Pre-Leaving Certificate Examination, 2022

Computer Science

Section C

Higher Level

Time: 1 hour

80 marks

Instructions

There is one section in this paper.

Section C	Programming	One question Answer all question parts	80 marks

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.

Do not hand this paper up

Section C	Programming	80 marks

Answer all question parts.

Question 16

(a) Open the program called **Question16_A.py** from your device.

Before making any changes, you should save your working copy of the file using the format **StudentNameQuestion16_A.py**. For example, you would save the file as **MaryMurphyQuestion16_A.py** if your name was Mary Murphy.

Enter your Name and School in the space provided on **line 2** in your Python file.

```
1  # Question 16(a)
2  # Name and School:
```

One of the most powerful aspects of Python is its ability to "read in" data from external sources and to perform complicated analysis on that data. You will find a file of a poem by Percy Bysshe Shelley called **shelley.txt** in the same folder as your seed file.

Mutability by Percy Bysshe Shelley

We are as clouds that veil the midnight moon;
How restlessly they speed and gleam and quiver,
Streaking the darkness radiantly! yet soon
Night closes round, and they are lost for ever: –

Or like forgotten lyres, whose dissonant strings
Give various response to each varying blast,
To whose frail frame no second motion brings
One mood or modulation like the last.

We rest – a dream has power to poison sleep;
We rise – one wandering thought pollutes the day;
We feel, conceive or reason, laugh or weep,
Embrace fond woe, or cast our cares away: –

It is the same! – For, be it joy or sorrow,
The path of its departure still is free;
Man's yesterday may ne'er be like his morrow;
Nought may endure but Mutability.

(i) Using the **`.readlines()`** built-in function in Python, open the **shelley.txt** file, read the file into your program, then close the **.txt** file.
Indicate that it has worked using an appropriate print statement.
The output should look as follows:

```
The poem has been read correctly by the program
```

Make the following changes to the program:

(ii) Modify the program to output the last line of the poem.

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

```
The poem has been read correctly by the program
The last line is: "Nought may endure but Mutability."
```

(iii) Modify the program to count the numbers of lines, words and characters in the poem (Hint: use **`.split()`** to create a list containing all the words from the different lines.)
When the program is run the output may look as follows:

```
The poem has been read correctly by the program
The last line is: "Nought may endure but Mutability."
There are 19 lines, 130 words and 700 characters
```

(iv) The **shelley.txt** file shows that there are 16 lines, not 19 lines as indicated in part **(iii)**.
Modify the program to output the correct number of lines.
When the program is run the output may look as follows:

```
The poem has been read correctly by the program
The last line is: "Nought may endure but Mutability."
There are 16 lines, 130 words and 700 characters
```

(v) It would be nice to be able to search the poem for a particular word and to know its location. Create a function so that, when called, it will tell you if an input word is present or absent and, if present, what line it is on. (Hint: be mindful of the fact that the poem has 16 lines, not 19!)
When the program is run the output may look as follows:

```
The poem has been read correctly by the program
Please enter a word to search for: path
The word "path" was found in line 14
The last line is: "Nought may endure but Mutability."
There are 16 lines, 130 words and 700 characters
```

Save your file using the format **StudentNameQuestion16_A.py**. For example, you would save the file as **MaryMurphyQuestion16_A.py** if your name was Mary Murphy.

(b) You will find a second file called **alt_shelley.txt** in the folder.

Create a new file called **Question16_B.py**.

Write a program that compares the two poems line by line, checking to see if they are the same.

Save your file using the format **StudentNameQuestion16_B.py**. For example, you would save the file as **MaryMurphyQuestion16_B.py** if your name was Mary Murphy.