DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
UNIVERSITY OF BARISAL

Final Examination -2024

Course Title: Programming Fundamentals
Course Code: CSE-1103
1st Year 1st Semester, Session: 2023-24

Time: 3 hours

Marks: 60

Answer any five Questions from the followings.

1. a) Define the following key term: i. Source program ii. Object program iii. Executable program [4] iv. Syntax error v. Linker error vi. Execution/ Run time error

   b) Describe the general form of a simple C program that includes at least directives, functions [4] and statements.

   c) Discuss the problem-solving methodology with giving an appropriate C program as an [4] example.

2. a) Using an appropriate flow chart, explain step by step process of creating and running a C [4] program.

   b) Why C is often called a Middle-Level language? What do you understand by C tokens? [4] Justify the necessity of using header files in C programs.

   c) Body Mass Index (BMI) is a measure of health on weight. It can be calculated by taking your [4] weight in kilograms and dividing by the square of your height in meters. Write a program that prompts the user to enter a weight in pounds and height in inches and display the BMI. Note that one pound is **0.45359237** kilograms and one inch is **0.0254** meters.

3. a) What are different data types used in C? Explain. [4]

   b) Explain different types of IF statements used in C using appropriate statements and flow [4] charts.

   c) Considering all possible situations, write a C program to solve any Quadratic Equation. [4]

4. a) Suppose a man (say, A) stands at (0, 0) and waits for user to give him the direction and [4] distance to go. User may enter N E W S for north, east, west, south, and any value for distance. When user enters 0 as direction, stop and print out the location where the man stopped.

b) When is it better to use switch statement in a C program? Using switch statement, write a C [4] program to calculate your grade of any course.

c) Write a C program to display a Pyramid of stars of any height. [4]

5. a) Define array in C. What are the differences between while and do....while statements? [3]

b) Write a C program to search a value within an array of elements. [4]

c) Write a C program to sort n number of elements in ascending order. [5]

6. a) What are different advantages of modular programming approach? Mention important [4] characteristics of modular programming.

b) Explain different types of functions with an example of each. [4]

c) Write a C program to calculate Standard Deviation of an array of values using function. [4]

7. a) Define a structure named Student which enclosed with data fields name, batch, id, incourse1 [4] and incourse2. From keyboard, take input name, batch, id and marks of incourse1 and incourse2 for three students of Student type. Calculate total marks of incourse1 and incourse2 for each student. Print out the details of the student who got the lowest total incourse marks among three students.

b) What are the benefits of using Pointers in a program? Mention important rules of pointer [4] operations.

c) Using function, write a C program to find the largest value among three values which are [4] passed as arguments using the call by reference method.

8. a) Why do we use file in C programming? What are different modes to open a FILE? Explain. [4] Mention and explain the purposes of any 10 (ten) commonly used C file-system functions.

b) Write C program to convert Celsius temperature to Fahrenheit and store the value into a file. [4]

c) Write a C program to append additional items to an existing file, "Inventory", stored in "d" [4] drive and print the total contents of the file.