higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

BASIC PRINCIPLES OF COMPUTER PROGRAMMING AND COMPUTER LITERACY

(First paper)

NQF LEVEL 2

(10041062)

24 November 2023 (Y-paper)
13:00–15:00

This question paper consists of 11 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
BASIC PRINCIPLES OF COMPUTER PROGRAMMING AND COMPUTER LITERACY
NQF LEVEL 2
PAPER 1
TIME: 2 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
2. Read all the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Use only a black or blue pen.
5. Write neatly and legibly.

SECTION A

QUESTION 1

Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1–1.10) in the ANSWER BOOK.

1.1 To create an end-of-line comment, which symbol do you use to begin the comment?

A #
B *
C /
D &

1.2 How is data stored within a computer's memory?

A It is stored as hexadecimal data.
B It is stored in plain text data.
C It is stored as binary data.
D It is stored as octal data.

1.3 In a computer, what component is known as the processor?

A Basic input/output devices
B CPU
C RAM
D SDD

1.4 When you declare a variable in Python, ...

A you must then initialise it in a separate statement before using it.
B you specify that variable’s data type at the same time.
C you must assign a value to that variable at the same time.
D that variable is assigned the value of None if you do not also initialise it.

1.5 Which ONE of the following hardware components is the most likely to affect the speed of the PC?

A Monitor
B RAM
C DVD-ROM
D Printer

1.6 What built-in function should you use in Python to prompt a user for data input?

A input
B cin
C prompt
D get

1.7 Your program displays an incorrect calculation which is an example of the type of error made in programming.

A syntax error
B type error
C input error
D logic error

1.8 What keyword is used in Python to make a multiway if statement?

A elif
B else
C then
D elseif

1.9 In a flowchart, what does the rectangle symbol below represent?



A Terminal symbol
B Processing symbol
C Decision symbol
D Input/output symbol

1.10 Assuming that the value of x is 4, and the value of y is 6, what is the value of the following expression? (x - y)**2 > y

A False
B True
C Undefined
D TypeError

(10 × 1) **[10]**

QUESTION 2

Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (2.1–2.5) in the ANSWER BOOK.

2.1 Programming algorithms are used to design the logic for the statements in a computer program.

2.2 The term debugging refers to removing comments from a program so that it runs faster.

2.3 A constant is used to store data in a memory location that can change when the program is running.

2.4 Scratch is an example of a block programming language.

2.5 The integer data type is used to store whole numbers only.

(5 × 1) **[5]**

QUESTION 3

Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–O) next to the question number (3.1–3.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
3.1	A software application that is used to create Python programs	A	AND
3.2	In programming, variables are stored on this computing device	B	input device
3.3	Is an example of a Logical operator	C	Thonny
3.4	Is an ordered collection of values of the same data type	D	hard drive
3.5	Communication signals in computers that are represented as electrical waves	E	dir
3.6	Hardware such as microphones and cameras are referred to as	F	Scratch
3.7	A complete computer with processor, memory, input/output functions built on a single circuit board	G	rmdir
3.8	Block-based programming language	H	array
3.9	Physical device responsible for all the processing operations in a computer	I	output device
3.10	Windows command used to list the contents of the current folder you are in	J	CPU
		K	analogue
		L	digital
		M	SBC
		O	RAM

(10 × 1) **[10]**

QUESTION 4

Choose the correct term from those in brackets and write it next to the question number (4.1–4.5) in the ANSWER BOOK.

4.1 (Array/Text files) stores data permanently in a sequential way as text under a common name.

4.2 (Modularisation/Variable scope) refers to the region of the program in which the variable is visible and accessible.

4.3 (IDE/VCS) refers to the software tools that help manage the changes to software being developed.

4.4 (cd/rd) is a Windows command that allows you to change to another directory.

4.5 A (logical/physical) solution is designed using an appropriate algorithm to solve a given problem.

(5 × 1) **[5]**

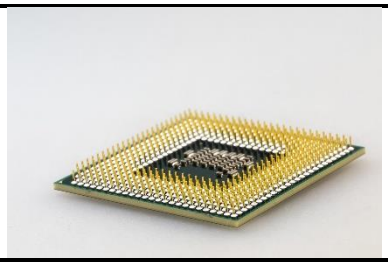
TOTAL SECTION A: 30

SECTION B

QUESTION 5

5.1 For each of the following questions, identify what the picture represents. Write only the word or words next to the question number (5.1.1–5.1.5) in the ANSWER BOOK.

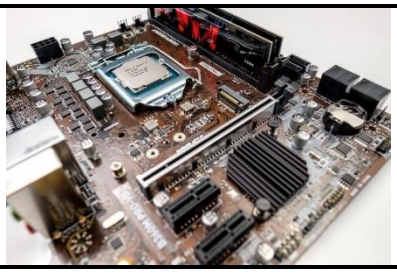
5.1.1



5.1.2



5.1.3



5.1.4



5.1.5



(5 × 1) (5)

5.2 Look at the Windows Command Prompt below and answer the questions.

```
 Directory of C:\Users\i5\Documents\Assessments

2023/08/29  21:19    <DIR>          .
2023/08/29  21:19    <DIR>          ..
2022/07/22  09:54             6 187 Marks.xlsx
2023/08/29  21:04    <DIR>          Practicals
2022/07/21  10:56            12 252 Prac_1.docx
2023/08/29  21:07    <DIR>          Tests
               2 File(s)         18 439 bytes
               4 Dir(s)   2 189 021 184 bytes free
```

5.2.1 Write the Windows command to change the name of the file Marks.xlsx to Marksheet.xlsx. (2)

5.2.2 Write the Windows command to delete the file Prac_1.docx. (1)

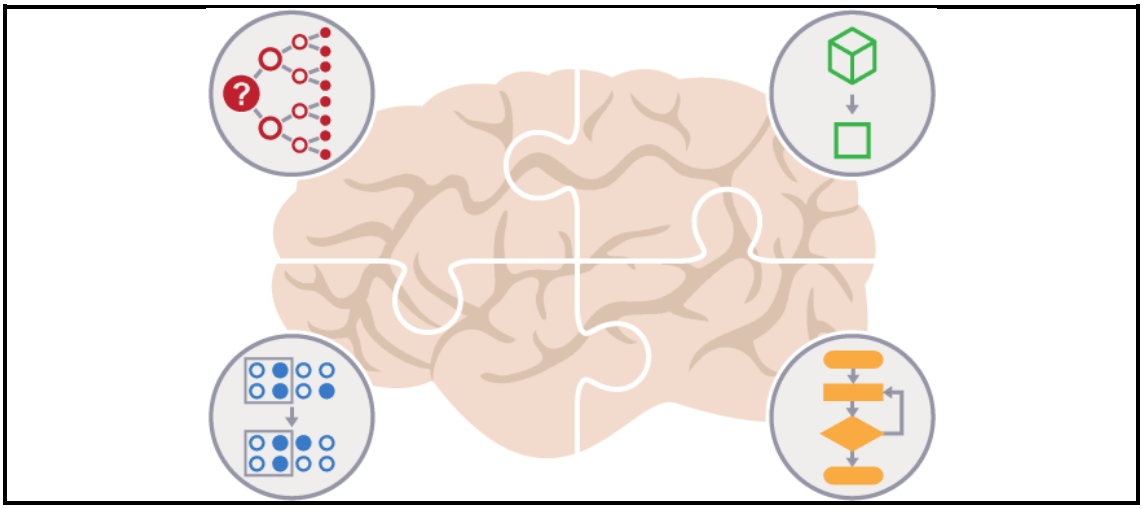
5.2.3 Write the Windows command to create a new folder called Exams in the current directory. (1)

5.2.4 Write the Windows command to clear the screen. (1)

[10]

QUESTION 6

6.1 Look at the picture below and then answer the question. ☆



COMPUTATIONAL THINKING

Identify the FOUR components of computational thinking. (4)

6.2 Identify the FOUR steps in Polya's problem-solving technique. (4)

6.3 Define the term *version control system.* (1)

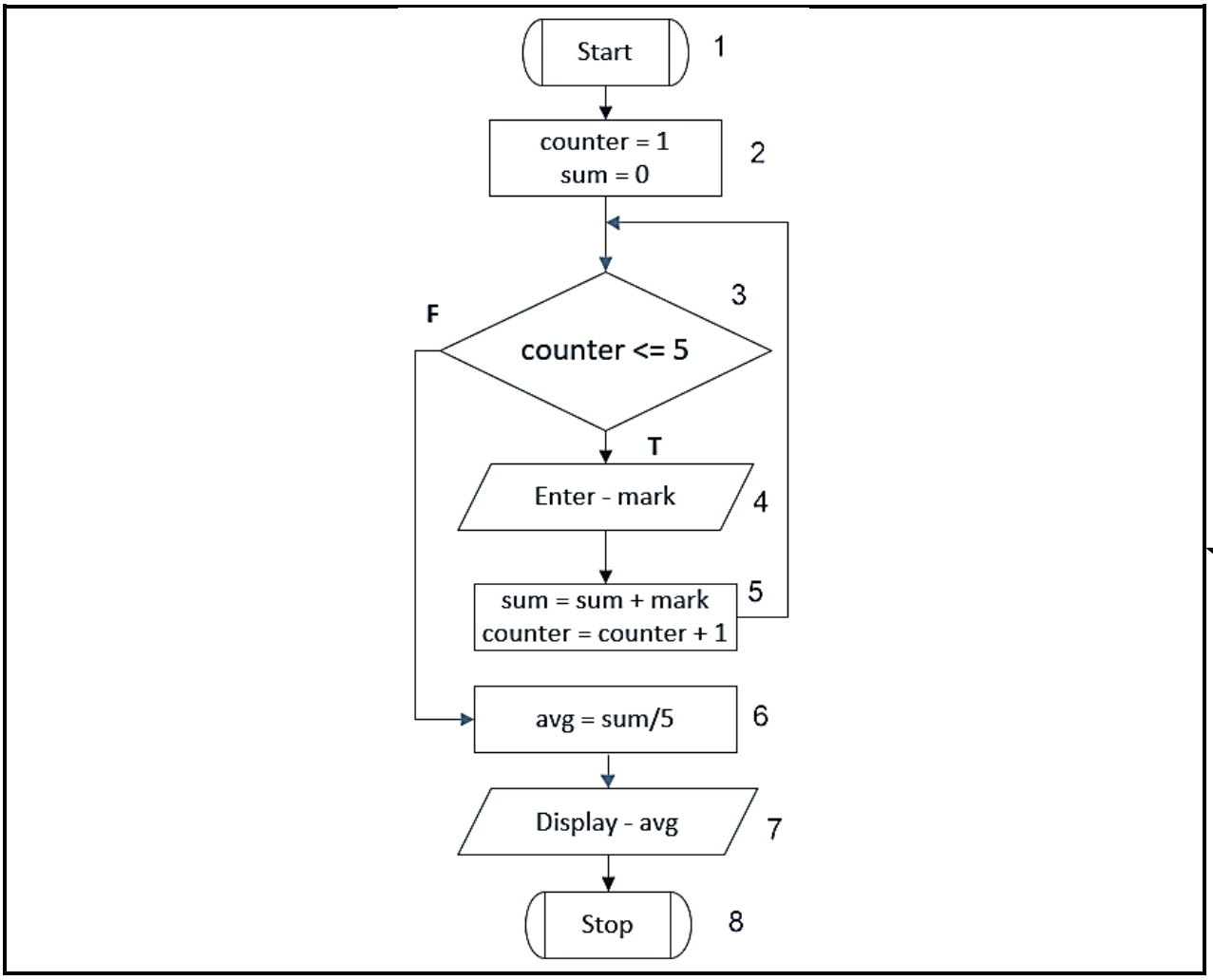
6.4 List any FOUR benefits of version control systems. (4)

6.5 Briefly explain any TWO differences between centralised and distributed VCS. (4)

☆ **[17]**

QUESTION 7

Refer to the flowchart below and answer the questions.



7.1 Identify the flowchart symbol that is numbered 3. (1)

7.2 Briefly explain what this flowchart is doing. (3)

7.3 How many times will the flowchart symbols numbered 4 and 5 be executed? (1)

7.4 Is the flowchart symbol number 6 part of the loop? (1)

7.5 What will be the effect if the text in flowchart symbol 6 is changed to:
avg = sum/4 (2)

7.6 What is the purpose of the counter in the flowchart? (1)

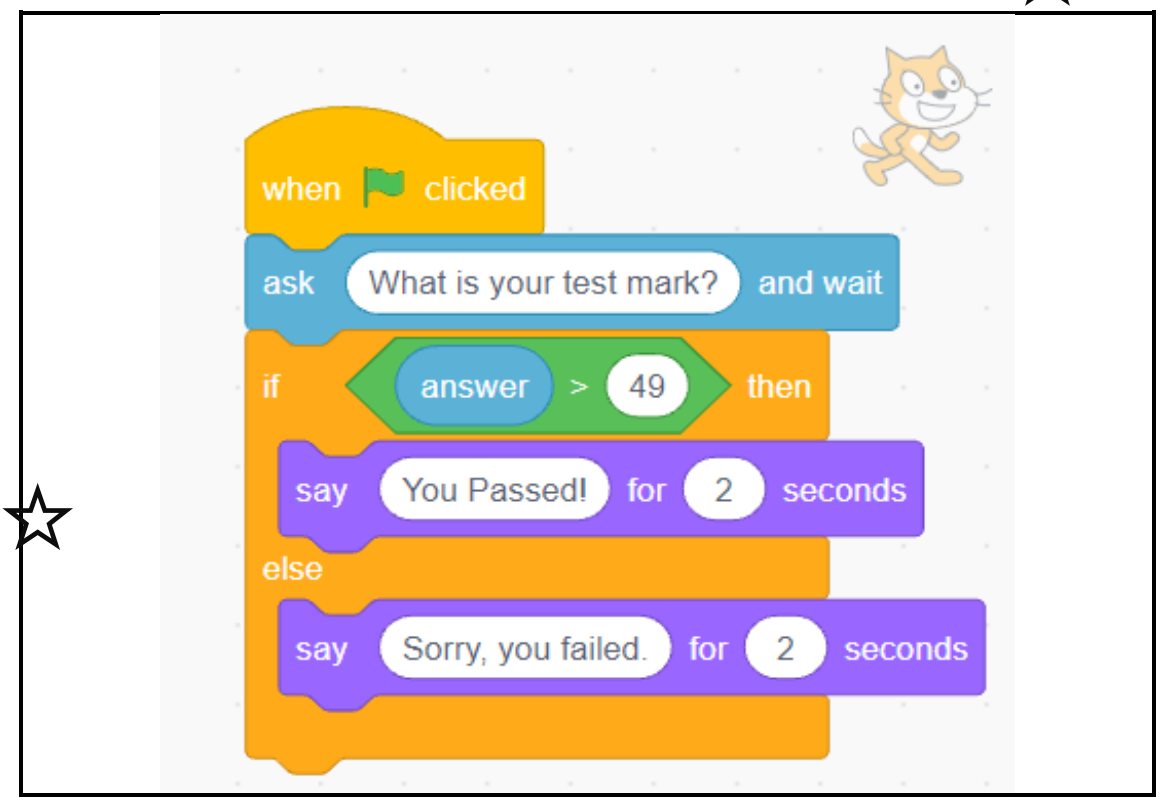
7.7 What type of loop is being used in this flowchart design? (1)

7.8 Identify and explain FOUR common data types used in Python. (4 × 2) (8)

[18]

QUESTION 8

8.1 Study the Scratch program below and then answer the questions.



8.1.1 Identify the variable used in the code.

8.1.2 What condition is being tested?

8.1.3 What will the result be if the input is 60?

(3 × 1) (3)

8.2 Briefly explain the term *compiler.* (2)

8.3 Is Python a compiled or interpreted programming language? (1)

8.4 Convert the binary number 11101111_2 to a decimal number system. Show all steps. (4)

8.5 Given A= 3 and B= 5, evaluate the following numeric expression and show all steps:

A**3 + 12 % B - 13 (4)

8.6 Study the Python code snippet below and then answer the questions. ☆

```
teamList = [South Africa;  Ireland;   France;   Scotland;   New Zealand]
```

8.6.1 Define the term *lists.* (1)

8.6.2 Write the code to display the 3rd item in the list. (2)

8.6.3 Write the code to add the item "Australia" to the end of the list. (2)

8.7 The Fibonacci series is a sequence of numbers in which each number is the sum of the two preceding numbers. The first two numbers are 0 and 1. The third term is found by adding the previous two numbers (0 + 1 = 1). The fourth term is found by adding the previous two numbers (1 + 1 = 2). And so on. ☆

An example of the series is 0, 1, 1, 2, 3, 5, 8…etc.

Study the Python code snippet below and then answer the questions.

```
first = 8.7.1 …
second = 8.7.2 ….
count = 1
print('Terms of the Fibonacci series:')
print(first, second, end=' ')

while count <= 8.7.3  …:
    nextnum = first + second
    print(8.7.4 …, end=' ')
    first = second
    second =  8.7.5 …
    count = count + 8.7.6 …
```

Provide the missing code in the spaces provided (8.7.1–8.7.6) to print the first ten numbers in the Fibonacci series.

The output should look as follows:
0 1 1 2 3 5 8 13 21 34 ☆ (6)

[25]

TOTAL SECTION B: 70
GRAND TOTAL: 100

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