
Section B

You are advised to spend no more than **15 minutes** on this section.

Type your answers to **Section B** 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**.

- Save your program/project/file in its own folder/directory.
 - You are advised to save your program at regular intervals.
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Question 4 Create a folder/directory **Question4** for your new program.

The algorithm, represented using pseudo-code in **Figure 4**, and the variable table, **Table 3**, describe a program that calculates and displays all of the prime numbers between 2 and 50, inclusive.

The MOD operator calculates the remainder resulting from an integer division
eg $10 \text{ MOD } 3 = 1$.

If you are unsure how to use the MOD operator in the programming language you are using, there are examples of it being used in the **Skeleton Program**.

Figure 4

```
OUTPUT "The first few prime numbers are:"
FOR Count1 ← 2 TO 50 DO
    Count2 ← 2
    Prime ← "Yes"
    WHILE Count2 * Count2 ≤ Count1 DO
        IF (Count1 MOD Count2 = 0) THEN
            Prime ← "No"
        ENDIF
        Count2 ← Count2 + 1
    ENDWHILE
    IF Prime = "Yes" THEN
        OUTPUT Count1
    ENDIF
ENDFOR
```

Table 3

Identifier	Data Type	Purpose
Count1	Integer	Stores the number currently being checked for primeness
Count2	Integer	Stores a number that is being checked to see if it is a factor of Count1
Prime	String	Indicates if the value stored in Count1 is a prime number or not

What you need to do

Write a program for the algorithm in **Figure 4**.

Run the program and test that it works correctly.

Save the program in your new **Question4** folder/directory.

Evidence that you need to provide

Include the following in your Electronic Answer Document:

2 0 Your PROGRAM SOURCE CODE. **[11 marks]**

2 1 SCREEN CAPTURE(S) for the test showing the correct working of the program. **[1 mark]**

2 2 Describe the changes that would need to be made to the algorithm shown in **Figure 4**, so that instead of displaying the prime numbers between 2 and 50, inclusive, it displays all the prime numbers between 2 and a value input by the user, inclusive. **[3 marks]**

Turn over for Section C

Turn over ►