Object Oriented Programming
Lab Task 0#3

Note:

● Copied task will be awarded zero marks.

● Note that these lab task marks could be graded through a viva inlab. ● Submit the .cpp file for each task in google classroomand renameit with your roll no and name.

  For example: Ali_Ahmed_22p9023_task1.cpp.

● Lab Tasks will be graded in Lab.

1. You are tasked with designing a hotel room booking system for a hotel. The hotel has 4 floors, each with 5 rooms in a sequence. The first two floors (basement andground floor) have elite rooms costing 10,000 RS per day, while the upper twofloors have economy class rooms costing 6,000 RS per day. Your task is todesign a program that is menu-driven and allows users to:

1. Book a Room:

● Ask the user to enter the floor and room number they want to book. ● Ask for the total number of days for which they want to book the room. ● Check if the room is available and book it if not already occupied. ● Display a confirmation message along with the total cost for the specified number of days.

● If the room is already booked, display an appropriate message and ask the user tochoose another room.

2. Show Available Rooms:

● Display the current status of all rooms in a 2D array. ● Use '*' to represent booked rooms and '-' to represent available rooms. **3. Exit the Program:**

● Exit the program when the user chooses this option.

Your program should be user-friendly, validate all inputs, and use a 2Darraytorepresent the hotel rooms. Ensure that the program repeatedly asks the user to select from the options until the user chooses to exit.

```
Hotel Room Booking System
1. Book a Room
2. Show Available Rooms
3. Exit
Enter your choice: 2
Rooms Status:
- - - - -
- - - - -
- - - - -
- - - - -
```

```
Hotel Room Booking System
1. Book a Room
2. Show Available Rooms
3. Exit
Enter your choice: 1
Enter the floor number (1-4): 2
Enter the room number (1-5): 3
Enter the number of days: 4
Floor: 2, Room: 3 successfully booked.
Your total cost for 4 days is 40000 Rupees.

Hotel Room Booking System
1. Book a Room
2. Show Available Rooms
3. Exit
Enter your choice: 2
Rooms Status:
- - - - -
- - * - -
- - - - -
- - - - -


 Hotel Room Booking System
 1. Book a Room
 2. Show Available Rooms
 3. Exit
 Enter your choice: 3
 Exiting the program. Thank you!
```

2. Write a function named "subtotal" takes as its arguments the following: (1) an array of floating point values; (2) an integer that tells the number of cells in the array. The function should replace the contents of each cell with the sum of the contents of all the cells in the original array from the left end to the cell in question. Thus, for example, if the array passed to the function looks like this: 0 1 2 3 4

5.8 | 2.6 | 9.1 | 3.4 | 7.0

   then when the function returns, the array will have been changed so that it looks like this:
   0 1 2 3 4

5.8 | 8.4 | 17.5 | 20.9 | 27.9

3. Write a function named "eliminate_duplicates" that takes an array of integers in random order and

eliminates all the duplicate integers in the array. The functionshould take two arguments:
 (1) an array of integers;
 (2) an integer that tells the number of cells in the array.
The function should not return a value, but if any duplicate integers are eliminated, then the function should change the value of the argument that was passed to it sothat the new value tells the number of distinct integers in the array. Here is anexample. Suppose the array passed to the function is as shown below, andtheinteger passed as an argument to the function is 11.

 0 1 2 3 4 5 6 7 8 9 10

| 58 | 26 | 91 | 26 | 70 | 70 | 91 | 58 | 58 | 58 | 66 |

Then the function should alter the array so that it looks like this: 0 1 2 3 4 5 6 7

 8 9 10

| 58 | 26 | 91 | 70 | 66 | ?? | ?? | ?? | ?? | ?? | ?? |

  and it should change the value of the argument so that it is 5 instead of 11 . Thequestion marks in the cells after the 5th cell indicate that it does not matter what numbers are in those cells when the function returns.