Section B

You are advised to spend no more than **20 minutes** on this section.

Type your answers in your Electronic Answer Document.
You **must save** this document at regular intervals.

The question in this section asks you to write program code **starting from a new program/project/file**.

Question 1 **Figure 1** and **Figure 2** show examples of ISBN's that are valid. **Figure 3** shows an ISBN which is invalid.

Figure 1

Digits (D):	9	7	8	1	4	7	1	8	8	6	6	5	**2**
Weights (W):	1	3	1	3	1	3	1	3	1	3	1	3	

(D x W): 18 + 21 +8 + 3 + 4 +21 + 1 +24 + 8 +18 + 6 + 15 = 138

138 MOD 10 = 8

10-8 = 2

Therefore a valid ISBN.

Figure 2

Digits (D):	9	7	8	3	3	7	2	6	9	9	1	4	**0**
Weights (W):	1	3	1	3	1	3	1	3	1	3	1	3	

(D x W): 9 + 21 +8 + 9 + 3 +21 + 2 +18 + 9 +27 + 1 + 12 = 140

140 MOD 10 = 0

As the result is 0, the check digit is 0.

Therefore a valid ISBN.

Figure 3

Digits (D):	9	7	8	1	4	7	1	8	8	6	6	3	**4**
Weights (W):	1	3	1	3	1	3	1	3	1	3	1	3	

(D x W): 18 + 21 +8 + 3 + 4 +21 + 1 +24 + 8 +18 + 6 + 9 = 132

132 MOD 10 = 2

10-2 = 8

The check digit was 4, not 8 so invalid ISBN.

Create a folder/directory **Question1** for your new program.

Write a program that will input a 13 digit International Standard Book Number (ISBN).

Each digit should be entered individually by the user into an array.

Have your program calculate the check digit and then compare with the check digit given.

If the check digits match, display the message "`Valid ISBN`" otherwise display the message "`Invalid ISBN`".

Table 1

Identifier	Data Type	Purpose
`ISBN`	`Array[1..13] Of Integer`	Stores the 13 digit ISBN entered by the user – one digit is stored in each element of the array.
`Count`	`Integer`	Used to select a specific digit in the ISBN.
`CalculatedDigit`	`Integer`	Used to store the digit calculated from the first 12 digits of the ISBN. It is also used to store the intermediate results of the calculation.

What you need to do

Use the variables named in **Table 1** above, plus any other variables that you require. Once you have written your program:

Test the program by showing the result of entering the digits `9, 7, 8, 0, 0, 9, 9, 4, 1, 0, 6, 7, 6` (in that order).

Test the program by showing the result of entering the digits `9, 7, 8, 1, 8, 5, 7, 0, 2, 8, 8, 9, 4` (in that order).

Save the program in your new **Question1** folder/directory.

Evidence that you need to provide
Include the following in your Electronic Answer Document.

1 1 Your PROGRAM SOURCE CODE.

[15 marks]

1 2 SCREEN CAPTURE(S) for the test when the digits `9, 7, 8, 0, 0, 9, 9, 4, 1, 0, 6, 7, 6` are entered (in that order).

Your evidence must show the result of the test and, as a minimum, the last three digits entered for the test.

[2 marks]

1 3 SCREEN CAPTURE(S) for the test when the digits `9, 7, 8, 1, 8, 5, 7, 0, 2, 8, 8, 9, 4` are entered (in that order).

Your evidence must show the result of the test and, as a minimum, the last three digits entered for the test.

[1 mark]