Hayden Walker 2019

This is a portfolio of some of my favourite programs that I wrote during the summer of 2019.
    *The programs are arranged alphabetically

NOTE: The following dependencies are required in order to successfully run some of these programs. These
dependencies are *not* included in the Python Standard Library.
    *Matplotlib plotting library (for the Collatz Conjecture program)
    *Pygame (for the aquarium program)

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Title (Date)
    *Skills

    Desc.
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Aquarium (19 August) [Requires Pygame]
    *Pygame
        *Importing sprites
    *Random library
    *Object-oriented programming
    *Game loop
    *Math operators
        *Multiplication
    *Conditionals

    A very simple aquarium, in which fish swim around randomly.
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Caesar Cypher (25 July)
    *Iterables
    *Conditionals
    *For Loops
    *List wrapping
    *Functions

    Takes an encryption key (n) from 0-25 and moves each character ahead n spaces in the alphabet. If the
letter reaches z, it wraps back to a.
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Cash register (3 August)
    *Rounding
    *While Loops
    *Conditionals
    *Functions

    Takes a sales total and amount tendered and calculates change, then lists the amount of each
denomination of change to return.
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Collatz Conjecture (7 August) [Requires Matplotlib]
    *A Classic Algorithm
    *While Loops
    *Conditionals
    *Math operators
        *Modulus
        *Floor division
        *Addition
    *Matplotlib Graphing Library

    Takes a positive integer (n), and depending on its parity, will either divide it by 2 or multiply it
by 3 then add 1, and repeat the whole process until the integer is equal to 1. It will then display a
graph where x is the number of steps and y is the value of n.
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Line/square drawing (27 July)
    *Tkinter GUI Library
        *Canvas
        *Buttons
        *Inputs
    *Random library
    *Object-Oriented Programming
    *For Loops
    *Functions

*Methods

    A GUI application that takes a number (n) and, depending on which button is pressed, will generate either n lines or n rectangles, all of random size, position, and colour. It will display the last action completed in a status bar at the bottom.
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Hangman (5 August)
    *Random Library
    *Reading from a text file
    *For Loops
    *Game Loop
    *Conditionals
    *Iterables
    *Functions

    A game of hangman that pulls words from a 100-word text file.
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Minefield/Minesweeper (20 July)
    *System commands
    *Random Library
    *Wrapping
    *Iterables
    *Conditionals
    *Functions
    *Game loop

    A game that draws a 5x5 grid, in which a random number of randomly placed mines are hidden. Goal: Clear the board without hitting a mine.
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Pig Latin (19 July)
    *String slicing
    *String concatenation
    *Conditionals

    Converts a word into "Pig Latin;" i.e. if the word begins with a vowel, it will add "ay" to the end, and if it begins with a consonant, it will move the first letter to the end of the word and then add "ay."
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Monty Python's Python Soundboard (31 July)
    *Tkinter GUI Library
        *Buttons
    *Lambda Expressions
    *Object-Oriented Programming
    *Playing audio files

    A just-for-fun soundboard of clips from Monty Python's Life of Brian. Fun Fact: The Python Programming Language is named after Monty Python!