Object Oriented Programming Lab

Lab 05 **Marks 20**

Instructions

- Work in this lab individually.
- You can use your books, notes, handouts etc. but you are not allowed to borrow anything from your peer student.
- Make sure to follow the best coding practices.
- Include comments to explain the logic where necessary.
- *You are strictly **NOT ALLOWED** to include any additional data-members/functions/constructors in your class.*
- Test your program thoroughly with various inputs to ensure proper functionality and error handling.
- Show your work to the instructor before leaving the lab to get some or full credit.

Carpet Calculator

The Nayyer Carpet Company has asked you to write an application that calculates the price of carpeting for rectangular rooms. To calculate the price:

- Multiply the area of the floor (width times length) by the price per square foot of carpet.

For example, the area of a floor that is 12 feet long and 10 feet wide is 120 square feet. To cover that floor with carpet that costs Rs. 80 per square foot would cost Rs. 9600 (12 * 10 * 80 = 9600).

Note: You will need the **FeetInches** class provided with this Lab in FeetInches.cpp file.

RoomDimenstion Class

Create a class named **RoomDimension** with the following functionalities:

1. Two private data members:
   - A **FeetInches** object named length that holds the length of the room in feet.
   - A **FeetInches** object named width that holds the width of the room in feet.
2. Provide implementation for the following functions:
   - Mutators for all data members (length and width) of the class.
   - Accessors for all data members (length and width) of the class.
   - Constructor accepting length and width as arguments.
   - Member function that returns the area of the room in square feet.
   - Member function that displays the length and width of the appropriate object.

RoomCarpet Class

Create a class named **RoomCarpet** with the following functionalities:

1. Two private data members:
   - A **RoomDimension** object named roomSize that holds the dimensions of the room.
   - A float named **costPerSquareFoot** that holds the cost of the carpet per square foot.
2. Provide implementation for the following functions:
   - Mutators for all data members (roomSize and costPerSquareFoot) of the class.
   - Accessors for all data members (roomSize and costPerSquareFoot) of the class.
   - Constructor accepting roomSize and costPerSquareFoot as arguments.
   - Member function that returns the total cost of the carpet.
   - Member function that displays the roomSize and costPerSquareFoot of the appropriate object.

Driver Program

Once you have written these classes, use them in an application that asks the user to enter the dimensions of a room and the price per square foot of the desired carpeting. The application should display the total cost of the carpet.