

Interesting examples of L Systems

Example L System

Now that you have seen L systems, it is fun to experiment with a few of the popular L systems. A fair number of the fractals can be generated by a carefully designed L-system

Here, for example, is the Levy C curve.

Rules

$$F + gF - -gF+$$

and the axiom is just F .

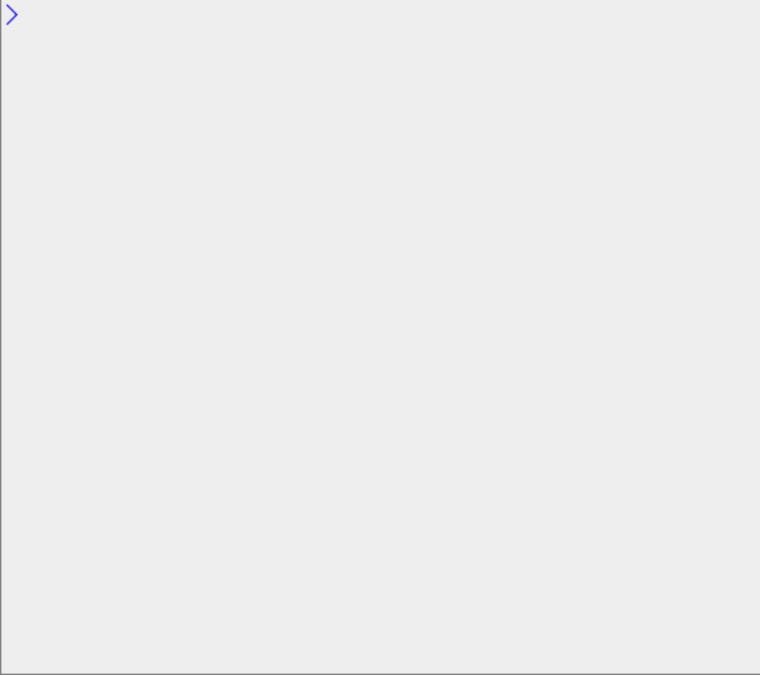
again, just for completeness the commands for the turtle graphics are

- g means move forward with the pen down
- $+$ means rotate to the right by a certain number of degrees. The amount of rotation is specified by the angle parameter.
- $-$ means rotate to the left by a certain number of degrees. Again the rotation amount of specified by the angle parameter.

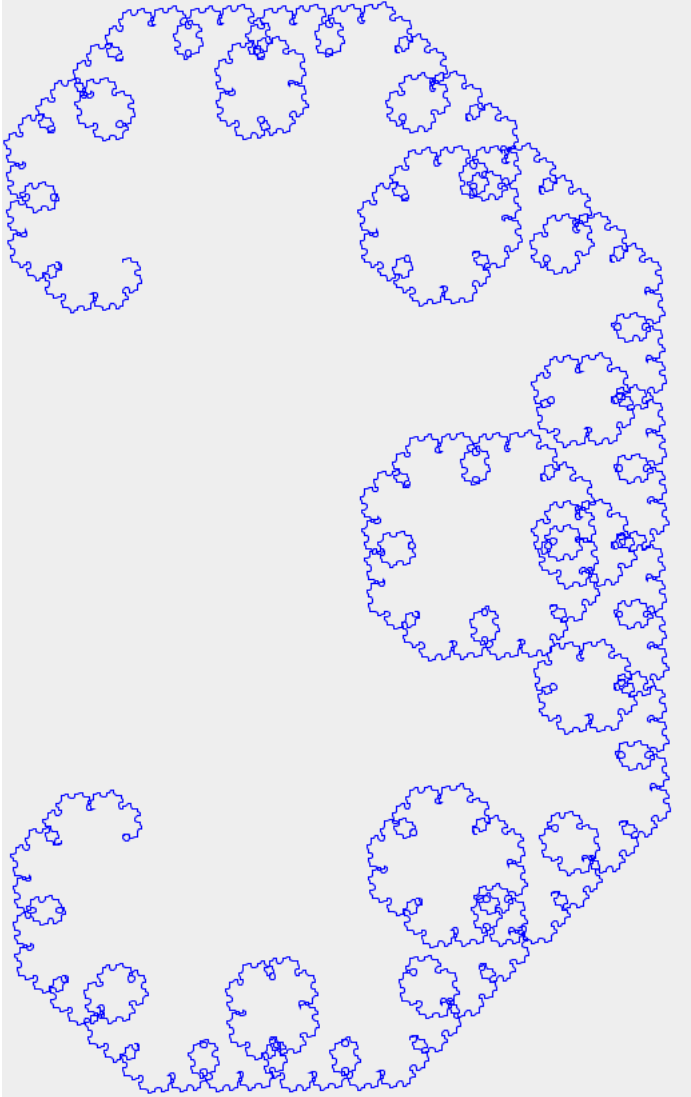
Example rendering

While the rule itself is simple, this system results in a fairly complicated system as shown below.

With one step, all you get is something that looks like a small greater than sign.



However within the 12 steps, the recursive power of the system has truly kicked in to result in the following picture.



Example

Here is another example which has a really interesting structure with just one rule

$$g \rightarrow g + g - g - gg + g + g - g$$

Set the angle parameter to be 90 degrees for this one to work.

The interesting difference with this L-system is that we choose to start it with $g+g+g+g$, which is just a small square.

But within 3 levels of recursion, you get the following pattern

