EXPERIMENT NO :- 09

AIM:- To implement Fractal generation using Koch curve

FRACTAL:-

A *fractal* is an object or quantity that displays self-similarity, in a somewhat technical sense, on all scales.
Objects defined by recursive algorithms
Fractals need not exhibit *exactly* the same structure at all scales, but the same "type" of structures must appear on all scales.
 Self-similarity:- See similar sub-images within image as we zoom in

EXAMPLES OF FRACTALS:-

 Clouds ,Grass, Fire, Modeling mountains (terrain), Coastlin Branches of a tree, Surface of a sponge

KOCH CURVES :-

Koch Curves Discovered in 1904 by Helge von Koch.

Start with straight line of length 1
Recursively Divide line into 3 equal part
Replace middle section with triangular bump, sides of length 1/3
New length = 4/3
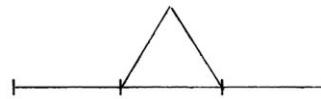
STEPS FOR EACH GENERATION:-

1. Start with a line.

2. Divide the line into three equal parts.

3. Draw an equilateral triangle (a triangle where all the sides are equal) using the middle segment as its base.

4. Erase the base of the equilateral triangle (the middle segment from step 2).
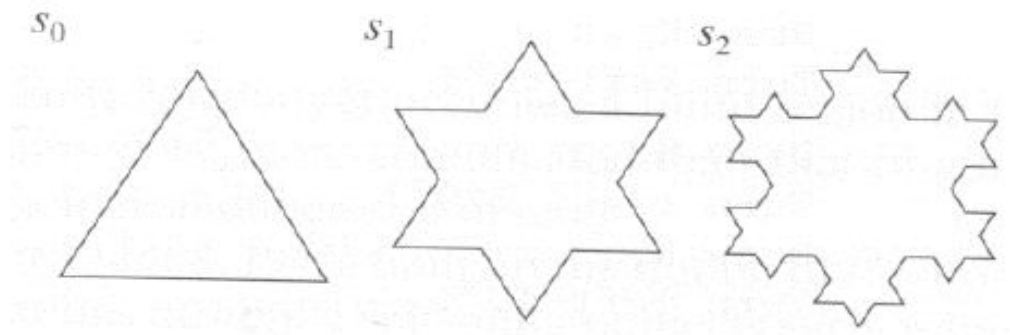
5. Repeat steps 2 through 4 for the remaining lines again and again and again.

KOCH SNOWFLAKES:-

 Can form Koch snowflake by joining three Koch curves
 Perimeter of snowflake grows exponentially where Pi is perimeter of the ith snowflake iteration
= 8/5!!
s0,s1,s2 are three iterations (generations) of curve.

KOCH SNOWFLAKES:-

 Pseudocode,
to draw Kn:
 If (n equals 0) draw straight line
 Else
{
 Draw Kn-1
Turn left 60°
 Draw Kn-1
 Turn right 120°
Draw Kn-1
 Turn left 60°
Draw Kn-1
}

CONCLUSION:- Successfully implemented Fractal generation using Koch curve using recursion.

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DATE