Python Assessment – Dillon Constantine

# Abstract

This report explains the process of demonstrating the core learning outcomes of python programming. Throughout this report and the accompanying code, the aim was to use various examples to show the understanding of the main topics within the python programming language.

# Introduction

Python is ranked as the top computer languages worldwide with almost 30% of the programming users according to PYPL (Statistics Times, 2022). With the popularity of the python programming language being so popular the aim of this project is to demonstrate the key knowledge areas.

The core learnings that are demonstrated in this project are;

* Functions
* Boolean-Logic (Loops and Conditions)
* Data Structures
* Object Orientated Programming (OOP)
* Error & Exception Handling

# Implementation Process

This section of the report will step through the process of demonstrating the core learning outcomes of Python programming. All the examples talked about below can be seen in the accompanying python script.

## Functions

Functions are a block of reusable code that is used to perform specific tasks. Python has many built-in functions that have been predefined and can be called upon easily. Some examples of these built-in functions are sum(), max(), abs() and sort(). These built-in functions are used throughout the code of this project.

Python also allows for users to create their own functions based on tasks they need to perform. In this project to demonstrate the use of functions the following were created as examples. Functions like the below can be built for easy recall within scripts and for code efficiency.

* **Welcome function:** This function can be called to say ‘Hello’ and welcome to any user. The user is asked to enter their name and it will print out a welcome message.
* **Calculation function:** This function once called allows for the user to perform a quick calculation by entering any three numbers (a, b & c).
* **Circumference of a circle function:** This function asks the user to enter the radius of there circle and the function calculated the circumference.
* **Bill Plus Service Charge function:** This function automatically generates the total value of a bill including a 10% service charge. The user needs to enter the bill amount and the function will add on the service charge.
* **Even Number Check function**: This function when called checks if a number is even or odd.

The process to implement the functions within this project was to demonstrate a variety of different uses of functions from a simple welcome message to getting the total of a bill plus the tip given the amount.

## Boolean-Logic (Loops & Conditions)

Boolean Logic is a way of finding out the truth of an expression by simply using true or false concept. To demonstrate this in a straightforward way the ‘AND’ and ‘OR’ operation was applied. For example, ‘True’ and ‘True’ equals ‘True’ whereas ‘True’ and ‘False’ returns ‘False’ as both values needed to be true. This demonstrated simply how Boolean logic works.

Next was the implementation of conditioning (if-else) where two examples are used to demonstrate an understanding. The first example was the drinking eligibility of the user, and the second example is based on the tyre type on F1 cars. This reason behind the use of these two examples is to demonstrate conditioning on both string and integer data.

Finally, to demonstrate Boolean logic, loop examples where implemented; one to print out a range of values and the second to loop through a list of brands. As the loop iterates through the values when it is returned ‘True’ the value is then printed.

## Data Structures

* Lists
* Dictionaries

## Object Orientated Programming

* Car Class – Uses battery + - values based off action
  + Drive
  + Air Conditioning
  + Charge
  + Crash
  + Repair
  + Respray

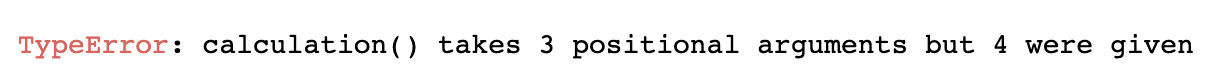
## Handling Various error messages & Exceptions

Syntax Error -

**Name Error** - Make sure the function is defined prior to calling it.



**Type Error** - Making sure the correct number of arguments are defined.





**Value Error –** When imputing a value. E.g., ‘Na’ into even number function.

Create an Error Message.

# References