For Loops

Overview

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

Data Types

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

Control Structures

- If
- For loops

Operators

Assignment Operators

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

Algebraic Operators

- + Addition
- - Subtraction
- * Multiplication
- / Division
- ** Exponentiation
- // Absolute Division

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

Challenges (Assignments)

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