

Object Oriented Programming Lab

Lab 11

Marks 10

Instructions

Work on this lab individually. You can use your books, notes, handouts etc. but you are not allowed to borrow anything from your peer student. *You are strictly **NOT ALLOWED** to include any additional data-members/functions/constructors in your class.*

Marking Criteria

Show your work to the instructor before leaving the lab to get some or full credit.

What you must do

Program the following task in your C++ compiler and then compile and execute them. *Write the **main** function first and keep testing the functionality of each function once created.*

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 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**. ($12 * 10 * 80 = 9600$.)

ADT: RoomDimension

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

The class should have following **two private data members**

1. A **FeetInches** object named **length** that holds the **length of the room**.
2. A **FeetInches** object named **width** that holds the **width of the room**

FeetInches.cpp class is provided with this Lab.

Provide the implementation of following **functions**

1. Provide the implementation of **mutators** for all the data members (*length and width*) of the class.
2. Provide the implementation of **accessors** for all the data members (*length and width*) of the class.
3. The constructor should accept the **RoomDimension's**, **length** and **width** as arguments. These values should be assigned to the object's appropriate member variables.
4. **Member function** that **returns** the **area** of the room as a **FeetInches** object.
5. **Member function** that display the **length** and **width** of the appropriate object.

ADT: RoomCarpet

Create a class named **RoomCarpet** having following functionalities

The class should have following **two private data members**

1. A **RoomDimension** object named **roomSize** that holds the **dimension of the room**.
2. A **float** named **costPerSquareFoot** that holds the **cost of the carpet per square foot**.

Provide the implementation of following **functions**

1. Provide the implementation of **mutators** for all the data members (*roomSize and costPerSquareFoot*) of the class.
2. Provide the implementation of **accessors** for all the data members (*roomSize and costPerSquareFoot*) of the class.
3. The constructor should accept the **RoomCarpet's**, **roomSize** and **costPerSquareFoot** as arguments. These values should be assigned to the object's appropriate member variables.
4. The class should have a **member function** that **returns** the **total cost of the carpet**.
5. **Member function** that display the **roomSize** and **costPerSquareFoot** of the appropriate object.

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**.