

061306T4CSC

COMPUTER SCIENCE LEVEL 6

ICT/OS/CS/CR/04/6

Understand Fundamentals of Programming

November/December 2025



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)**

WRITTEN ASSESSMENT

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INSTRUCTIONS TO CANDIDATE

1. The paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section A and any **THREE** (3) questions in section B.
3. Marks for each question are indicated in the brackets.
4. Candidates are provided with a separate answer booklet.
5. **DO NOT** write on this question paper.

This paper consists of FIVE (5) printed pages

**Candidate should check the question paper to ascertain that all
pages are printed as indicated and that no questions are missing.**

SECTION A (40 MARKS)***Answer ALL The Questions in This Section***

1. Java uses arrays to store multiple items of the same data type. Declare one named temperature with values 28, 32, 30, and 35, then display each value using a loop. (4 marks).
2. As a programmer implementing logical comparisons for a school grading system, write a Java code applying such comparisons to output: (4 marks)
 - “High” if the score is between 90 and 100
 - “Moderate” if the score is between 70 and 89
3. Code maintenance and complex logic clarification when writing java programs is countered using either sing-line or multi-line comments. Illustrate with examples how to apply the two in java. (2 marks)
4. Given the following variable declarations and Boolean expressions, provide the expected output: (4 marks)


```
int m = 25, n = 30;
boolean res1 = m > n;
boolean res2 = m <= n;
boolean res3 = m == n;
boolean res4 = m != n;
```
5. Constants in Java preserve values that shouldn't be modified. Illustrate how that can be applied for country "Kenya" and population 54000000. (2 marks)
6. Java naming rules must be followed when writing identifiers. State FOUR such guidelines. (4 marks)
7. In Java, different translators are used for converting code. Name THREE types used in the compilation and execution process. (3 marks)
8. A fellow scholar presented the following code for debugging during a practical. As an expert in object-oriented programming identify and explain the existing errors. (4 marks)


```
system.out.Println("Done!");
Public static Void main(String args[])
y=2**3;
int class;
```
9. Write a switch-case based Java program that prompts a user to enter a number and provide output based on the following sequence of inputs;

<i>Output</i>	<i>Counter</i>
"Excellent"	for input 1
"Very Good"	for input 2
"Average"	for input 3

(4 marks)

10. Define a Java class called Library. Inside it, implement a method named books() which can be accessed from another class in the same program. (4 marks)

11. Enums represent fixed sets of values in Java. Declare one called Season with values: Spring, Summer, Autumn, and Winter. Loop through and print each season. (5 marks)

SECTION B (60 MARKS)

Answer Any THREE Questions in This Section

12. a) Describe the following terms as applied in object-oriented programming;

(6 marks)

- Human-readable code
- Intermediate bytecode
- Executable machine code

b) Use the string String class in Java to demonstrate the use of the following methods:

length()

trim()

toUpperCase()

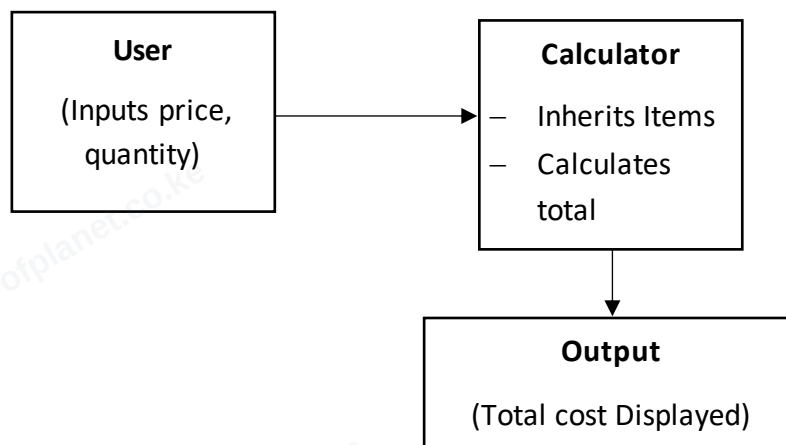
substring()

(4 marks)

- c) The dataflow diagram below illustrates relationships between three classes.

Implement this scenario in Java using inheritance.

(10 marks)



13. a) Implement a Java structure that provides the following outputs based on the provided input characters:

Determinant Character Output

if character is 'O' or 'o'

if character is 'G' or 'g'

if character is 'L' or 'l'

if character is 'A' or 'a'

(8 marks)

- b) Create a for loop using Java programming language that prints numbers from 1 to 5 along with their squares. (10 marks)

- c) Show the distinction between a unary and a binary operator in Java using examples. (2 marks)

14. a) Examine the following algorithm and answer the questions that follow:

Start

Let $m = 200$

Let $n = 100$

Let $\text{total} = m + n$

Output total

End

- Identify the programming tool and justify. (2 marks)
- Convert it into Java code. (6 marks)

- b) Write a Java program using a do...while loop that calculates interest for 3 years, starting with a principal of 3000 at a 7% rate. Output year, interest, and amount. (8 marks)
- c) Differentiate a class from an object using short Java examples. (4 marks)
15. a) Construct a class named Employee with fields name and salary. Use a constructor and this keyword to assign "Martin" and 40000. (8 marks)
- b) Using a program illustrate method overloading by defining three methods named calculate ():
- One with two int parameters
 - One with two double parameters
 - One with three int parameters (6 marks)
- c) To facilitate learning in a math class, you are requested as a developer to write a java program that will distinguish even and odd numbers. Write the code that would help you achieve. (8 marks)