Simple Koch Snowflake

http://en.wikipedia.org/wiki/Koch_snowflake

To see how these rewrite systems can be used to generate images lets look at the rules associated with the Koch Snowflake.

The Koch snowflake is recursively defined by starting with a triangle, and for each edge subdividing the edges into three equal sections, selecting the mid-section, dividing it and moving the center of the midsection out, perpendicular until the joining two joining lines are equal to the remaining two line sections. This process then repeats.

To develop the L-system, we must convert the above description of the finished flake into a sequence of actions taken by a turtle traversing the parameter of the flake.

Starting at a vertice of a triangle, the turtle would traverse the side of the flake F turn 120 degrees traverse the side of the flake F and turn 120 degrees before traversing the last side of the flake F.

If + means turn 60 degrees clockwise or inward the above sentence can be compactly described as F ++ F ++ F ….

For each side of the Flake to be traversed, The turtle will move across the side of a Flake F, until it hits the center portion of the flake with has been moved out, requiring the little beast to turn outward - (counter clockwise) before traversing the side of the flake, F at which point it must turn inward 120 degrees before traversing the side of the Flake F until it reaches the base of the section which has not be perturbed , turning outward by 60 degrees before traversing the final side of the Flake.

This is compactly described by a F - F + + F - F .   In JFLAP the command g causes the chelonian to move forward and leave a trail…. so it is a bit tricky to determine when, during the recursion to leave the mark to properly to draw the snowflake.

g F - F g + + g F - F g is one placement of actions which will correctly draw the outline… Is there another spot for the actions which will also work? Is there any special requirement?