# Project 8

This was our second project using L-systems. In this project, we made them by creating classes and methods inside of those functions. In this project, we made trees more complex by having multiple rule L systems.

The first task was creating five additional characters to help us draw a tree with colored leaves. For the first required image, I used four of the tree L-Systems. Using looping, I made it so the trees went up diagonally across the screen by looping through a list of trees. I also made each tree increase in iterations each time through the loop which means you can increase iterations by controlling how many times to loop. In addition, I made the the positioning scalable so you could place this picture wherever. (arrangement.py)

```
23    tree = [ ls.Lsystem( 'systemCL.txt'), ls.Lsystem( 'systemDL.txt'), ls.Lsystem( 'systemFL.txt'),
24            ls.Lsystem( 'systemGL.txt')]
25
26
27
28    for i in range( 4 ):
29        # Makes it so the trees make one diagonal line
30        x0 = -400 + 200*i
31        y0 = -430 + 200*i
32
33        # Takes each filename from tree list and increases iterations by two as it runs
34        tstr = tree[i].buildString( 1 + 2*i )
```
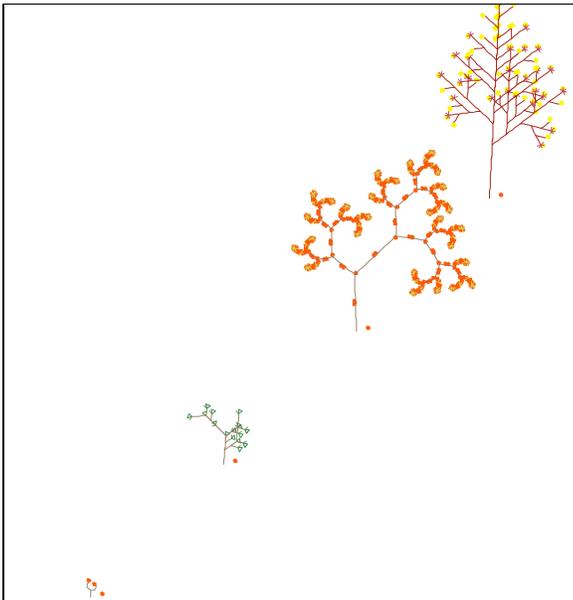

For the second task, we had to create two new L systems and place them throughout the picture with different iterations. I did something similar to the grid.py where I increased iterations each time through a loop. I looped through a list of four trees where iterations was a function of the tree index. The top two rows of trees are my L-systems. They're variations of trees from the algorithmic botany with an additional characters to change trunk color and berries attached.
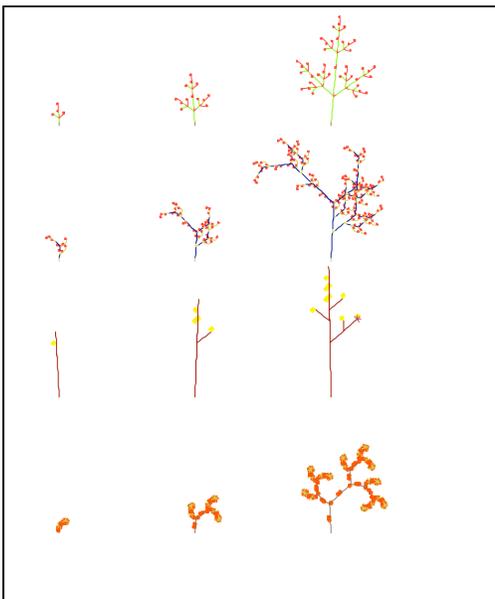
Extensions:

1) I added characters to my turtle interpreter to add berries/fruits, trunk color, and color of branches.

2) By passing the '&' string to systemGL.txt, I made the leaves squares. I also made triangles by passing the ';' string to systemDL.txt
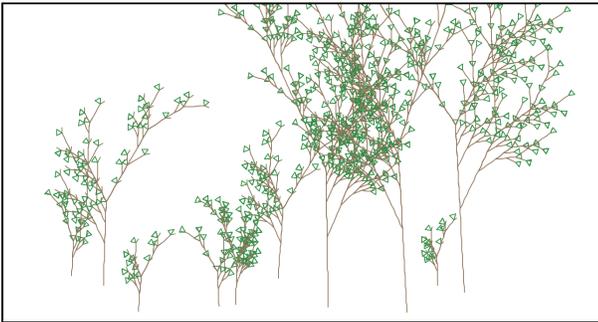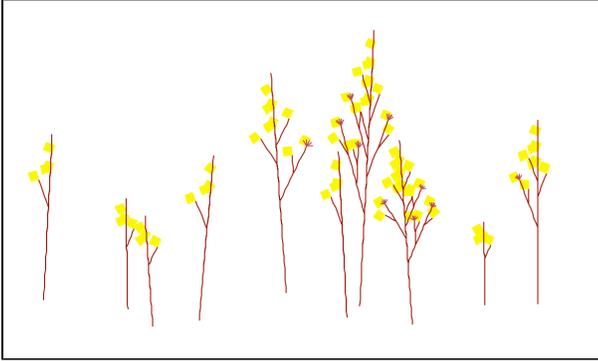
3) All of these came together in modifying the trees. I added variations to each tree to make it more interesting by creating strings and adding them in the Lsystems to make them a little more interesting. This extension was kind of a culmination of the first two extensions.

I learned a lot about Lsystems and how to call methods from classes.

References:

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