Monroe Township Library Coding Bootcamp

2/5 Class Notes

* Intro to coding, syntax, languages
* A little bit about the Python programming language
* How to install Python
* IDEs and coding environments
* Github, how to access class files
* Print statement
* Basic data types
* Variables
* Comments

**Coding in general:**

* Coding (or programming), at its most basic, means writing instructions that can be interpreted and processed by a computer
* There are several different coding languages that operate slightly differently, and are used for different purposes
* A programming language’s **syntax** refers to the rules that need to be followed when writing the code
  + Many languages have similar functionality but use different syntax

**Python:**

* In this class we’ll be coding in Python, one of the most popular coding languages used in anything from data science to web development to machine learning
* Python strives to be easy to write and understand (relative to other languages)
* Python in an interpreted language which means the code you write is converted to a computer-readable format when you run your program, you do not have to compile the code first
  + In general, Python has a reputation for making development quicker and easier, but running a little slower than compiled languages
* You can install Python by going to [python.org](https://www.python.org/) and downloading the current version for your OS
  + Make sure you choose ‘Add to Path’ option when installing

**IDES and coding environments**

* A coding environment is simply a place where you can write code
* Technically, all you need is a text editor (like Notepad), but IDEs come with helpful features, code completion, and debug options that make writing code easier
* We’ll be using Spyder in this class which can be downloaded from [spyder-ide.org](https://www.spyder-ide.org/)

**Github**

* I’ll be uploading all class files to Github, which is a code-hosting website (among many other things), feel free to create an account if you want
* You can access files at [github.com/monroecoding](https://github.com/monroecoding) and select the ‘Coding Bootcamp 2022’ repository
* In the upper left there is a dropdown menu that says ‘main’, click on that to access files from each class
  + If you have an account, you can also post questions in the discussions tab, I’ll try to keep an eye on that

**Printing to terminal**

* The print statement is a built-in Python function that simply prints whatever is wrapped in parentheses to the terminal/console
* We’ll be using this a lot to view output of our code

**Basic data types**

* **String (str):** a string of characters between single or double quotes, can contain letters, numbers, or special characters
* **Integer (int):** a positive or negative whole number
* **Floating point number (float):** a positive or negative decimal number
* **Boolean (bool):** a true of false value
* **NoneType (None):** represents no value, returned when functions have no output

**Variables**

* Variables are used to store data so that it can be accessed later
* In Python, variables are creating by simply choosing a name and assigning a value using the assignment operator (=)
  + Variable names cannot start with a number or contain spaces
  + Not necessary, but Python convention is to use lowercase and string multiple words together with an underscore
  + Avoid using specific Python keywords as you may accidentally overwrite important data
* Python is dynamically-typed, meaning we do not need to specify beforehand what data type our variable will hold, and we can override existing variables with any data type

**Comments**

* It is good practice to write comments explaining what your code does, especially if you are working with other programmers
* Comments can be added to your code using a hash (#), anything after the hash will be ignored by the computer when the program is run
* Large blocks of code can be ‘commented out’ by highlighting and pressing Ctrl + /