For Loops

Unit Overview

- In this unit we are going to introduce our first construct to allow us to control the flow of our programs; the for loop. We will learn how to:
  - Loop through an entire list of elements.
  - Use the range() function to generate a sequence of numbers.
  - Loop through a numerical range.
  - Use the list function to turn a range into a list.
  - Use the list function to turn a string into a list.
  - Use the .join method to turn a list back into a string.
  - Nest for loops for more complex program structure.
  - Use list comprehension for more compact coding practices.
  - Slice a list to only loop through a portion of a list.
  - Copy a list versus creating a new variable that points to the same list.
  - Use the zip() function to loop through multilpe lists at the same time.
  - Import the cmath library to work with complex numbers.

Data Types

- Strings: A series of characters
- Integers: Whole numbers
- Floats: Decimal numbers
- Lists: A mutable collection
- Tuples: An immutable collection
- Ranges: A sequence of integers

Control Flow

- For Loops

Operators

Assignment Operators

- = Assignment
- += Compound Assignment
- -= Compound Assignment
- + Concatenation (strings)

Algebraic Operators

- + Addition (ints and floats)
- - Subtraction
- * Multiplication
- / Division
- ** Exponentiation

Built In Functions

- print()
- type()
- str()
- int()
- float()
- input()
- round()
- sorted()
- len()
- range()
- list()
- min()
- max()
- sum()
- zip()
- bin()
- hex()

Methods

Strings:

- .upper()
- .lower()
- .title()
- .strip()
- .count()
- .join()

Lists:

- .append()
- .insert()
- .pop()
- .remove()
- .sort()
- .reverse()
- .copy()

External Libraries

- math
- datetime
- cmath

Challenge Problems

- Binary and Hexadecimal Conversion App
- Quadratic Equation Solver App
- Factorial Calculator App
- Fibonacci Calculator App
- Grade Point Average Calculator App