Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2021

Computer Science

Section C

Ordinary Level

Saturday 22 May   Morning 11:30 – 12:30

50 marks

Instructions

There is one section in this paper.

Section C   Programming   One question   50 marks

Answer all question parts

Answer all parts of the question on your digital device.

Calculators may be used during this section of the examination.

The *Formulae and Tables* booklet cannot be used for this section of the examination.

The superintendent will give you a copy of the *Python Reference Guide*.

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

Save your files using the naming structure described at the beginning of each question part.

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.

Rough work pages are provided at the end of this booklet. Please note that this booklet is not to be handed up and will **not** be reviewed by an examiner.

At the end of the examination it is your responsibility to ensure that you have saved all of your files onto your external media.

You will be provided with a brown envelope for your external media. Write your examination number on this envelope and place your external media into it before sealing. Place this envelope in the pouch at the front of the red envelope that contains your examination booklet from Section A and B.

Do not hand this paper up

Section C	Programming	50 marks

Answer all question parts.

Question 16

(a) Open the program called **Question16_A.py** from your device. The source code is shown and described briefly below.

Before making any changes, you should save your working copy of the file using the format **CandidateNumberQuestion16_A.py**. For example, you would save the file as **123456Question16_A.py** if your candidate number was 123456.

Enter your Examination Number in the space provided on **line 2** in your Python file.

The program below is for a simple Automatic Teller Machine (ATM). An ATM allows banking customers to withdraw money from their accounts provided they enter the correct Personal Identification Number (PIN). When the user enters the correct PIN, a message appears saying "Welcome".

```
1  # Question 16(a)
2  # Examination Number:
3
4  pin = "1579"
5
6  userTry = input("Enter PIN:")
7
8  if userTry == pin:
9      print("Welcome")
```

Make the following changes to the program:

(i) Insert a comment in the appropriate location to explain what the `input` command is doing in this program.

(ii) Amend the program so that the following message is displayed if an incorrect PIN is entered:

```
Incorrect PIN
```

(iii) Create a suitably named Boolean variable (e.g. `loggedIn`) that is initially set to `False` before the user enters a PIN.

(iv) Amend the program so that the new Boolean variable is set to `True` when the user enters the correct PIN.

(v) Using a `while` loop or similar, keep asking the user to enter their PIN until they have entered it correctly.

When the program is run the output may look as follows:

```
Enter PIN:1234
Incorrect PIN
Enter PIN:1456
Incorrect PIN
Enter PIN:1579
Welcome
```

(vi) Create a suitably named variable (e.g. `failedAttempts`) that is initially set to **0** before the user enters a PIN. This variable will keep track of the number of failed login attempts.

(vii) The user should only be allowed 3 failed login attempts. If the PIN is entered incorrectly 3 times an appropriate message should be displayed.

When the program is run the output may look as follows:

```
Enter PIN:1111
Incorrect PIN
Enter PIN:2222
Incorrect PIN
Enter PIN:3333
Incorrect PIN
You have entered the PIN incorrectly 3 times.
```

Save your file using the format **CandidateNumberQuestion16_A.py**. For example, you would save the file as **123456Question16_A.py** if your candidate number was 123456.

Space for rough work.

This page will not be reviewed by an examiner.

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