Daffodil International University
Faculty of Science & Information Technology
Department of Computer Science & Engineering
Mid-Term Examination, Fall-2024
Course Code: CSE113, Course Title: Programming and Problem Solving
Level: L1 Term: T1 Batch: 67

Time: 01:30 Hrs   Marks: 25

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.	Illustrate the following expressions in **detailed steps** where A = 4, B = 7, C = 3, D = 2 & E = 6. Remember all the variables here are integers and for every equation the initial value of A, B, C, D & E are the same. **Write each variable's value after every evaluation to obtain full marks.**		CO1
a)	A = (B > C) && !(D < E) || (A + B) * (C - D) / ++E	[1.5]	
b)	A += B++ - --C * (D / E) + (E % B)	[1.5]	

2.	a)	Mention how many errors you can find in the following code. **Explain** the errors as per your understanding with line no. and why you think it as an error.	[2]	CO2

```
1. #include <stdo.h>
2. int main() {
3.     int a = 5, b = 10;
4.     float c = 15.5;
5.     if (a < b {
6.         printf("a is less than b\n");
7.     } else {
8.         print("a is not less than b\n");
9.     }
10.     for (i = 0; i < 5; i++) {
11.         printf("i = %d\n", i);
12.     }
13.     int sum = a + b + c;
14.     printf("Sum is: %f\n", sum);
15.     return 0;
16. }
```

	b)	Construct the code without any errors.	[2]	

3.	Construct the Output for the given codes below (write only the output segment in a box) :		CO3

a)	b)	[1.5+1.5]

`#include <stdio.h>`
`int main() {`
`    float a = 5.5, b = 10.2;`
	`#include <stdio.h>`
	`int main() {`
	`    for (int i = 1; i <= 3; i++) {`	

```
int c = 3;

if ((int)a % c == 0) {
    printf("Result: %.2f\n", a / c);
}
else {
    printf("Result: %.2f\n",
(float)((int)b % c));
}
return 0;
}
```

```
for (int j = 1; j <= 3; j++) {
    if (i == j) {
        continue;
    }
    if (i + j == 4) {
        break;
    }
    printf("i = %d, j = %d\n", i, j);
}
}
return 0;
}
```

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4. Analyze the problem scenarios given below to write a full program for each of the following: | CO4

a) Recently, Bangladesh has experienced a devastating flood that has affected many lives. As a prayer for the safety of all Bangladeshis, write a simple C program that outputs the following message: **May our people be safe from the flood!** | [3]

Sample Input	Sample Output
NO INPUT	May our people be safe from the flood!

b) The recent flood has affected many lives. A team of relief workers is collecting foodgrains from different regions to help those in need. They have collected **(A)** kg of foodgrains from Dhaka, **(B)** kg from Chittagong, and **(C)** kg from Rajshahi. Unfortunately, **(D)%** of the foodgrains are lost during transportation. Write a C program to calculate the amount of foodgrains that will actually be delivered. | [4]

Input: Four floating point numbers A, B, C & D as described above.
Output: The program should output the total amount of foodgrains delivered, formatted to two decimal places, in the following format:
A total of X.XX kg of foodgrains delivered

Sample Input	Sample Output
100.0 150.0 200.0 10.0	A total of 405.00 kg of foodgrains delivered

Sample Input	Sample Output
50.5 75.75 100.25 5.0	A total of 215.18 kg of foodgrains delivered

c) A team of rescue workers is tasked with delivering relief packages to various flood affected areas. Each package contains a certain number of essential items. The team will visit multiple locations, and the number of packages delivered at each location will be given as input. Write a C program to calculate the total number of packages delivered. | [4]

Input: The program will take the following inputs:
- o An integer n representing the number of locations.
- o n integers representing the number of packages delivered at each location.

Output: The program should output the total number of packages delivered in the following format:

A total of X packages delivered

Sample Input	Sample Output
3 10 20 30	A total of 60 packages delivered

Sample Input	Sample Output
4 5 15 25 10	A total of 55 packages delivered

a) A team of rescue workers is tasked with distributing relief packages to various flood affected areas. Each area will receive a certain number of packages. The team will visit multiple locations, and the number of packages delivered to each location will be stored in an array. Write a C program to calculate the total number of packages delivered and print the number of packages delivered to each location that received more than a specified threshold.

[4]

Input: The program will take the following inputs:
- o An integer **n** representing the number of locations.
- o An array of **n** integers representing the number of packages delivered to each location.
- o An integer **t** representing the threshold number of packages.

Output: The program should output the total number of packages delivered and the number of packages delivered to each location that received more than the threshold, in the following format:

A total of X packages delivered
Locations with more than Y packages:
Location i: Z packages

Sample Input	Sample Output
3 10 20 30 15	A total of 60 packages delivered Locations with more than 15 packages: Location 2: 20 packages Location 3: 30 packages

Sample Input	Sample Output
4 5 15 25 10 10	A total of 55 packages delivered Locations with more than 10 packages: Location 2: 15 packages Location 3: 25 packages