**Python Mini Project**

**Due date: 30 November 2020**

**Instructions**

1. Please provide a daily report to your lecturer on your accomplishments and challenges.
2. The lecturer will not provide you with answers but may give you hints or links to resources.
3. You must produce an original program. Copying and plagiarism is not accepted.
4. You are encouraged to consult your lecturers if there are instructions which are not clear. As a programmer, requirements analysis is a crucial state.
5. Also read the rubric to assist you in understanding the assessment of your code
6. When done add your name, surname and class as a comment to your source code. Zip the project and submit the assignment to LMS
7. Due date is not negotiable.

**Lottery Numbers Challenge**



You have been hired by the Ithuba National Lottery of South Africa to write a program using python which will be used in determining the lotto numbers and compare them with those that a player chooses.

In this challenge you will write a Python program that automatically generates six random numbers (from 1 to 49) and display them on the screen, sorted in ascending order. The program will need to make sure that each number is unique; the same number cannot come twice in the selection of six selected numbers. The prizes for predictions are shown in Table 1 below.

Table 1: Lotto prizes

|  |  |
| --- | --- |
| **Prediction** | **Prize (R)** |
| 6 correct numbers | 10, 000 000.00 |
| 5 correct numbers | 8,584.00 |
| 4 correct numbers | 2,384.00 |
| 3 correct numbers | 100.50 |
| 2 correct numbers | 20.00 |

**Requirements for the code**:

The player must enter his/her age first. Only players who are above 18 years are allowed to play lotto. Your program should take care of the validation. The program should also automatically write the results to a text file including the current date. The text file should reflect the total amount which the Ithuba lottery has to pay to the winners and show winners in each category.

In doing this project, you are expected to implement the following concepts:

Start by identifying the software development methodology which you are going to use. Write a report why you have selected that approach. Also write a report on the following to indicate your understanding of the requirements:

* Design understanding of design techniques. You can implement =>Flowcharts, algorithms, pseudocodes or input processing output tables.
* GUI using tkinter or PyQt.
* Appropriate variable naming conventions. Google pep8 please.
* Use of list or stacks or arrays or dictionaries or queues. You can use more than one type of collection also.
* Loops and functions
* Implementing text files
* Object oriented Programming (use classes, objects, constructors, inheritance and methods) (not mandatory though. You are free to implement the solution using procedural programming)
* Software testing- doctest and or unittest is highly recommended
* Implementation of user defined and in-built modules is highly recommend
* Implement exception handling. Handle the exception that you can easily reproduce.
* Implement acceptable documentation in-order for other developers to understand your code.

Please note, as programmers you will notice that you are going to have completely different solutions to the program. You are encouraged to do a proper research for each concept you intend to implement. If your solution is exactly similar to another one, it will not be marked. The challenge tests all concepts studied in Python sessions. Nonetheless, you can also implement your own concepts to show the extent of going an extra mile.

Reminder: Add your name, surname and class as a comment in line one of your project.

Zip the project together with the executable file. When submitting, please submit through LMS. Do not forget to click submit.