CS 1073

FR03A

Assignment #5

Ethan A. McCarthy

3573807

Section 1

```java
/**
* @author Ethan McCarthy 3573807
*/

public class Window{

    private String address;
    private double height;
    private double size;
    private boolean insulation;

    /**
     * constructor
     * @param addressIn address
     * @param heightIn height
     * @param sizeIn size
     * @param insulationIn if the insulation is special or not
     */
    public Window(String addressIn, double heightIn, double sizeIn, boolean
insulationIn){
        address = addressIn;
        height = heightIn;
        size =  sizeIn;
        insulation = insulationIn;

    }

    /**
     *  getter method to get address
     * @return the address
     */
    public String getAddress(){
        return address;
    }

    /**
     * returns height
     * @return height
     */
    public double getHeight(){
        return height;
    }
```

```
    /**
     * returns area
     * @return size
    */
    public double getSize(){
        return size;
    }

    /**
     * returns wether or not the window has special insulation
     * @return insulation
     */
    public boolean getInsulation(){
        return insulation;
    }

    /**
     * method to get the total cost
     * @param materialRate how much per cm^2
     * @return the total cost
     */
    public double installationCost(double materialRate){
        double cost = 100 + (size * materialRate);
        if(insulation == true){
            cost += 25;
        }
        return cost;

    }
}
```

```
/**
* @author Ethan McCarthy 3573807
*/

public class HopperWindow extends Window{
        private boolean inwards;

        /**
         * constructor
         * @param addressIn address from superclass
         * @param heightIn height from superclass
         * @param sizeIn size from superclass
```

```
         * @param insulationIn insulation from superclass
         * @param stainedSizeIn stained glass area
         */
        public HopperWindow(String addressIn, double heightIn, double sizeIn,
boolean insulationIn, boolean inwardsIn){
            super (addressIn, heightIn, sizeIn, insulationIn);
            inwards = inwardsIn;

        }

        /**
         * returns if the hopper window open out or in
         * @return if its inward or not
         */
        public boolean inwardsStatus(){
            return inwards;
        }

        /**
         * method to get the total cost
         * @param materialRate how much per cm^2
         * @return the total cost
         */
        public double installationCost(double materialRate){
            double cost = super.installationCost(materialRate);
            if(inwards == true){
                cost += 125;
            }
            else{
                cost += 75;
            }

            return cost;

        }
    }
```

```
/**
* @author Ethan McCarthy 3573807
*/

public class StainedGlassWindow extends Window{
```

```
    private double stainedSize;

    /**
     * constructor
     * @param addressIn address from superclass
     * @param heightIn height from superclass
     * @param sizeIn size from superclass
     * @param insulationIn insulation from superclass
     * @param stainedSizeIn stained glass area
     */
    public StainedGlassWindow(String addressIn, double heightIn, double sizeIn,
boolean insulationIn, double stainedSizeIn){
        super (addressIn, heightIn, sizeIn, insulationIn);
        stainedSize = stainedSizeIn;

    }

    /**
     * method to retreive the area of the stained part
     * @return stained area
     */
    public double getStainedSize(){
        return stainedSize;
    }

    /**
     * method to get the total cost
     * @param materialRate how much per cm^2
     * @return the total cost
     */
    public double installationCost(double materialRate){
        double cost = super.installationCost(materialRate);
        if(stainedSize > (super.getSize()/2)){
            cost += super.getSize() * 0.11;
        }

        else{
            cost += super.getSize()*0.14;
        }

        return cost;

    }
```

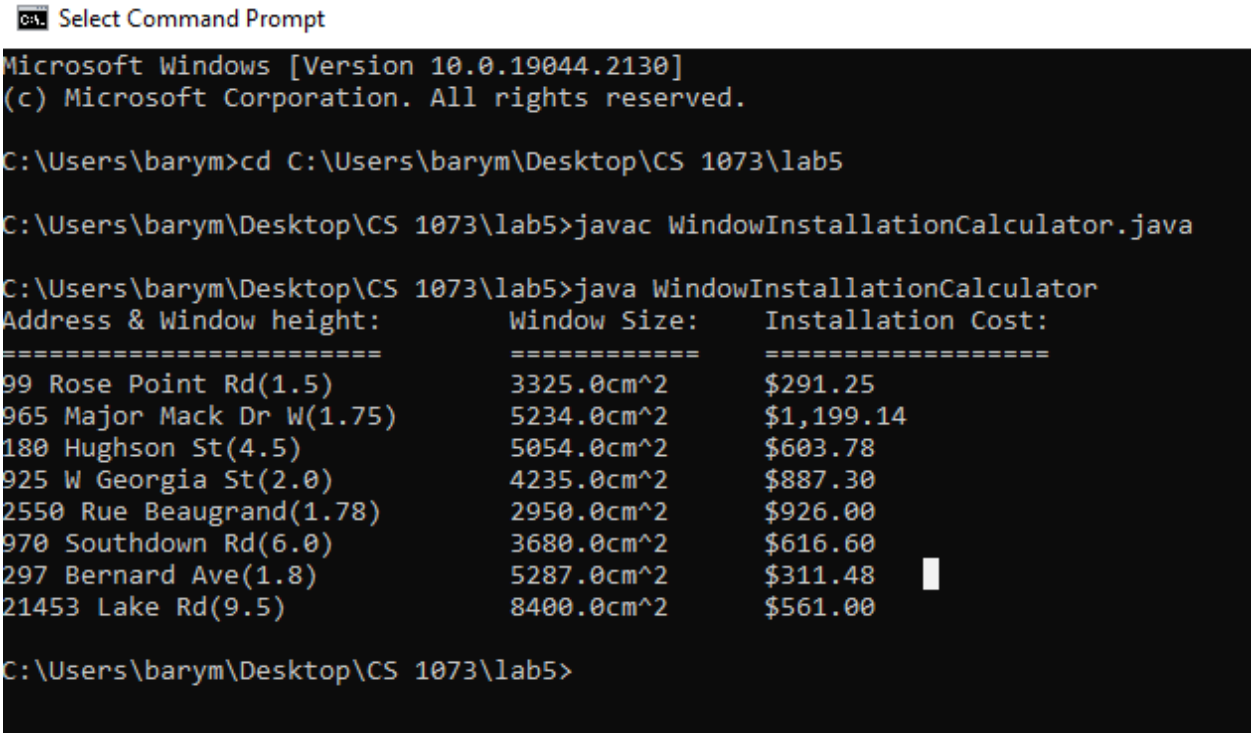
```
}
```

Section 2

```
/**
 * @author Ethan McCarthy 3573807
 */

 import java.text.NumberFormat;

 public class WindowInstallationCalculator{
    public static void main(String[] args){
        NumberFormat formatter = NumberFormat.getNumberInstance();
        formatter.setMaximumFractionDigits(2);
        formatter.setMinimumFractionDigits(2);

        Window window1 = new Window("99 Rose Point Rd", 1.5, 3325, true);
        StainedGlassWindow window2 = new StainedGlassWindow("965 Major Mack Dr
W", 1.75, 5234, false, 1842);
        HopperWindow window3 = new HopperWindow("180 Hughson St", 4.5, 5054,
true, true);
        StainedGlassWindow window4 = new StainedGlassWindow("925 W Georgia St",
2, 4235, true, 3733);
        StainedGlassWindow window5 = new StainedGlassWindow("2550 Rue Beaugrand",
1.78, 2950, false, 1475);
        HopperWindow window6 = new HopperWindow("970 Southdown Rd", 6, 3680,
false, false);
        Window window7 = new Window("297 Bernard Ave", 1.8, 5287, false);
        HopperWindow window8 = new HopperWindow("21453 Lake Rd", 9.5, 8400,
false, true);

        System.out.println("Address & Window height:\tWindow Size:\tInstallation
Cost:");
        System.out.println("=======================\t===========\t============
=====");
        System.out.println(window1.getAddress() + "(" + window1.getHeight() +
")\t\t" + window1.getSize() + "cm^2\t" + "$" +
formatter.format(window1.installationCost(0.05)));
        System.out.println(window2.getAddress() + "(" + window2.getHeight() +
")\t" + window2.getSize() + "cm^2\t" + "$" +
formatter.format(window2.installationCost(0.07)));
        System.out.println(window3.getAddress() + "(" + window3.getHeight() +
")\t\t" + window3.getSize() + "cm^2\t" + "$" +
formatter.format(window3.installationCost(0.07)));
        System.out.println(window4.getAddress() + "(" + window4.getHeight() +
")\t\t" + window4.getSize() + "cm^2\t" + "$" +
formatter.format(window4.installationCost(0.07)));
```

```
        System.out.println(window5.getAddress() + "(" + window5.getHeight() +
")\t" + window5.getSize() + "cm^2\t" + "$" +
formatter.format(window5.installationCost(0.14)));
        System.out.println(window6.getAddress() + "(" + window6.getHeight() +
")\t\t" + window6.getSize() + "cm^2\t" + "$" +
formatter.format(window6.installationCost(0.12)));
        System.out.println(window7.getAddress() + "(" + window7.getHeight() +
")\t\t" + window7.getSize() + "cm^2\t" + "$" +
formatter.format(window7.installationCost(0.04)));
        System.out.println(window8.getAddress() + "(" + window8.getHeight() +
")\t\t" + window8.getSize() + "cm^2\t" + "$" +
formatter.format(window8.installationCost(0.04)));
    }
 }
```

Section 3


Select Command Prompt
Microsoft Windows [Version 10.0.19044.2130]
(c) Microsoft Corporation. All rights reserved.
C:\Users\barym>cd C:\Users\barym\Desktop\CS 1073\lab5
C:\Users\barym\Desktop\CS 1073\lab5>javac WindowInstallationCalculator.java
C:\Users\barym\Desktop\CS 1073\lab5>java WindowInstallationCalculator
Address & Window height: Window Size: Installation Cost:
99 Rose Point Rd(1.5) 3325.0cm^2 $291.25
965 Major Mack Dr W(1.75) 5234.0cm^2 $1,199.14
180 Hughson St(4.5) 5054.0cm^2 $603.78
925 W Georgia St(2.0) 4235.0cm^2 $887.30
2550 Rue Beaugrand(1.78) 2950.0cm^2 $926.00
970 Southdown Rd(6.0) 3680.0cm^2 $616.60
297 Bernard Ave(1.8) 5287.0cm^2 $311.48
21453 Lake Rd(9.5) 8400.0cm^2 $561.00
C:\Users\barym\Desktop\CS 1073\lab5>