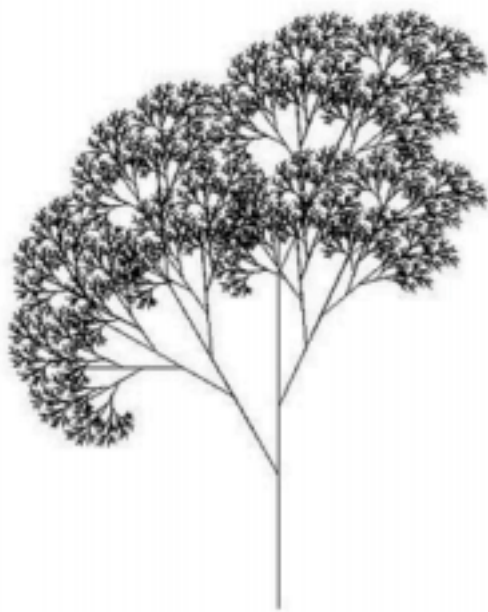


## Lab 2

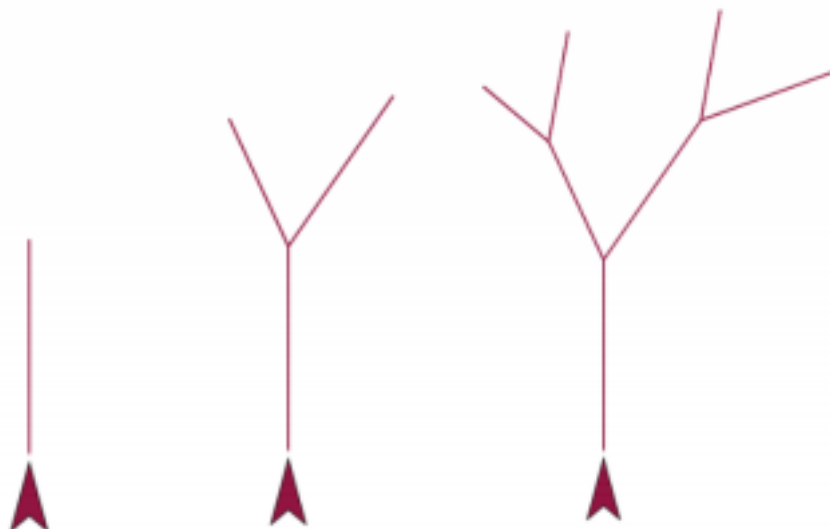
Answer question 1 in a file named *StudentID\_Firstname\_lab2\_ans.pdf*, where *StudentID* is your KU ID and *Firstname* is your given name

### 1. Recursive Graphics

Recursion is all around you.



Consider how you can draw a tree with 1, 3, and 7 branches (think of branches as lines

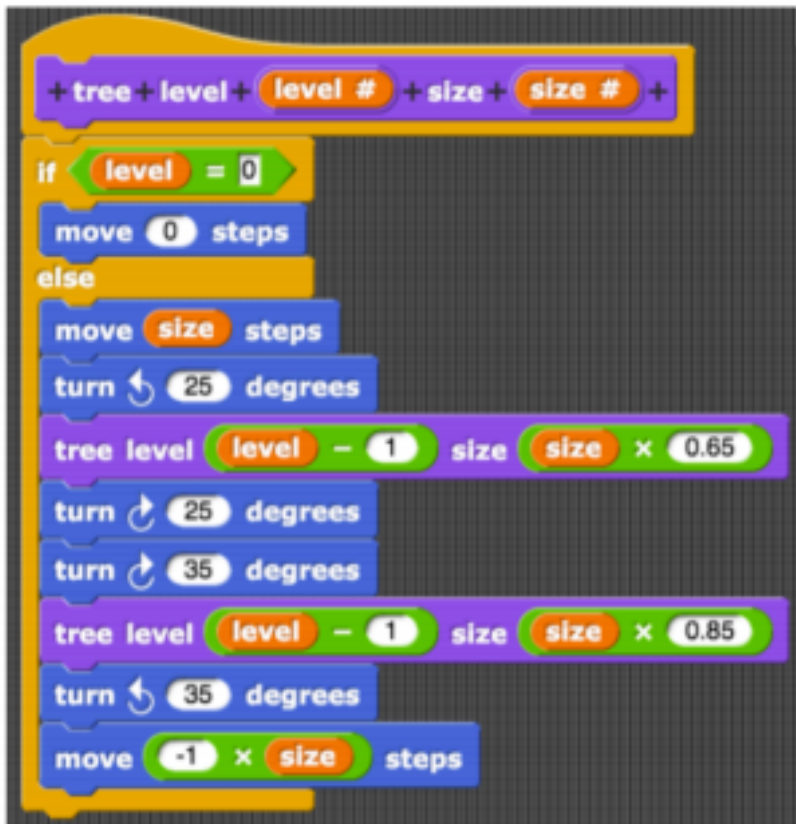


drawn)

Notice that the drawing procedure is recursive in nature.

<https://snap.berkeley.edu/snap/snap.html>

and try out the following code:



Then, answer the following questions to check your understanding:

- What happen if you change the size value to -100?

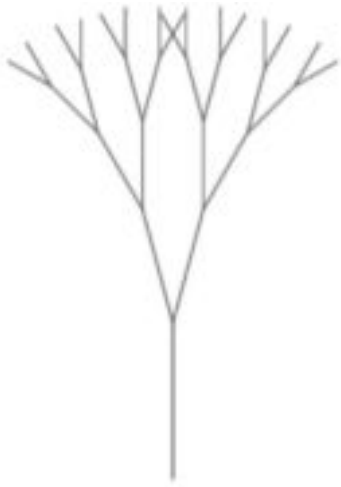
Tree is upside down

- What happen if you change the input level to be -4?

None structure tree, loop and never get a tree

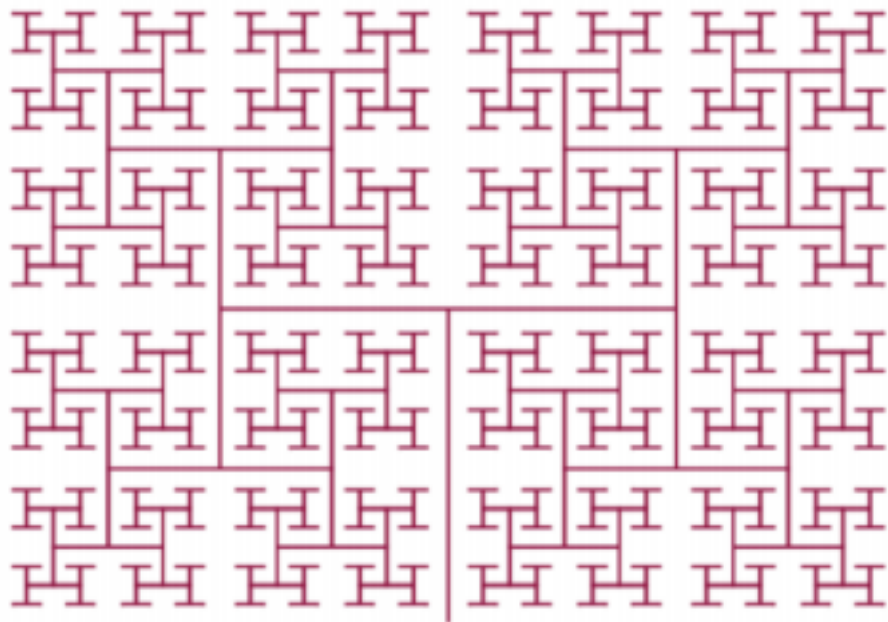
- To produce a tree below, what are the values for levels, the two turn degrees, and the two constant multipliers for size during recursive calls

levels = 5, same multipliers, The two turn degrees is changing the previous angle 35 to 25



2 of 3

Study the code in `turtle_tree_draw.py` and run it. Then, modify it to produce an H-tree that looks like the following:



- What modification you have to make to the original code to produce the above H-tree?

(For those who need an introduction to Python's Turtle graphics, see the attached `turtle_graphic_intro.py` file)

## 2. `recursion_lab.py`

Complete the missing code in `recursion_lab.py` and make sure that it passes all the test cases. **You must use recursion to get credit for this problem; no loops (while, for, etc.) allowed.**

### **Submission:**

- **Create `StudentID_Firstname_lab2` folder, where *StudentID* is your KU ID and *Firstname* is your given name**
- **Put the files to submit, `StudentID_Firstname_lab1_ans.pdf` and `recursion_lab.py`, into this folder**

- ***Zip the folder and submit the zip file to the course's Google Classroom before the due date***