While Loops

Unit Overview

- In this unit we will learn another mechanism to control the flow of your programs; the while loop. While loops are similar to for loops except that they run while a specific condition is true. We will learn how to:
    - Implement while loops.
    - Use active flag variables to control while loops.
    - Perform modulo division.
    - Use Break and Continue statements to alter the flow of a while loop.
    - Use empty or populated lists or dictionaries as Boolean values.
    - Use the bool() function to convert values to their boolean equivalent.
    - Nest while loops for more complex control flow.
    - Use the time library to time processes in our program.

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
- Booleans: A True or False value
- Dictionaries: A collection of associated key-value pairs

Control Flow

- For Loops
- If Statements
- If/Else Statements
- If/Elif/Else Statements
- Break
- Pass
- Continue
- While Loops

Operators

Assignment Operators

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

Algebraic Operators

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

Operators

Logical Operators

- And
- Or
- Not

Membership Operators

- In
- Not in

Comparison Operators

- == Equal to
- != Not Equal to
- < Less than
- > Greater Than
- <= Less Than or Equal
- >= Greater Than or Equal

Built In Functions

- print()
- type()
- str()
- int()
- float()
- input()
- round()
- sorted()
- len()

- range()
- list()
- min()
- max()
- sum()
- zip()
- bin()
- hex()
- set()

- bool()

Methods

Strings:

- .upper()
- .lower()
- .title()
- .strip()
- .count()
- .join()
- .startswith()
- .replace()
- .split()

Lists:

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

Dictionaries:

- .items()
- .keys()
- .values()
- .most_comon()

External Libraries

- math
- datetime
- cmath
- random
- collections
- time

Challenge Problems

- Factor Generator App
- Even Odd Number Sort App
- Prime Number App
- Guess My Word App
- Powerball Lottery Simulation App