Pre-Leaving Certificate Examination, 2021

Computer Science

Section C

Ordinary Level

Time: 1 hour

80 marks

Instructions

There is one section of the examination paper in this booklet.

Section C   Programming   80 marks   1 question

Answer all parts of the question on your digital device.

Instructions are provided for each question.

Ensure that you save your work regularly and when you complete each question.

Do not change the file names or save your work under different file names.

If you are unable to get some code to work correctly you can comment out the code so that you can proceed. The code that has been commented out will be reviewed by the examiner.

Answer all question parts.

Question 16

(a)   Open the program called **Question16_A.py** from your device.
Enter your name in the space provided on **Line 2.**

A small business wants to update its web page so that it can process online sales. It hopes in doing this it can increase its sales and create a new source of revenue for the business. It is currently developing its online ordering system so that customer orders will be processed quicker by a member of staff before being delivered.

```
1   # Question 16(a)
2   # Student name:
3
4   print("Welcome to the new online ordering system.\n")
5
6   total_cost = 0
7   items_count = 1
8
9   price_of_item = float(input("Enter the price of item {}".format(item_count)+" : € "))
10  total_cost+=price_of_item
11
12  print("You entered",item_count,"items and the total is €",total_cost)
```

This program is the interface that staff use to process orders. Currently, though, the program does not have a lot of functionality, and staff are restricted to only processing orders one item at a time.

```
Welcome to the new online ordering system.

Enter the price of item 1 : € 4.75
You entered 1 items and the total is € 4.75
```

(i)   Add a comment at the start of the program that says '**This program is a simple ordering system**'.

(ii)   Modify the program so the staff member who is processing the order can enter their name.
A **suitable variable** should be used to **store** the name:

```
Please enter your user name: Martin
```

(iii) Modify the program to output the user name created in part (ii) to the screen.

```
The member of staff who processed your order was: Martin
```

(iv) Currently the program can only process orders one item at a time.

Modify the program so:

a. It asks the user how many items are in the order.
b. Use a **for** loop or **otherwise** to calculate the **total value** of the order.
c. **Display** the total cost of the order.

The output of the program may look as follows:

```
How many items are in the customers order: 3
Enter the price of item 1 : € 3.54
Enter the price of item 2 : € 2.37
Enter the price of item 3 : € 5.00
You entered 3 items and the total due is € 10.91
```

(v) Customers are required to create an account that they lodge money to when placing their orders. During the processing of the order, a member of staff will check to see if the balance of the customer's account is enough to finalise the order.

Modify the program so:

a. The staff member can **enter** the **current balance** of the customer's account.
b. **Calculate** and **display** the **remaining balance** in the customer's account after the order has been processed.

Suitable variable(s) should be used to store name(s):

The output of the program may look as follows:

```
You entered 2 items and the total due is € 5.96
What is the customers current account balance € 10
Your remaining balance: € 4.04
```

(vi) Modify the program so that it tells the user:

a. If the customer does not have enough credit in their current account.
b. The output should tell the user how much money is still owed.

The output of the program may appear as shown below:

```
The customer does not have enough credit in their account, they still owe: € 2.01
```

(vii) **Output** a message, if the number of items in an order entered is below 0.

```
How many items are in the customers order: -2
Invalid option
```

You can use the data in this table to test the functionality of your program.

Item Number	Item Cost
1	10.00
2	3.45
3	11.36
4	8

Total cost = 32.81 euro
Customer account balance = 30 euro
Customer still owes = 2.81 euro

(b) Open the program called **Question16_B.py** from your device.
Enter your name in the space provided on **Line 2**.

```
1   # Question 16(b)
2   # Student name:
3
4   Standard_Postal_List = []
```

Countries that qualify for standard postage and packaging costs			
Netherlands	Denmark	Poland	Portugal
Finland	Romania	France	Germany
Greece	Spain	Hungary	Sweden
Ireland			

(i) When the business posts orders that have been placed online it has a list of **thirteen** countries that qualify for standard postage and packaging costs. These countries are shown in the table above.

Place these countries in the list called **'Standard_Postal_List'**.
Note: Python is case sensitive. Ireland and ireland are two different items because of the size of the letter i.

(ii) Modify the code so:

    a. It asks the user to enter the name of the country they want to ship an order to.
    b. Use an **if statement** to compare the user input to the Standard_Postal_List. If the country is an element of the list, output a message saying "**This country uses standard postage and packaging costs**".
    c. If the country is not in the standard postal list then the output should be a message stating "**This country is not on the approved delivery list".**

The output may appear as follows:

```
Please enter the country that you wish to send the order to: India
This country is not on the approved delivery list.
```

(iii) Modify the code so:

    a. If the country the user enters in part (ii) is not on the list, the program should ask the user if they want to add this new country to the Standard_Postal_list.

    b. If user chooses 'yes', the new country will be added to the Standard_Postal_list.

    c. If user chooses 'no', the new country will not be added to the Standard_Postal_list and a message is displayed confirming this.

The output may appear as follows:

```
Please enter the country that you wish to send the order to: India
This country is not on the approved delivery list.
Would you like to add this country to the approved Postal List for future
deliveries, y/n: y
India has been added to the Standard Postal List
```

(iv) Print the list to the **Standard_Postal_list** to the screen with any new countries that may have been added.

Display the list in alphabetical order.

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