



MACHAKOS UNIVERSITY

University Examinations for 2022/2023

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

FIRST YEAR FIRST SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY_

SIT 120: PROGRAMMING METHODOLOGY

DATE:

TIME:

INSTRUCTIONS: Answer question one and any other two questions in this paper

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Explain three basic symbols of a flowchart (6 marks)
- b) Draw a flow chart diagram to check if a number is prime number or not. (4 marks)
- c) Explain the function of each of the THREE resources.
 - i) Assembler (2 marks)
 - ii) Compiler (2 marks)
 - iii) Interpreter (2 marks)
- d) Using a simple code snippet, illustrate how each of the following are used in C programming language;
 - i) Pre decrement operator (2 marks)
 - ii) Post decrement operator (2 marks)
- e) You want to list numbers from 1 to 10 in ascending order. Write a program using the WHILE loop to output your list. (6 marks)
- f) What will be the output of the following C code? (2 marks)

QUESTION TWO (20 MARKS)

- a) Most C Programs use a technique called divide and conquer. What do you understand by the statement “divide and conquer” with reference to programming. (4 marks)

Answer

Use of functions - explain

- b) Describe TWO rules for naming a variable in C program (4 marks)
- c) Strings are always enclosed by double quotes. A programmer can use the following declarations while writing a program
✓ `char string[20] = “fresh2refresh”;` (or)
✓ `char string [] = “fresh2refresh”;`

You are required to:

- i) Differentiate the above declarations. (4 marks)
- i) Use **strcpy()** to write a program in C to copy one string to another string. (4 marks)
- d) write a code snippet in C program to illustrate the use of assignment operators.(4 arks)

QUESTION THREE (20 MARKS)

- a) With the aid of a code snippet, illustrate how a for loop is used in C program. (3 marks)
- b) What is the difference between ++x and x++? (3 marks)
- c) Write a code program by defining a function called “square” that calculates the square of two given numbers. The user should enter the numbers to be squared. (4 marks)
- d) Write a C program that adds 2 numbers. The user will enter the numbers to be added. (4 marks)
- e) In programming, the use of algorithms cannot be assumed. Explain THREE important features of an algorithm? (6 marks)

QUESTION FOUR (20 MARKS)

- a) Write a program to print the multiplication table up to ten of the number entered by the user. The table should be displayed in the following format: (6 marks)
`29 * 1 = 29`
`29 * 2 = 58`
- b) Differentiate between PASS BY REFERENCE and PASS BY VALUE in C Programming. (4 marks)
- c) You are required to:
- i) Explain what is function prototype in C programming (2 marks)

- ii) Illustrate function prototype using a code snippet (2 marks)
- d) Explain the THREE types of errors that can occur during the execution of a computer program? (6 marks)

QUESTION FIVE (20 MARKS)

- a) Explain the meaning of each of the expressions in C programming language;
Main() (2 marks)
Size_of() (2 marks)
- b) Storage classes are used in C Programming language. Explain giving two examples why storage classes are used in the program. (4 marks)
- c) Identify errors in the following code program. (4 marks)
- ```
1. #include<stdio.h>
2. {
3. int n;

4. printf("Enter an integer\n");
5. scanf("",&n);

6. if (n%2 == 0)
7. printf("Even\n");
8. else
9. printf("Odd\n");

10. return 0;
11. }
```
- d) Identify TWO areas where C programming language is used. (4 marks)
- e) In C, why is the void pointer useful? When would you use it? (4 marks)