Python Workshop Teaching Script

* Intro to Python:
  + Lesson 1: Variables
    - Variables are containers for storing data values
    - While there are certain naming customs for variables, basically anything can stand for a variable.
    - A variable is created the moment you assign a value to it.
    - Variables do not need to be declared with any particular type, and can even change type after they have been set.
    - However, if you want your variable to be a specific type, you can use casting.
    - (code)
  + Lesson 2: Operators
    - Operators are used to perform operations on variables and values.
    - There are many different types of python operators, but we will mostly be using arithmetic operators, comparison operators, and logical operators.
    - Arithmetic operators are used with numeric values to perform common mathematical operations (multiplication, division, addition, subtraction)
    - Comparison operators are used to compare two values.
    - Logical operators are used to combine conditional statements (which we will get to later).
    - (code)
  + Lesson 3: Input and Output
    - Input is data that is given to an algorithm during the execution of a program and can affect the results of the algorithm.
    - Output is data or actions produced by an algorithm. Including any data sent from a program to a device.
    - (code)
  + Lesson 4: Loops
    - Loops are used to repeat code without having to rewrite each piece.
    - There are two types of loops in python - while loops and for loops
    - While loops execute as long as a condition is true.
    - (code)
  + Lesson 5: Conditionals
    - If…else statements are used to only execute code if the condition is true.
    - Indentation is extremely important here!
    - (code)
  + Lesson 6: Functions
    - Lastly, just like with loops, in order to avoid having to rewrite code, in python you can make functions, which can be used throughout a program.
    - To create a function, use the def keyword.
    - To call a function, use the function name followed by parenthesis.
    - (code)
* Turtle Module:
  + Set-up

player\_shape = "circle"

player\_size = 10

player\_color = "blue"

player\_fillcolor = "darkorchid"

player.speed(0)

player.pencolor(player\_color)

player.shape(player\_shape)

player.pensize(player\_size)

player.fillcolor(player\_fillcolor)

* + Draw

player.forward(10)

player.backward(10)

player.right(45)

player.left(45)

player.circle(10)

player.penup()

player.goto(50,50)

player.pendown()

* Challenges:
  + Calculate your age by entering your birthday (basics)
  + Write your full name using Turtle
  + Draw your favorite animal using Turtle
  + (code)