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/* Code for COMP102 - 2024T3, Assignment 1
 * Name:
 * Username:
 * ID:
 */

import ecs100.*;

/**
 * Program for calculating a quote for installing carpets
 */

public class CarpetCalculator{

    public static final double UNDERLAY_PRICE = 14;   // cost of underlay per square meter
    public static final double SMOOTHEDGE_PRICE = 3.6;    // cost of smoothedge per meter

    public static final double AREA_INSTALLATION_PRICE = 2.85;    // cost of installation per
square meter of floor area
    public static final double EDGE_INSTALLATION_PRICE = 27;   // cost of installation per meter
of perimeter

    /**
     * Calculates and prints a quote for installing carpet in as single rectangular room
     */
    public void calculateCarpetQuote(){
        /*# YOUR CODE HERE */
        UI.println("Carpet Calculator Completion");
        double length = UI.askDouble("Length of first room (m) : "); // User input for room 1
length
        double width= UI.askDouble("Width of first room (m) : ");  // User input for room 1 width
        double length2 = UI.askDouble("Length of second room (m) : "); // User input for room 2
length
        double width2= UI.askDouble("Width of second room (m) : "); // User input for room 2 width
        double cost= UI.askDouble("Cost per square meter?");  // User input for carpet price per
square meter
        double rollWidth = UI.askDouble("Width of carpet roll (m) : "); // User input for carpet
roll width

        // Calculate the cost for Room 1
        double floorarea = length * width; // Calculate floor area for room 1 (in square meters)
        double carpetcost = floorarea*cost; // Calculate carpet cost for room 1
        double underlaycost = floorarea*14; // Calculate underlay cost for room 1
        double smoothedgecost = (length*2 + width*2)*3.60; // Calculate smoothedge cost for room 1
        double installationcost = floorarea*2.85 + ((length*2 + width*2 ) *27); // Calculate
installation cost for room 1
        double total = carpetcost + underlaycost + smoothedgecost + installationcost ;  // Total
cost for room 1

         // Calculate the cost for Room 2
        double floorarea2 = length2 * width2;// Calculate floor area for room 2
        double carpetcost2 = floorarea2*cost;// Calculate carpet cost for room 2
        double underlaycost2 = floorarea*14; // Calculate underlay cost for room 2
        double smoothedgecost2 = (length2*2 + width2*2)*3.60; // Calculate smoothedge cost for
room 2
        double installationcost2 = floorarea2*2.85 + ((length2*2 + width2*2 ) *27); //
Installation cost for room 2
        double total2 = carpetcost2 + underlaycost2 + smoothedgecost2 + installationcost2 ; //
Total cost for room 2

        // Calculate the total quote for both rooms
        double totalquote = total + total2;

        // For Room 1
        int strips1 = (int) Math.ceil(width / rollWidth);  // Number of strips needed to cover the
```

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width
        double totalRollLength1 = strips1 * length;  // Total length of carpet roll required for
Room 1
        double waste1 = totalRollLength1 - length;  // Wasted carpet for Room 1 (just the excess)

        // For Room 2
        int strips2 = (int) Math.ceil(width2 / rollWidth);  // Number of strips needed to cover
the width
        double totalRollLength2 = strips2 * length2;  // Total length of carpet roll required for
Room 2
        double waste2 = totalRollLength2 - length2;  // Wasted carpet for Room 2

        // Print out the results for Room 1
        UI.println("One possible output: ");
        UI.println("-----QUOTE--------");
        UI.println("Room 1 (" +length + "x" + width + "):");
        UI.printf("Floor area:                          %.2f m2",floorarea);
        UI.println();
        UI.printf("Carpet cost:                $      %.2f",carpetcost);
        UI.println();
        UI.printf("Underlay cost:              $      %.2f",underlaycost);
        UI.println();
        UI.printf("Smoothedge cost:            $      %.2f",smoothedgecost);
        UI.println();
        UI.printf("Installation:               $      %.2f",installationcost);
        UI.println();
        UI.printf("Waste:                               %.2f m2\n", waste1);
        UI.println();
        UI.printf("Cost for room 1:            $      %.2f",total);
        UI.println();

        // Print results for Room 2
        UI.println("------------------");
        UI.println("Room 2 (" +length2 + "x" + width2 + "):");
        UI.printf("Floor area:                          %.2f m2",floorarea2);
        UI.println();
        UI.printf("Carpet cost:                $      %.2f",carpetcost2);
        UI.println();
        UI.printf("Underlay cost:              $      %.2f",underlaycost2);
        UI.println();
        UI.printf("Smoothedge cost:            $      %.2f",smoothedgecost2);
        UI.println();
        UI.printf("Installation:               $      %.2f",installationcost2);
        UI.println();
        UI.printf("Waste:                               %.2f m2\n", waste2);
        UI.println();
        UI.printf("Cost for room 2:            $      %.2f",total2);
        UI.println();
        UI.println("------------------");
        UI.printf("Total Quote:                $      %.2f",totalquote);









    }



    /**
     * Setup the GUI with the buttons
     */
    public void setupGUI(){
        UI.initialise();
        UI.addButton("Calculate Quote", this::calculateCarpetQuote);
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        UI.addButton("Quit", UI::quit);
        UI.setDivider(1);    // Expand the Text pane
    }

    /**
     * main: construct a CarpetCalculator object and call the setupGUI method on it.
     */
    public static void main(String[] args){
        CarpetCalculator cc = new CarpetCalculator();
        cc.setupGUI();
    }

}
```