CS151 Spring 2020

Project 8

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Design a Java class Room that represents a room of a house. Assume that a room is a rectangular box, so that it is described with three doubles: the width, depth, and height of the room.

Additionally, Room objects has a String instance variable wallColor that holds the color of the walls and ceiling. Make all instance variables private.

There is a private static int variable count that counts number of instances of Room class.

The constructor sets the width, depth, and height of the room. These values never change, so there are no setters for them.

Also, the constructor should also initialize wallColor to “white” and increment static variable count by one.

Room objects have methods that change and retrieve wall colors:

public void setWallColor( String color )

public String getWallColor()

Also, implement the following methods:

public double getTotalArea() // the total area of the room

public double getWallArea() // the area of the walls and ceiling

public double getFloorArea() // the area of the floor.

public String toString() // a String that describes the room

Room class has static method

public static int getCount()

that retrieves static variable count.

Look at Slogan.java and SloganCounter.java for static implementation.

Create TestRoom class that has following structure of main method

public static void main(String[] args)

{

// display Room.getCount()

Room rm = new Room( 10.2, 16.1, 12.0 );//create a new room

// display Room.getCount()

// display rm

// set rm wall color to "green"

// display rm again

// display total area

// display wall and ceiling area

// display floor area

// you may test the program with another Room instance

}

All doubles must be rounded to one decimal. (Use String.format and System.out.printf methods)

This is a possible output:

Room count: 0

Room count: 1

Wall color: white

WxDxH: 10.2'x12.0'x16.1'

Wall color: green

WxDxH: 10.2'x12.0'x16.1'

Total area: 959.6 sqft

Wall and ceiling area: 837.2 sqft

Floor area: 122.4 sqft