COMMONWEALTH SECONDARY SCHOOL
PRELIMINARY EXAMINATION 2020

COMPUTING
Paper 2 (Practical)

Name: _____ ( ) Class: _____

SECONDARY FOUR EXPRESS/NORMAL (ACADEMIC) **Wednesday 2 Sep 2020**

7155/2 **1100 – 1330**

2 hour 30 min

READ THESE INSTRUCTIONS FIRST

Answer **all** questions.

All tasks must be done in the computer laboratory. You are not allowed to bring in or take out any pieces of work or materials on paper or electronic media or in any other form.

Programs are to be written in Python.
Save your work using the file name given in the question as and when necessary.

The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 50.

Name of setter: Mr Cheong Hock Soan

Task 1

A delivery company is trying to incentivise its delivery staff to work harder amidst the spread of the COVID-19 virus. It uses spreadsheet to track the staff's trips and amount of money they clocked in their deliveries for a particular week.

Open the file **WEEKLY**. You will see the following data.

Save the file as **GENREPORT**_<your name>_<class>_<index number>**.xlsx**

Safe2Deliver Delivery Services Weekly Report

Employee ID	Name	Area	Number of Trips	Amount Clocked	Incentive	Commission	Award
W000239	Swee Poh Kuee		27	$235.54			
W000324	Teh Meng Hee		21	$241.64			
E000423	Muhd Haer Bin Ariff		28	$312.64			
S000233	Lee Xian Huat		34	$375.28			
N000386	Zhong Wenquan		25	$258.43			
W000244	Khoo Meng Teng		17	$220.49			
E000422	Tan Kim Kok		24	$258.20			
N000231	Wee Gim Kiat		37	$367.32			
S000329	Chan Kian Siong		25	$258.21			
E000118	Veerasamy s/o Gopalnathan		18	$234.53			
W000322	Tay Hock Lye		32	$312.57			
S000241	Parthiban s/o Kaliaya		33	$309.43			
W000253	Grace Teng		26	$284.99			
E000284	Ahmad bin M Danish		32	$343.56			
N000392	Suria d/o Pravin		29	$326.89			
S000374	Ravichandran s/o T Mariemuthu		23	$264.21			
E000243	Swee Kok Hui		17	$198.90			
S000374	Mohd Adnan bin M Hassan		22	$221.24			
W000410	Prashand s/o Vellaisamy		31	$297.50			

Incentive Table

Number of Trips	15	20	25	30	35
Incentive	5%	10%	15%	20%	25%

Staff Deployment

Region	Number of Staff
N	
S	
E	
W	

1 The first letter of the **Employee ID** states the area that he/she is deployed to work in. Enter an appropriate function in the **Area** column to find the area that the employee is deployed to. [1]

2 Use an appropriate function to search for the **Incentive** in the **Incentive Table**, complete the **Incentive** column. [2]

3 Enter a formula in the **Commission** column to calculate the commission that each staff gets. The commission is calculated by multiplying the incentive to the amount clocked. [1]

4 Use a conditional statement, to identify those staff who have commission more than $75.00 and put **YES** in the **Award** column. Otherwise, put **NO** in the **Award** column. [2]

5 Use conditional formatting, to identify those staff who have commission less than $20 by highlighting the cells in the Commission column in red. [2]

6 Use an appropriate function to count the number of staff deployed in each area and put the number in the **Number of Staff** column in the **Staff Deployment** table. [2]

Save and close your file.

Task 2

The following program takes in 2 user entries and verifies if the users are Singaporeans by checking if the first letter of each entry is “S”. If the user is a Singaporean, the program prints a welcome home message. Otherwise, it prints a welcome to Singapore message.

```
ID = ''

for i in range(2):
    ID = input("Enter ID: ")
    if ID[0] == "S":
        print("Welcome home!")
    else:
        print("Welcome to Singapore!")
```

7 Open the file **VERIFY.py**

Save the file as **MYVERIFY**_<your name>_<class>_<index number>**.py**

Edit the program so that

(i) It takes in 5 entries, [1]

(ii) It prints the same welcome home message if the first letter of the entry is either “S” or “T”. [2]

(iii) The program counts the total number of Singaporeans in the list. [3]

Save your program.

8 Open the file **MYVERIFY.py**

Save your file as **NUMVERIFY**_<your name>_<class>_<index number>**.py**

Edit the program so that it

- Checks that the length of the ID is 9 characters. Otherwise, it will produce an error message and keep asking the user to re-enter the ID. [2]
- Works for any number of entries. [2]

Save your program.

Task 3

The following program accepts a user-defined string, removes the spaces, and extracts the characters based on the indices specified by the user.

For example, if the string is “I have a cat” and the indices entered are 2,3,6,8, the program prints the output of ‘avct’.

There are several syntax errors and logical errors in the program.

```
string = input("Enter string: ")
index = int(input("Enter the index/indices of characters you wish
to extract in a,b,c format: "))
indx_lst == index.split("")

new_string = ''
final_string = ''

for j in range(string):
    if string[j] == '':
        break
    else:
        new_string = new_string + string[j]

for i in range(len(indx_lst)):
               indx_lst[i] = indx_lst[i]

    for ele in range(indx_lst):
    final_string = final_string + new_string[ele]

print("The original sentence is: , string")
print("The index/indices of characters you wish to extract is/are
", indx_lst)
print("The character(s) extracted is/are ", final_string)
```

Open the file **EXTRACT.py**

Save the file as **LIST**_<your name>_<class>_<index number>**.py**

9 Identify and correct the errors in the program so that it works correctly accordingly to the rules above. [10]

Save your program.

Task 4

You have been asked to write a program to convert the raw marks of four subjects (English, Mother Tongue, Mathematics and Science) into grades.

A distinction grade (D) is 75% and above.
A credit grade (C) is between 60% (inclusive) and 75% (non-inclusive).
A pass grade (P) is between 50% (inclusive) and 60% (non-inclusive).
A fail grade (F) is below 50%.

The program should allow you to:

- Enter data in the format of a b c d where a, b, c and d are the marks in integer for English, Mother Tongue, Mathematics and Science. An example is `45 54 66 73`.
- Repeat this until the data entry is `X`.
- Converts all the raw marks into the corresponding grades.
- Calculate the number of Distinctions, Credits, Passes and Failures
- Display this on the screen. Your output **must** look like this:

```
Grades for   EL    MT    Math  Sci
             P     C     D     F
             F     C     C     P
             D     P     C     C


Number of Distinctions:  2
Number of Credits:       5
Number of Passes:        3
Number of Failures:      2
```

10 Write your program and test that it works.

You may use the following test data:

```
54 68 87 45
43 70 69 53
76 54 62 71
 x
```

Save your program as **GRADES**_<your name>_<class>_<index number>**.py** [11]

11 Save your program as **VERIFYGRD**_<your name>_<class>_<index number>**.py**

Extend your program to validate that:

- The length of each entry is 4
- each grade entry is between 0 and 100 inclusive

Entries are to be re-entered if they fail to meet any of the validation.

Save your program. [3]

12 When your program is complete, test it for the following.

- Enter the marks for EL, MT, Math and Sci:
  - `45 55 67 78`
  - `-4 56 68 65`
  - `76 68 12 65`
  - `60 121 43 88`
  - `89 54 33 76`
  - `45 33 98 54 67`
  - `43 67 80 53`
  - then `X`.

Take a screenshot of your test. Save this screenshot as:
TESTGRD_<your name>_<class>_<index number>

Save your files in either **.png** or **.jpg** format. [2]

13 Save your program as **VARYGRD**_<your name>_<class>_<index number>**.py**

Extend your program such that the user can input and vary the distinction, credit and passing mark.

Include in your program to validate that the distinction mark to be higher than the the other two marks, and the credit mark to be higher than the passing mark.

Save your program. [4]

END OF PAPER