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
  - \texttt{spiral(length, multiplier, angle)}
  - First side has given \texttt{length}
  - Each subsequent side grows by \texttt{multiplier}
  - Each subsequent side turns by \texttt{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 `fractalTree(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 `fractalTree` as a building block
  ○ (for the `fractalTree` function itself)
  ○ Afterwards, we want our 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