Python Curriculum

Setting up Our Development Environment

- Installing Python3
- Installing Pycharm
- Launching the interactive shell

Pip, Python Modules, and Virtual Environments

- What is Pip
  - Package manager for Python modules (like apt or dnf)
- What are modules
  - Think of it like a code library
- Installing Pip
  - Should install with Python
- Installing modules
  - pip install <module_name>
- Virtual environments
  - Isolated environment for installed Python modules

Variables & Data Types

- Variables
  - Defining
  - Setting
  - Manipulating
- Data types
  - String
  - Int
  - Bool

String Manipulation

- Escaping characters
- Concatenation
- Slicing
- String functions
  - len()
  - lower()
  - upper()
  - format()
  - strip()
  - title()

    - split()
    - find()
    - replace()
    - join()

Basic Operators and Receiving Input

- Operators
    - +
    - -
    - *
    - /
    - //
    - **
- input() vs raw_input()

Basic Data Structures

- Lists
- Tuples
- Sets
- Dictionaries
- Slicing

Conditionals and Comparison Operators

- Comparison Operators
- If statements
- Else statements
- Elif statements
- Chaining conditional statements
- Nesting conditional statements

Loops

- For loops
    - Iterating over items
    - range()
- While loops

Functions

- Function declaration
- Calling functions
- Function parameters/arguments
- Keyword arguments
- Default arguments
- Arbitrary arguments
    - *args
    - **kwargs
- Return
- Pass keyword
- Recursion

Debugging

- Using the Pycharm debugger
- Breakpoints
- Inline debugging
- Stepping through functions
- Watching
- Evaluating expressions

File I/O

- File paths
    - Really good article on file paths in Python
- Opening files
    - Opening options
- Writing to files
- Reading from files
- Closing files
- Renaming files
- Removing files
- With:

Object-Oriented Programming

- Objects vs classes
- Creating classes
- Inheritance

Error Handling

- try/except/else/finally
- Exceptions
    - Raising
    - Creating custom exceptions