Class:
01033.

SHU 207	QUN SECONDARY SCHOOL 18 Preliminary Examination Secondary 4 Express	
Computing		7155/02
Paper 2 Practical (lab-based)		13 September 2018
		2 hours 30 minutes
Additional Materials:	Electronic version of LIBRARY.xlsx dat Electronic version of RAINFALL.py file Electronic version of BMI.py file Insert Quick Reference Glossary	a file

READ THESE INSTRUCTIONS FIRST

DO NOT WRITE IN ANY BARCODES.

Approved calculators are allowed.

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.

FOR	EXAMINER'S USE	

Total

This document consists of **7** printed pages, including this cover page.

[Turn over

Task 1 (10 marks)

A community library uses a spreadsheet to record the books borrowed by its members. You are required to complete the setting up the spreadsheet to record the books that are overdue.

Open the file LIBRARY. You will see the following data.

Save the file as **MYLIBRARY**_<your name>_<centre number>_<index number>.

	A	в	С	D	E	F	G	н	I
1		Cortana Community Library							
2									
3	Date:								
4									
5					Borrowers	List			
6									
7	ΙΓ	Borrower ID	Age	ltem Type	Borrow Date	Due Date	Return Date	Days Overdue	Status
8	[M19830524		General	05/08/2017		29/08/2017		
9		F19800609		General	05/08/2017		27/08/2017		
10		F19851011		Children	07/08/2017		21/08/2017		
11		M19910130		General	10/08/2017		16/08/2017		
12		F20010521		Young readers	13/07/2017		27/08/2017		
13		F20020908		Young readers	13/08/2017		27/08/2017		
14		M20030415		Young readers	15/06/2017		02/09/2017		
15		F19791230		General	26/08/2017		01/10/2017		
16		M20080413		Children	03/09/2017		16/09/2017		
17		F19767565		General	21/06/2017		10/09/2017		
18		F20061256		Children	09/08/2017		10/09/2017		
19		M19981176		General	10/09/2017		02/10/2017		
20		F19970056		General	11/09/2017		02/10/2017		
21									
22									
23									
24									
25					-				
26			Loan Type						
27] Γ	ltem Type	Duration (day)	Fines per day					
28		General	21	\$0.36					
29		Children	14	\$0.30					
30		Young readers	14	\$0.33					
- 24									

1 In cell **B3** enter a function to return today's date.

- [1]
- 2 The second to fifth digits of the **Borrower ID** indicates the date of birth of the borrower. For example, Borrower ID F19900762 indicates that the date of birth of the borrower is 1990.

Enter a formula to calculate the age of the borrower and use it to complete the **Age** column.

3 Use an appropriate function to search for the **Item Type** in the **Loan Type** table and use it to complete the **Due Date** column in the **Borrowers List** table.

[2]

[2]

Use a conditional statement to check if a borrowed item was overdue, if an item was overdue put the number of days overdue in the Days
 Overdue column else If an item had not been returned or was not due yet put a value of 0. Complete the Days Overdue column.

[2]

[2]

[1]

- 5 If an item was overdue for more than 60 days a status value of SUSPENDED is shown in the Status column else if it was overdue for more than 30 days but less than or equal to 60 days, a status value of WARNING is shown. Otherwise an OK status value is shown
- 6 In the **Status** column, format the cells to automatically show a red background when the status value is SUSPENDED and a yellow background when the status value is WARNING.

Save and close your file.

Task 2 (10 marks)

The following program prompts the user to enter the amount of rainfall recorded in mm over 1 week and prints out the highest rainfall recorded for that week. The rainfall is recorded to the nearest mm.

```
highest_rainfall=0
for day in range(7):
    rainfall = int(input("Enter rainfall recorded in mm: "))
    if rainfall > highest_rainfall :
        highest_rainfall = rainfall
print("Highest rainfall recorded for the week is ",
highest rainfall)
```

Open the file **RAINFALL.py**

Save the file as **MYRAINFAL**L_<your name>_<centre number>_<index number>.

7 Edit the program so that it:

(a)	Prints the highest and lowest rainfall for the week.	[2]
(b)	Prints the average rainfall for the week, the average value should be rounded to 2 decimal place.	[2]
(c)	Validates that the rainfall entered is a non-negative integer, and if not, prompts the user to enter again as necessary.	[4]

Save your program.

8 Save your program as

VARAINFALL_<your name>_<centre number>_<index number>.

Edit your program to allow user to specify how many days of rainfall to enter, calculates and display results based on the number of days entered. You can assume that the user enters a positive integer.

[2]

Task 3 (10 marks)

A recruitment exercise requires that the applicants have a BMI value of <u>between 18.5</u> to 22.9 kg/m² (inclusive). The following program calculates the number of people who are accepted and the number of people who are rejected. The program terminates when a weight of zero <u>or</u> a height of zero is input. The number of people who are accepted and the number of people who are rejected are then printed.

The program uses the following rules:

- The weight is entered in kilogram (kg) rounded to 1 decimal place and the height is entered in meters (m) rounded to 2 decimal place. (You can assume that the user enter these correctly)
- The program uses the following formula for calculating the value of BMI:

$BMI = weight \div (height \times height).$

• The BMI value is rounded to **<u>1 decimal place</u>**.

There are several syntax and logical errors in the program.

```
weight=float(0)
height=float(0)
bmi=float(0)
accepted=0
rejected=10
weight=float(input("Enter weight in kg: ")
height=float(input("Enter height in m: "))
while not weight=0 and not height=0:
    bmi= round(weight/(height * height),1)
   print("bmi=",bmi)
    if bmi >= 18.5 or bmi < 22.9:
        accepted = accepted + 1
    else:
        rejected = rejected - 1
    print("Total accepted = ", accepted)
    print("Total rejected = ", rejected)
```

Open the file **BMI.py**.

Save the file as **MYBMI_**<your name>_<centre number>_<index number>.

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

Save your program.

Task 4 (20 marks)

A program is to be written to accept the marks obtained by four students in four subjects, English, Mother Tongue, Math and Science. The program will calculate the average marks for each student.

The program should allow you to:

- Prompt user to enter the marks for each student in the format a, b, c, d, where a is the mark for English, b is the mark for Mother Tongue, c is the mark for Math and d is the mark for Science. An example is 67, 78, 81, 75
- The marks entered must be an integer from 0 to 100. Program will terminate when there is an invalid input.
- After the students' marks are entered, the program will then calculate and print each student's average mark for the four subjects. The average mark must be rounded to the nearest integer.

Example of prompts and inputs:

Enter marks for student1: 67,78,81,75 Enter marks for student2: 54,67,48,59 Enter marks for student3: 89,92,87,91 Enter marks for student4: 42,62,42,45

Your output must look like this:

Average marks for student1 is 75 Average marks for student2 is 57 Average marks for student3 is 90 Average marks for student4 is 48

10 Write your program and test that it works.

Save your program as **MARKS1_**<your name>_<centre number>_<index number> [10]

When your program is working, use the following test data to show

[5]

[3]

[2]

54,67,48,59 89,92,87,91 42,62,42,45 Take a screen shot of your results and save it as a bitmap MARKSRESULTS <your name> <index number> 12 Save your program as MARKS2 <your name> <centre number> <index number>. Extend your program to print the highest marks for each of the four subjects. Your output should look like this: Highest mark for English is 89 Highest mark for Mother Tongue is 92 Highest mark for Math is 87 Highest mark for Science is 91 Save your program. 13 Save your program as MARKS3 <your name> <centre number> <index number> Extend your program to work for any number of students. Save your program. .

END OF PAPER

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your text results:
67,78,81,75