Sample algorithm For Assignment 3 Program

Step 1: Declare structure coord\_xye to store x, y, e pointers for dynamic declaration

Step 2: Make a function makerec() that:

1. Takes in:
   1. X0,y0 for the start point
   2. E0 for the original extrusion value
   3. L and b for the length and breadth of the rectangle
   4. Er for the extrusion rate
   5. Num for the number of sides (in case we do something similar with other polygons)
2. Dynamically declares X, y, e with the array size of num for num points for the x,y,e pointers of a structure variable
3. Set values of the points in the order as shown where O and D are the original (x0,y0) as well as the final point.

O, D

A

C

B

1

2

3

4

length

breadth

1. Sets the corresponding extrusion values for each movement in the e variable of the structure.
2. Returns the structure variable so that the values of x,y,e can be used to print in the main function.

Step 3: Declare the variables:

1. Read and write variables in fstream type to perform file operations.
2. X0,y0, e0, for original values of x, y, e
3. Er (extrusion rate), length and breadth
4. Structure variable coords\_rec

Step 4: Read the lines from the top gcode file (top\_filler.txt) and write into the newly generated code file (sq\_try2.gcode)

Step 5: input from the user:

1. x0,y0, Length and Breadth values
2. The number of rectangles num
3. The x and y distance between subsequent rectangles (x,y) in a rectangle array

Step 6: call makerec() function in a for loop run num times

Step 7: In each loop:

1. The function call returns a structure variable stored in coords\_rec.
2. The gcode moves are appended to the gcode file
3. The x0,y0 values are updated by adding x, y
4. The e0 value is updated to the newly generated final extrusion value
5. After the rectangle is made, lift the z axis by 2mm before moving to the new x0,y0. Then move, then bring back down to the original z position (0.2mm).

Step 8: Read the lines from the bottom gcode file (bottom\_filler.txt) and write into the same gcode file