



Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science & Engineering

Final Examination, Summer 2026

Course Code: CSE113, Course Title: Programming and Problem Solving

Level: 1 Term: 2 Batch: 71

Time: 02:00 Hrs

Marks: 40

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	Identify the errors in the following code? Explain the why they are erroneous.	Marks	
	<pre> 01 #include <stdio.h> 02 #include <string.h> 03 struct Student { 04 char name[30]; 05 char branch[20]; 06 }; 07 void display(Struct Student s) { 08 printf("Name: %s\n", s.name); 09 printf("Branch: %s\n", s.branch); 10 } 11 void compareName(char a, char b[]) { 12 if(strcmp(ab)==0) 13 printf("Names are same\n"); 14 else 15 printf("Names are different\n"); 16 } 17 int main() { 18 struct Student s; 19 strcpy(s.name, "Rahul"); 20 strcpy(s.branch, "CSE"); 21 display('s'); 22 printf("Name length: %d\n", strlen(s.name)); 23 compareName(s.name, "Rahul"); 24 strcat(s.name, ' Kumar'); 25 printf("Updated Name: %s\n", s.name); 26 return 0; 27 } </pre>	[03]	CO2
	b) Rewrite the code without any errors.	[03]	
	Generate the output of given codes as follows (write only the output segment in a box):		
	<pre> c) #include <stdio.h> int add(int *x, int *y){ *x = *x + *y; return *x; } </pre>	[03]	

	<pre>void string(char a[]){ a[1] = 'T'; printf("%s\n", a); } int main(){ int a = 4, b = 7; add(&b, &a); printf("The result is %d\n", b); char s[10] = "diucse", t[10]="acmlab"; string(s); string(t); return 0; }</pre>						
d)	<pre>#include <stdio.h> void pattern(int n, char c){ if(n == 0) return; printf("%c%d\n", c, n); pattern(n - 1, c + 1); printf("%c%d\n", c, n); } int main(){ pattern(3, 'A'); return 0; }</pre>	[03]					
e)	<pre>#include <stdio.h> int sum(int a[], int n){ if(n == 0) return 0; int result = a[n-1] + sum(a, n-1); printf("%d + previous = %d\n", a[n-1], result); return result; } int main(){ int arr[] = {2, 4, 6}; printf("Total = %d\n", sum(arr, 3)); return 0; }</pre>	[03]					
2	Identify the problem scenarios given below and write a complete C program for each problem statement.						
a)	Write a C program that uses a recursive function to calculate the sum of all elements in a given integer array. The final total must be displayed inside the <i>main</i> function. Input: • The first line contains an integer n, the number of elements. • The second line contains n space-separated integers. Output: • Print a single integer representing the total sum of the array elements. <table border="1"><tr><th>Sample Input</th><th>Sample Output</th></tr><tr><td>6 1 2 3 4 5 6</td><td>21</td></tr></table>	Sample Input	Sample Output	6 1 2 3 4 5 6	21	[05]	CO3
Sample Input	Sample Output						
6 1 2 3 4 5 6	21						

b) Write a C program to identify the boundary elements of matrix and compute the sum of those elements. [05]

Input:

- The first line contains two integers **r** and **c**.
- Next **r** lines each contain **c** integers.

Output:

- Print the sum of the boundary elements.

Sample Input	Sample Output
3 4 1 2 3 4 5 6 7 8 9 10 11 12	Boundary sum = 65

c) You are given a string consisting of lowercase English letters. Write a C program to identify and display the first non-repeating character in the string. If the string does not contain any non-repeating character, display "No unique character". [05]

Input:

- A single string **S** consisting of lowercase English letters (a–z) only.
- The string contains **no spaces**.

Output:

- If the string contains a non-repeating character, print:
First non-repeating character: <character>
- Otherwise, print: No unique character

Sample Input	Sample Output
swiss	First non-repeating character: w

d) Implement a C program to determine whether a given string is a palindrome or not palindrome. [Note: A **palindrome** is a string that reads the same forward and backward. For example, **level**, and **racecar** are palindromes.] [05]

Input:

- A single string **S** consisting of lowercase English letters (a–z) only.
- The string contains **no spaces**.

Output:

- If the string is a palindrome, then print "Palindrome" otherwise "Not Palindrome"

Sample Input	Sample Output
diuacm	Not Palindrome

e) Write a C program to process a collection of employee records, calculate the average salary of all employees, identify and display the employees whose salaries are higher than the calculated average. [05]

Input:

- First line contains integer **n**.
- Next **n** lines contain: ID < Name < Salary

Output:

- Print the average salary.
- Print the names of employees earning above the average.

Sample Input	Sample Output
4 101 John 42000 102 Emma 50000 103 David 39000 104 Sophia 61000	Average Salary = 48000.00 Employees earning above average: Emma Sophia