



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	
a)	<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):		
c)	<pre> #include <stdio.h> int add(int *x, int *y){ *x = *x + *y; return *x; } </pre>	[03]	

The result is 12
diucse
acmlab

	<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.		CO3				
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><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]	
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. 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. <table border="1"><thead><tr><th>Sample Input</th><th>Sample Output</th></tr></thead><tbody><tr><td>3 4 1 2 3 4 5 6 7 8 9 10 11 12</td><td>Boundary sum = 65</td></tr></tbody></table>	Sample Input	Sample Output	3 4 1 2 3 4 5 6 7 8 9 10 11 12	Boundary sum = 65	[05]
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". 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 <table border="1"><thead><tr><th>Sample Input</th><th>Sample Output</th></tr></thead><tbody><tr><td>swiss</td><td>First non-repeating character: w</td></tr></tbody></table>	Sample Input	Sample Output	swiss	First non-repeating character: w	[05]
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.] 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" <table border="1"><thead><tr><th>Sample Input</th><th>Sample Output</th></tr></thead><tbody><tr><td>diuacm</td><td>Not Palindrome</td></tr></tbody></table>	Sample Input	Sample Output	diuacm	Not Palindrome	[05]
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. 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. <table border="1"><thead><tr><th>Sample Input</th><th>Sample Output</th></tr></thead><tbody><tr><td>4 101 John 42000 102 Emma 50000 103 David 39000 104 Sophia 61000</td><td>Average Salary = 48000.00 Employees earning above average: Emma Sophia</td></tr></tbody></table>	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	[05]
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