CIS 122

Turtle Assignment
Assignment Breakdown

● Only 3 Parts
  ○ Part 0 - Getting your turtle up and running
  ○ Part 1 - Spinning in Circles
  ○ Part 2 - Fun with Fractals

● You've already done Part 0
  ○ Get turtle up and running
  ○ Run sample code
  ○ Don't need to submit anything
Part 1 - Spinning in Circles

- In this problem, you're going to write a spiral drawing function

- A spiral is a naturally recursive shape
  - The "rest" of a spiral is just another spiral

- How do we draw a spiral?
  - Draw one side
  - Then draw the rest of the spiral
Part 1 - Spinning in Circles

● What defines a spiral?
  ○ Initial side length
  ○ Side length modifier
  ○ Angle

● Our spiral function will take 3 arguments
  ○ spiral(length, multiplier, angle)
  ○ First side has given length
  ○ Each subsequent side grows by multiplier
  ○ Each subsequent side turns by angle
Part 2 - Fun with Fractals

- What is a fractal
  - A self-similar shape
  - Part of the shape looks like the shape as a whole

- A spiral is a simple fractal
  - But they can be much more complicated
Part 2 - Fun with Fractals

- For this problem, you're going to draw fractal trees
  - Surprisingly little code
  - Surprisingly complex shape
Part 2 - Fun with Fractals

- What is a fractal tree?
  - It's a trunk
  - With two smaller fractal trees attached
Part 2 - Fun with Fractals

- So how do we draw one?

- Write a function `tree(levels, trunkLength)`
  - Draws a fractal tree
  - And returns turtle to where it started

- Why do we care where our turtle ends up?
  - Want to use `tree` as a building block
  - (for the `tree` function itself)
  - After we call `tree`, want turtle to be where we left it
A Secret to Programming

- I don't have all the turtle functions memorized
  - I don't have all the basic Python functions memorized

- When you want to know how to do something basic
  - Use google
  - Online documentation
  - Code samples
A Secret to Programming

● Don't look up answers
  ○ Look up low level programming questions

● GOOD
  ○ How do I draw a line in Python?
  ○ How do I import the turtle module?

● BAD
  ○ How do I implement a caesar cipher?
  ○ How do I draw a fractal tree?

● Figure out what you want to code
  ○ Look up how to do the pieces