triangle

Koch Snowflake

Hilbert Curve