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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
FIRST YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF SCIENCE
(COMPUTER SCIENCE)

KCS 101 – INTRODUCTION TO PROGRAMMING

Date: 12th April, 2023
Time: 11:30am – 1:30pm

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

a) Distinguish between the following terminologies in C Programming Language
   i) Pseudocode and Algorithm
   ii) Variables and Constants
   iii) Preprocessor directives and Escape sequences (6 Marks)

b) Describe why the function main () is special in a c program (2 Marks)

c) Discuss the two methods of including comments in your C program. (2 Marks)

d) Write a simple program in C Programming Language using the while loop. (5 Marks)

e) i) Define a data type (1 Mark)

   ii) Describe the four categories of data types in C Programming Language. (4 Marks)

f) i) Create a structure named salary to store the information about an employee with the following elements
   - Name (up to 20 characters)
   - Department (up to 10 characters)
   - Basic_ pay
   - House_ allowance (4 Marks)

   ii) After creating the structure declare a variables named employee from the structure. (2 Marks)

g) Explain two conditions that would prompt a programmer to use the void keyword in a program with functions. (4 Marks)

QUESTION TWO (20 MARKS)

a) Discuss the steps followed in program development. (8 Marks)

b) Explain three classification of the programming languages (6 Marks)

c) Write a simple program that demonstrates the if…else control statement. (6 Marks)

QUESTION THREE (20 MARKS)

a) Differentiate between recursive functions and iterative functions.
(2 Marks)

b) i) Explain the importance of the function prototype
(2 Marks)

ii) Explain any two benefits of using a function
(2 Marks)

iii) Write a program that computes both the area and circumference of a circle.
(2 Marks)

c) Define two functions called area () and circum() to compute and return the area and circumference of the circle respectively.
(8 Marks)

d) Explain the following data structured used in c; include a program illustration.
i) Arrays
ii) Structures
(4 Marks)

QUESTION FOUR (20 MARKS)

a) Distinguish between the following terms
i) Keywords and Literals.
ii) Global variable and Local variable
iii) Top-down development and Modular design
iv) Object code and Source code. (8 Marks)

b) A program is required that accepts two integers and if the first integer is bigger than the second one, the second integer is subtracted from the first one. If the second integer is bigger than the first one, the two integers are multiplied. Otherwise the two integers are added.
i) Draw a flowchart for the solution.
(4 Marks)

ii) Write the program
(8 Marks)

QUESTION FIVE (20 MARKS)

a) Using an example declare a pointer (2 Marks)

b) Illustrate the three control structures used in programming (6 Marks)

c) A program is required to process and award students grades for students in a class according to the following summary table.

Marks%	Grade
80 – 100	A
60 – 79	B
40 – 59	C
Below 40	Fail

Write a C program that prompts the user for the student's Marks and outputs the appropriate grade using nested if else statement. The else option should print an error message "Wrong Marks" (6 Marks)

d) There are several operators in C language. Define an operator and discuss any three data operators
(6 Marks)