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5001 Intensive Foundations
Spring 2021
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Report 07

Problem Description

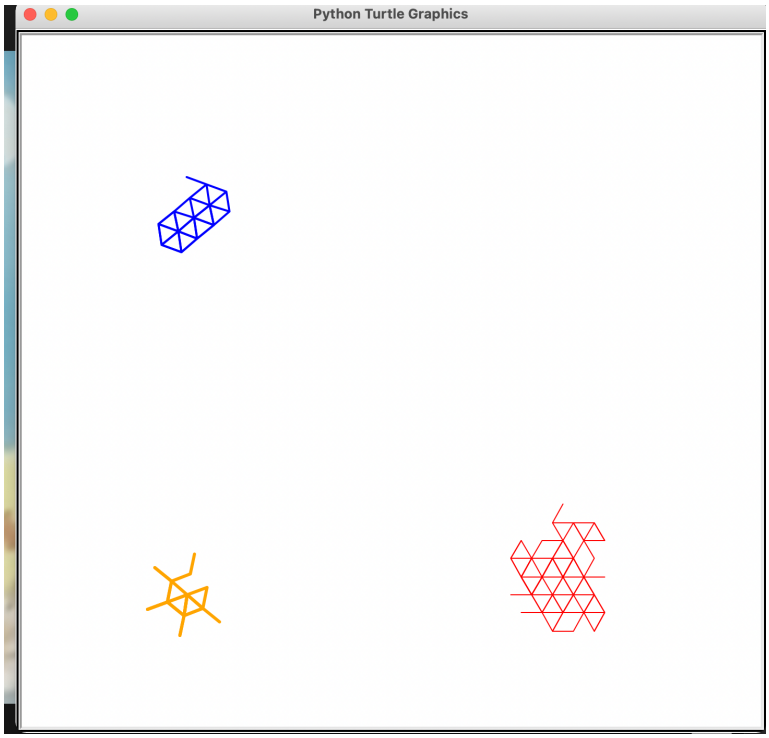
Project 7 focuses on the ability to create a python interpreter that makes use of text files and constructs L-systems using the turtle package. The key components on building the interpreter is a solid foundation on best programming, good modularity, and clear readability.

Follow up questions:

1. An interpreter is something that can take one piece of information and translate/output into another language or understanding. In the case of this project we are taking a text file that is using certain characters to indicate certain functions. The interpreter we have built takes those characters and applies those functionalities.
2. An L-System is a method in which characters and strings can be given a task and multiply their functionality. The idea was borrowed from biology and how plants cells grow.
3. To loop over the characters in a string means to repeat the same individual characters of the string a certain or indefinite amount of times.
4. The stack allows us to store a starting point for our L-system. We can use the pop method to go back to that specific starting point and continue to branch out the L-system
5. The first movie that comes to my mind are the Ents from the Lord of the Rings Trilogy.

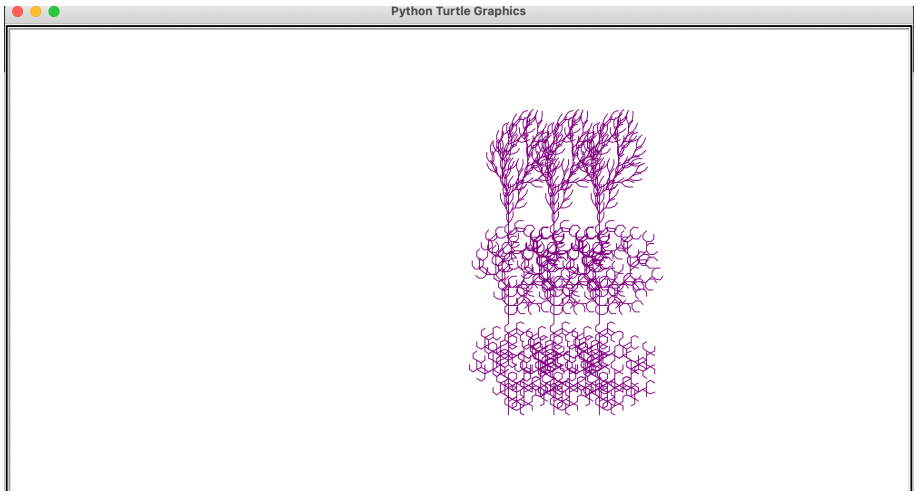
Required Task Elements:

1.



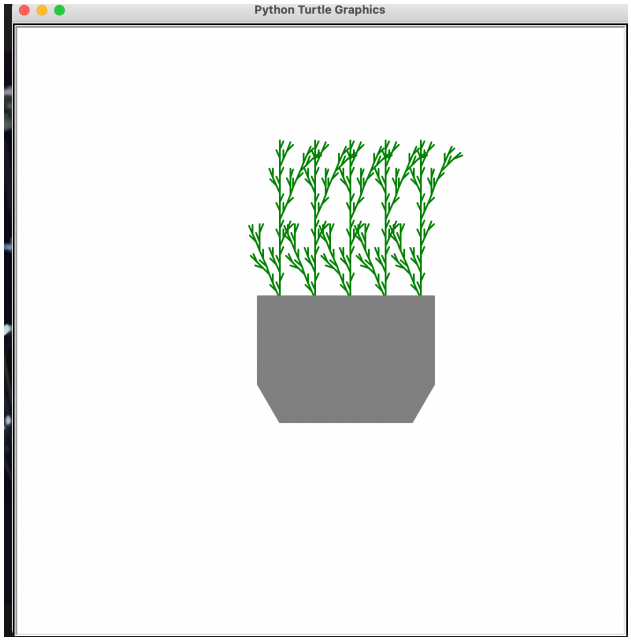
Getting my first L-system to appear was very interesting. This is a topic that was bit hard to grasp at first on how it will appear on the canvas. After playing around with the code I was able to get a better grasp of it. The abstract image was definitely not my best work but definitely keeping things simple helped me understand what I was working with.

2.



Programming the 3x3 L-system was a definite challenge. I hard coded most of the values so that the 3x3 grid would be easier to debug and build. Going forward it would be easy to take the L-system functions out of the grid function and put it into the main function and use sys args to start the program

3.



I found it pretty interesting that you can essentially create anything using an L-System. I made the vase as a linear L-system. I used the formula for a simple tree to make the plants.

Extensions

1. I made the grid.py drawing scalable. It will take an int argument on the command line for the scale
2. I added a scale parameter to my scene.py file as well

Reflection

I found this project to be a step above in complexity from our previous projects. It took me a bit longer to understand how everything works. Once I was able to get that I was able to move forward at a decent pace with the project. I definitely spent some time experimenting with the different results of the L-system text file to figure out how the stack and direction worked.

Acknowledgements:
Office Hours: Janielle Hiciano - Assisted with pointing in the right direction of making the for loop in the grid.py file
The Algorithmic Beauty of Plants: Used the tree formula from page 25 to make plants