LONDON METROPOLITAN UNIVERSITY

ITAHARI INTERNATIONAL COLLEGE

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Everest Computers Pvt. Ltd.

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I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a mark of zero will be awarded.

ABSTRACT

This report includes various aspects regarding development of an Information System application which is designed for fictional enterprise named as “Everest Computers Pvt. Ltd.” This has been facing problems for effective and efficient management of records for various electronic appliance stocks. All tasks in the coursework were divided to each group members who was performed by discussing the work as a team.

Firstly, development task was carried out for which NetBeans IDE was used. During the GUI design, various SWING components were used along with some images and icons. After GUI design, coding part got quite challenging which took more time than expected. For validating the work as per the question paper, a general testing was carried out and the report of testing with screenshots is prepared.

After development and testing, the final task is to prepare report by merging the work done by group members. Here, the report consists of explanation about the use of binary search algorithm during the development phase with the representation of diagram, algorithm steps, flowchart and Big ‘O’ notation. After that, method description is done using a table which represents the method name, syntax and concise description. The last task testing is comprehended in the report with all test cases and screenshots for each test case.

ACKNOWLEDGEMENT

We are really obligated because we managed to complete our Emerging Programming Platforms and Technologies module group coursework within the given deadline given by RTE department (IIC). This assignment cannot be completed without the effort and co-operation of our team members, Susan Shrestha, Sulav Shrestha, Sujata Acharya and Kshitiz Bhujel. We also sincerely thank our lecturer and tutor Mr. Pradhumna Dhungana for the guidance and encouragement in finishing the coursework and also for teaching us in this module. Last but not the least; we would like to express our gratitude to our friends and respondents for the support and willingness to spend some time with us to fill in the questionnaires.

Proposal

Title: Everest Computers information system.

This project will be intensively designed for computer store to help them easily keep a description of every product available in the store. So, far the store has been facing various problems like missing many items, ambiguous category and confusion about the price and model number of different products. When it comes to managing the inventory, trying to maintain the right balance is a challenging task. After all, too little stock can lead to a stock-out, unhappy customers and potential loss of sales. Having excess stock, however, can take up valuable warehouse space and incur unnecessary charges.

List of data:

This project will make it very clear about the various items and their categories and also about the price and discounts of the products. It also makes the process of managing the storage (inventory) a whole lot easier, saving you time, money and quite frankly, sanity.

So the list of data which will be provided by this system are:

- Item Name:

  Name of the items is a word or set of word by which an item or thing is known.

- Item Number:

  A numeral or string of numerals that is used for identification of the product.

- Item Categories:

  An item category is class or division of an item or products regarded as having particular shared characteristics. The categories are:

  - Keyboard
  - Mouse
  - Monitor
  - Speaker

    - Graphics Card
    - RAM
    - SSD
    - HDD
- Item Recommendation Range:

  Item recommendation range is suggestion or proposal given by Company, Community or an individual. There will be three types of item recommendation range, and they are:

    - Low
    - Medium
    - High
- Item Price:

  The amount of money expected, required, or given in payment for something

- Discount:

  The amount of money that is deducted from price of the item is the Discount.

Features:

With the help of this project we will be able to find right items within a second and also it will be easier for us to find their price and discount amount with the help of item number. Fortunately, with this system one can track low stock levels and identify the re-order points for each product, in turn avoiding the occurrence of stock-outs.

I. The system will have a features of displaying and storing details of various computer appliances.
II. It will be able to store a data in systematic and well defined and detailed way.
III. The system will have a function by which an item can be easily searched and navigated from a group of products by the help of its price and the name of the category.
IV. The system will be able to open files, import files and save the information about products in a file.

V. The system will be able to open a file which will contain a user manual which be very handy for the user.

Tools:

NetBeans:

NetBeans is an open-source integrated development environment (IDE) which is used for developing various projects with the use of Java, PHP, C++, and other programming languages.

For development purpose NetBeans will be used as it is powerful and easy GUI builder as compared to others IDE because its supports Swing Application Framework and Beans binding and it is platform independent so it supports for all java standard if JDK is installed. While developing the system, the debugging tool in NetBeans IDE will make the development efficient by detecting errors and once the development will be completed as NetBeans already has debugging tools, so it will detect errors with the help of these tools and also it will save our time on maintenance.

JDK:

The JDK is a java development kit which contains the development tools necessary to create Java programs and applets. The JDK consists of a Java compiler, the Java virtual machine and the Java class libraries.

The use of JDK in this system is to convert the source code into a format that the Java Runtime Environment (JRE) can execute. The JDK allows us to create Java programs that will be executed and run by the JVM and JRE. It is a package of tools that provides an environment for developing Java-based software.

Table of Contents

Table of Tables

Table of Figures

1. Individual tasks

Group Responsibilities:

Member Name	Responsibilities
Sujata Acharya	Introduction, Binary Search Algorithm, Proposal, and Manual
Sulav Shrestha	Software Development, Testing, and Conclusion
Susan Shrestha	GUI Development, Abstract, and Method Description
Kshitiz Bhujel	Testing, Proposal

Table 1: Group responsibilities

2. Introduction

Java is an object oriented and high level programming language which generates software for various platforms. It is specially designed to develop a programs, web applications etc. It is widely used around the world because it is fast, secure and reliable. Java compile and run program through java virtual machine (JVM). Java is derives from C and C++ programming language but it has only low-level facilities than either of them. (guru99.co, 2020)

2.1. JDK

The JDK stands for Java development toolkit. It is software development environment which contains the development tools necessary to develops Java programs and applets. The JDK consists of a Java compiler, the Java virtual machine and the Java class libraries. There are two JDK tools used by developers, Java and Javac and both of them are run by command prompt. (techopedia.co, 2021)

2.2. JRE

The use of JDK in this system is to convert the source code into a format that the Java Runtime Environment (JRE) can execute. It is the software tools used in development for java applications. The JDK allows us to create Java programs that will be executed and run by the JVM and JRE. It is a package of tools that provides an environment for developing Java-based software. (techopedia.co, 2021)

2.3. NetBeans

NetBeans is an open-source integrated development environment (IDE) which is used for developing various projects with the use of Java, PHP, C++, and other programming languages. It is the platform which is used to develop java desktop applications. NetBeans is powerful and easy GUI builder as compared to others IDE because its supports Swing Application Framework and Beans binding and it is platform independent so it supports for all java standard if JDK is installed. NetBeans runs on maximum operating systems with a help of JVM, including Solaris, Mac OS, and Linux. (techopedia.co, 2021)

2.4. Swing

Swing is a set of program component used by developers which provides the propensity to GUI components, such as buttons, scroll bars, combo box etc. Swing components are used with the Java Foundation Classes which includes various packages for developing desktop applications in Java. (techopedia.co, 2021)

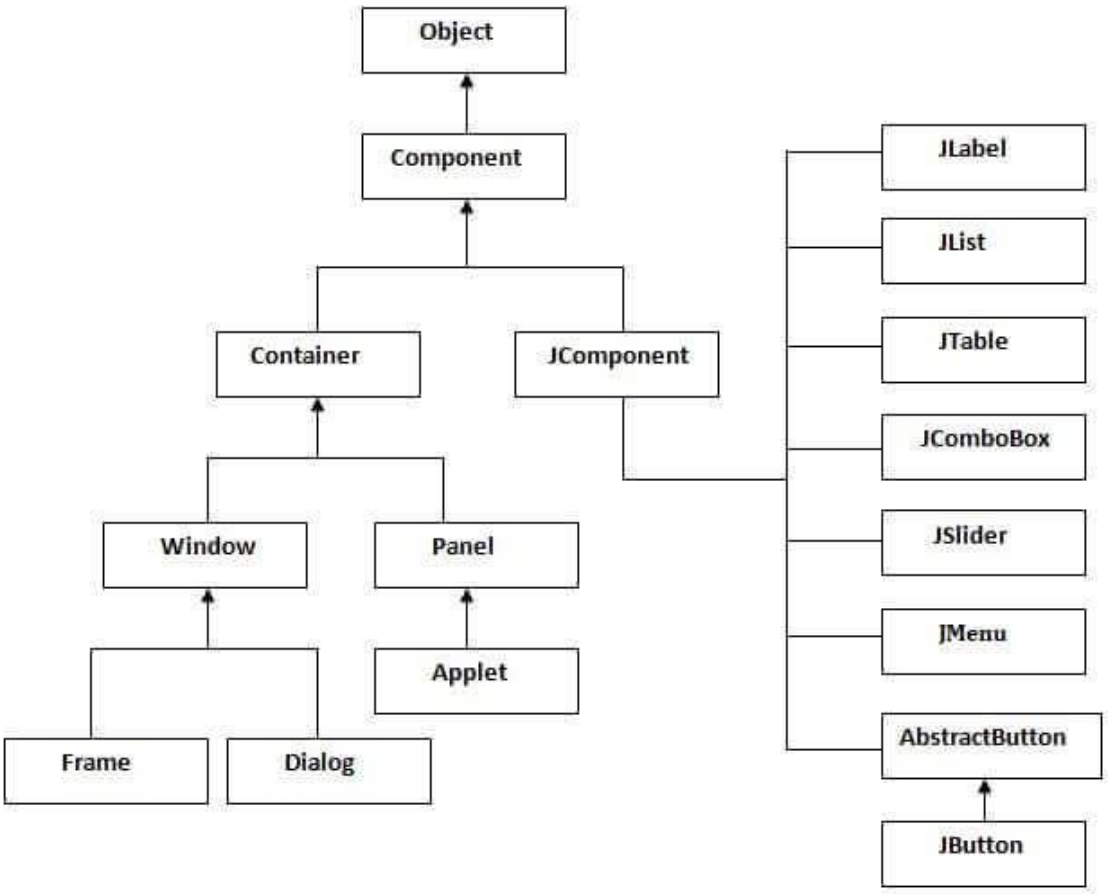


Figure 1: Hierarchy structure of Swing (javatpoint.co, 2018)

3. Binary Search Algorithm

Binary Search is a search of desired elements in sorted arraylist. It is also known as dichotomy search which divides selected algorithm in two parts while searching the elements so it is named as Binary Search algorithm. Binary search algorithm is best searching algorithm from which we can find the exact position of one value from given multiple values. It is faster than the linear search. In this binary search, the elements of the array, number are sorted in ascending order whereas strings are sorted in dictionary order. Binary search algorithms works only on sorted values.(R.S.Salaria, 2017)

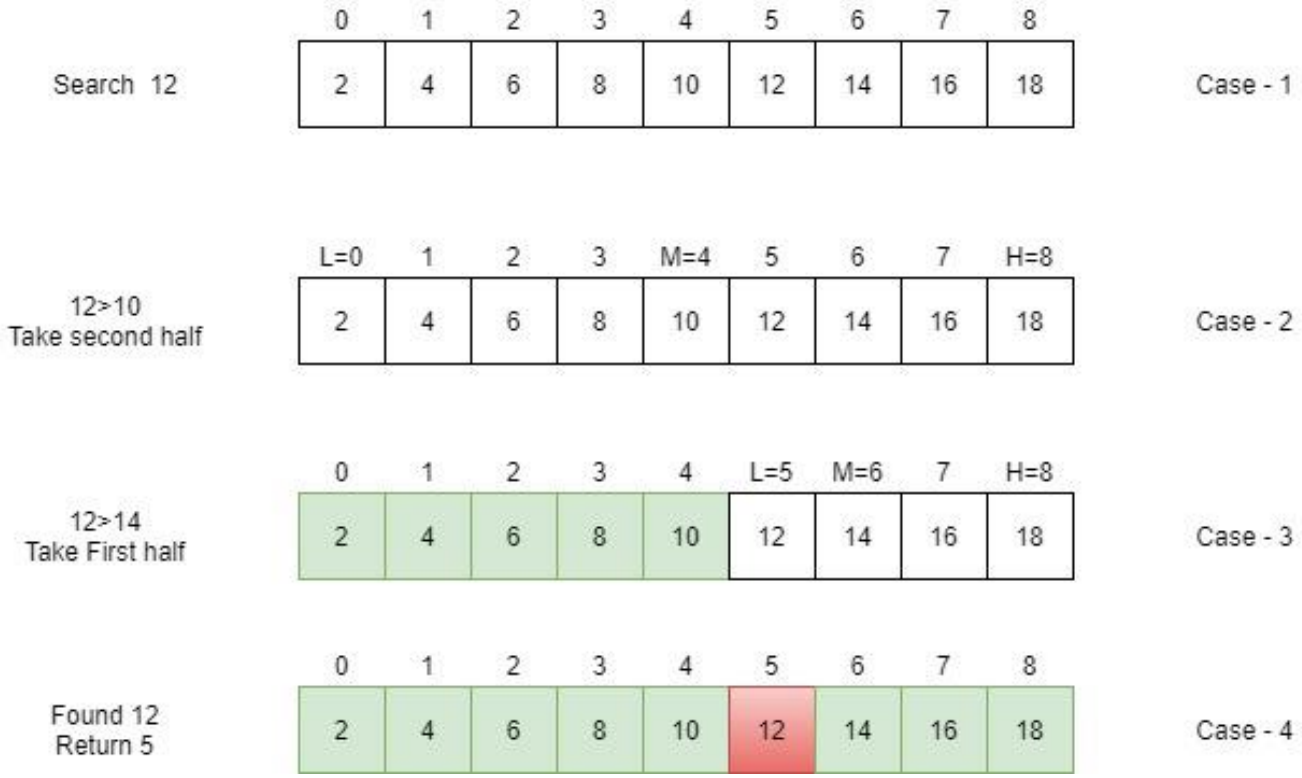


Figure 2: Figure of Binary Search

- In case 1, the algorithm is searching 12 element on sorted array, where starting element is 0 index value and ending element is 8 index value.
- In case 2, it take lowest element= 0 index value, highest element = 8 index value and calculate position for middle element as,

  M = (L+H)/2 = (0+8)/2 = 4

Therefore, middle element is 4 index values. In comparison in between given value to the middle element (10>12), it found that middle element is smallest than the given value. So it took second half for our next iteration.

- In case 3, it take lowest element= 5 index value, highest element = 8 index value and calculate position for middle element as,

  M = (L+H)/2 = (5+8)/2 = 6.5

  Therefore, middle element is 6. In comparison in between given value to the middle element (14>12), it found that middle element is greater than the given value. So it took first half for our next iteration.

- There is only one element in first half so it found given element at index 5 and stop iteration process.

3.1. Algorithm

```
Step 1. Set L = 0              // L represents lowest index value
Step 2. Set H = 8              // H represents highest index value
Step 3. Set M = (L+H)/ 2
Step 4. Repeat steps 5 and 6 While ((L<= H) and (arr[M] != value))
Step 5. If (value < arr[M]) then
            Set H = M-1
        Else
            Set L = M+1
        End if
Step 6. Set M = (L + H)/ 2
        End while
Step 7. If (L>H) then
            Set loc = -1
        Else
            Set loc = M
        End if
Step 8. Exit
```

3.2. Flowchart

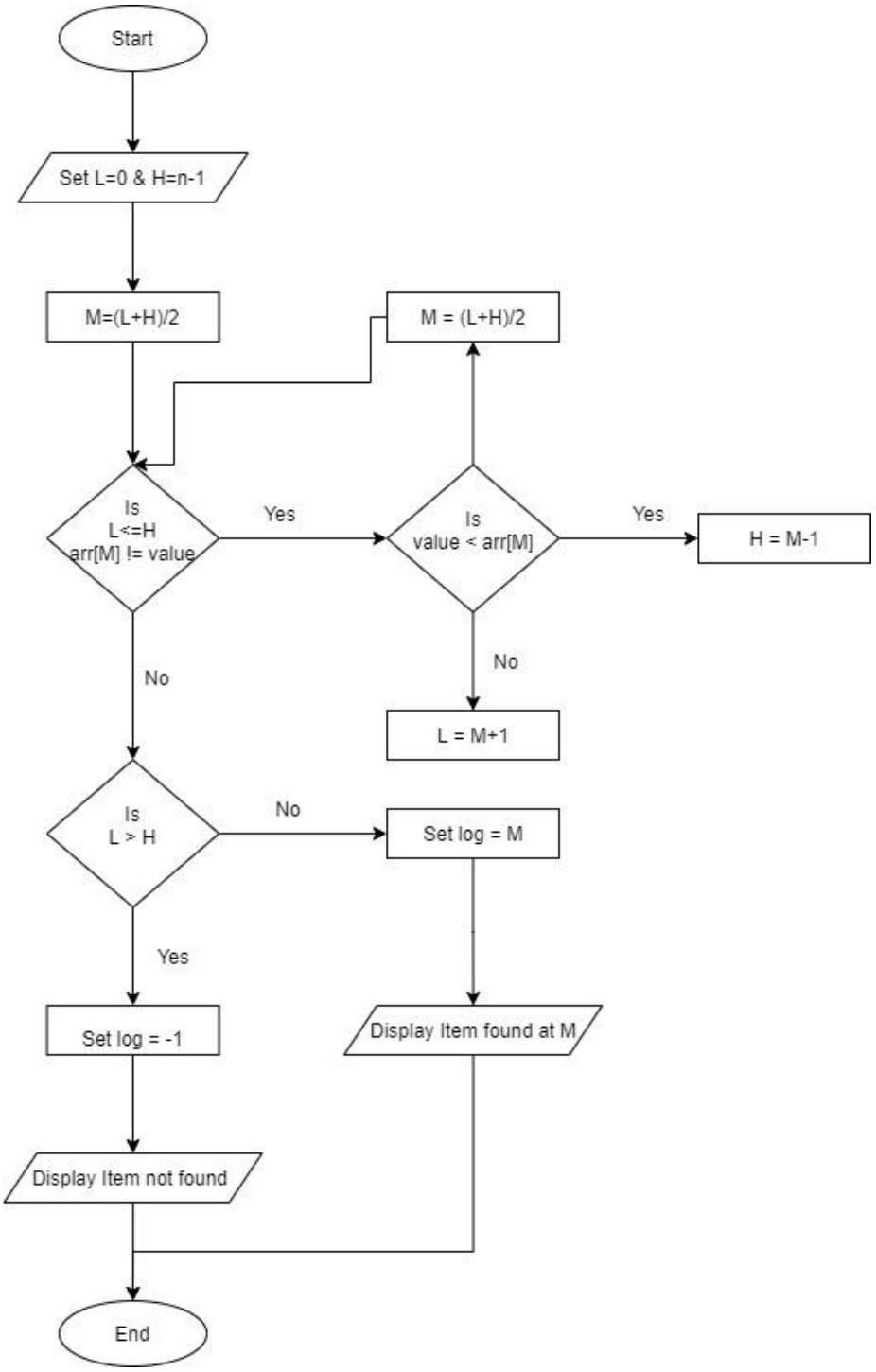


Figure 3: Flowchart

3.3. Advantages and Disadvantages

The advantages and disadvantages of binary search algorithm are:

- Advantages
  - It is the best search algorithms through which we can found the exact elements in a short time.
  - It is suitable for large list array.

- Disadvantages
  - It only worked on sorted array.
  - It is not suitable for small list array.

3.4. Big O Notation

Big O notation is used to measure the time and space of the algorithms. It is relative representation of the complexity of an algorithm which describes the performance and measurement of it. It is also known as mathematical notation which shows the limited behavior of given function when the argument draws on a particular value or infinity.

3.4.1. Big O Notation of Binary Search

O (log n) = Worse and average case

O (1) = Best case

- **<u>Worst Case</u>: Worst case is symbolically represented as Big O Notation or O(n).** It will provide us with an asymptotic upper bound for the increment rate of the runtime of an algorithm.

- **<u>Average Case</u>: Average case is symbolically represented as Big Theta or Θ(n). It is used to** represent the asymptotically strong bound on the increment rate of runtime of an algorithm.

- **<u>Best Case</u>: Best case is symbolically represented as Big Omega or Ω(n).** It will provide us with an asymptotic lower bound for the increment rate of the runtime of an algorithm.

Example of Big O Notation of Binary Search,

There are 25 elements in a sorted arraylist. So for those 25 elements it will see the worst case to search an element, which can be expressed in log base 2 as following:

$\log_2 (25) = 4$. (Sharma, 2019)

4. User Manual

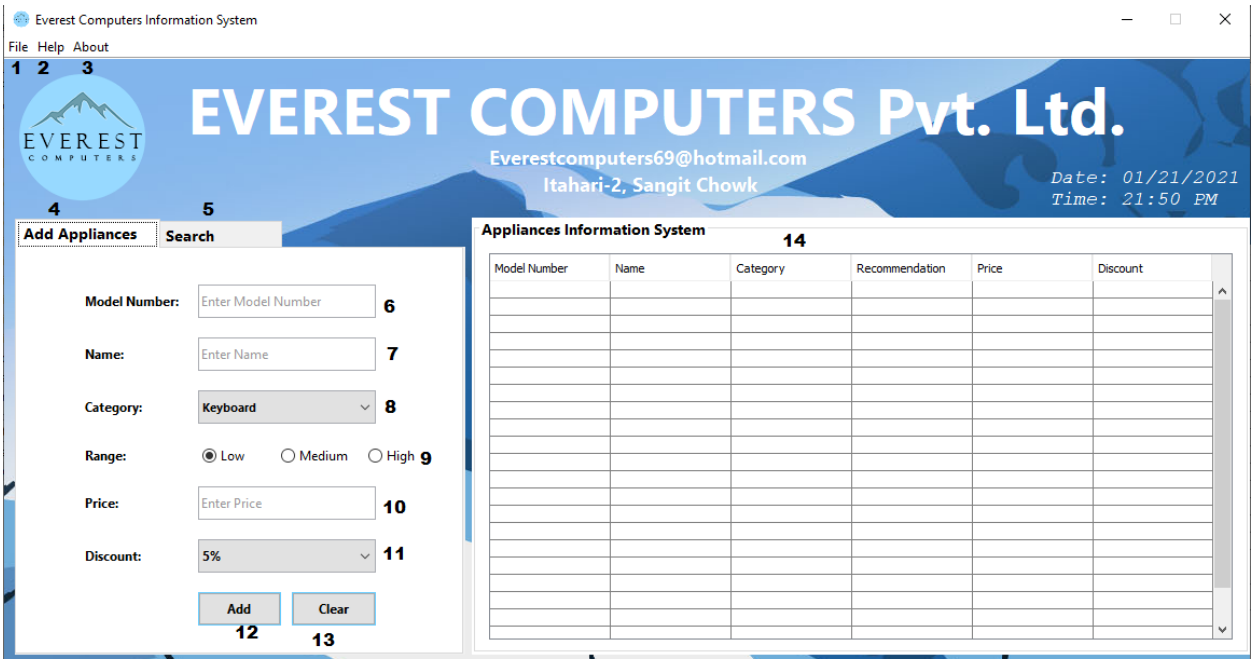


Figure 4: User Manual Figure 1

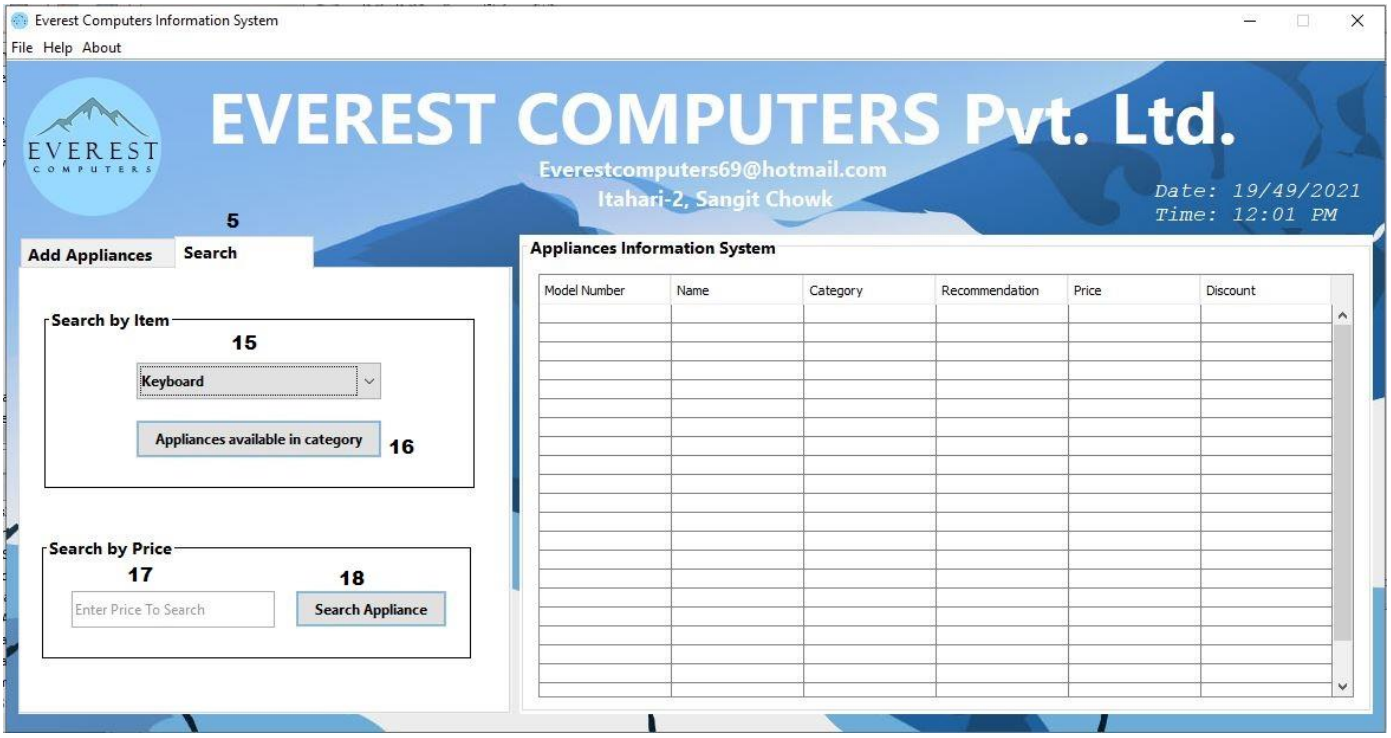


Figure 5: User Manual Figure 2

In menu bar, we have three menu options File, Help and About.

1. File: In File menu, we have two options Open and Exit. We can open other different file with the help of Open option and we can close the whole program with the help of Exit option.
2. Help: In Help menu, user can find one menu item named FAQs by pressing that user will find user manual.
3. About: In About option, Users can find brief introduction about our system and will be able to know about different features of our system.
4. Add Appliances: When users press Add Appliances button, System display new panel where users can add Item Number(6), Name(7), Category(8), Range(9), Price(10) and discount per item(11) through the help of Add button(12).
5. Search: When users press Search button, System display two different panel where, In first panel i.e. Search by Item, users can search desired item with the help of item name where users can add Category of item in given combo box (15) and can search item by clicking Appliances available in category button (16). In second panel Search by Price, users can search first item of same price by adding price in Enter price to Search text field (17) and can search by clicking Search Appliances button (18).
6. Clear: With the help of Clear button users can clear all text-field, combo box and Radio button.
7. Table: In table users can store product details like product Name, Number, Category, Range, Price and Discount.

5. Method Description

Method	Modifier and Type	Description
showDate()	private void	Displays current date. This method is called in the constructor and triggered when program starts.
showTime()	private void	Displays current time This method is called in the constructor and triggered when program starts.
setIcon()	private void	Sets icon for application window. This method is called in the constructor and triggered when program starts.
miOpenActionPerformed(java.awt.event.ActionEvent evt) ()	private void	Opens the previously saved file. It is triggered when Open menu item is clicked.
miExitActionPerformed(java.awt.event.ActionEvent evt) ()	private void	Asks user to exit the program. It is triggered when Exit menu item is clicked.
txtSearchByPriceFocusGained(java.awt.event.FocusEvent evt)	private void	Sets the Text Field text as empty when the given text field is active. This method gets triggered when txtSearchByPrice text field is clicked or in use.
txtSearchByPriceFocusLost(java.awt.event.FocusEvent evt)	private void	Sets the Text Field text as “Enter Price to Search” if the text field is not focused and empty.
btnSearchByPriceActionPerformed(java.awt.event.ActionEvent evt)	private void	When the Search by price button is clicked, it calls the btnSearchByPriceActionPerformed() method which searches for the keyword as price given by the user in

		text field and displays the first matched item details for the given keyword.
btnSearchByCategoryActionPerformed(java.awt.event.ActionEvent evt)	private void	When Search by category (Appliance available in the Category) button is clicked, it calls btnSearchByCategoryActionPerformed() that shows all the details of those items for selected category
btnClearActionPerformed(java.awt.event.ActionEvent evt)	private void	Clears all inserted text in text field and sets to default. It is triggered when the clear button is clicked.
btnAddActionPerformed(java.awt.event.ActionEvent evt)	private void	It is used to add the inserted data to the table by validating the user input form and hence saving the table data to a .csv file. It is triggered when the Add button is clicked.
save()	private void	It saves the table data as .csv file in the given location. This method is called when Save menu item is selected.
txtModelNumberFocusGained(java.awt.event.FocusEvent evt)	private void	Sets the Model Number Text Field text as empty when the text field is active or clicked.
txtModelNumberFocusLost(java.awt.event.FocusEvent evt)	private void	Sets the Model Number Text Field text as “Enter Model Number” if the text field is not focused and empty.
txtPriceFocusGained(java.awt.event.FocusEvent;evt)	private void	Sets the Price Text Field text as empty when the given text field is active or clicked.
txtPriceFocusLost(java.awt.event.FocusEvent evt)	private void	Sets the Price Text Field text as “Enter Price” if the text field is not focused

		and empty.
txtNameFocusGained(java.awt.event.FocusEvent evt)	private void	Sets the Name Text Field text as empty when the given text field is active and clicked.
txtNameFocusLost(java.awt.event.FocusEvent evt)	private void	Sets the Text Field text as “Enter Name” if the text field is not focused and empty.
miAboutActionPerformed(java.awt.event.ActionEvent evt)	private void	When About menu item is selected miAboutActionPerformed () is called that pops up a dialog box containing information about the company and the appliance information system program.
txtPriceKeyTyped(java.awt.event.KeyEvent evt)	private void	This method accepts integer values only and restricts other values; it is triggered when any key is pressed.
txtSearchByPriceKeyTyped(java.awt.event.KeyEvent evt)	private void	This method accepts integer values only and restricts other values; it is triggered when any key is pressed.
miFAQsActionPerformed(java.awt.event.ActionEvent evt)	private void	In help menu, when FAQs submenu is selected then miFAQsActionPerformed () is called that opens a user manual containing the information about using the application program and components.
miImportActionPerformed (java.awt.event.ActionEvent evt)	private void	When import menu item is clicked, it calls this method which loads the previously saved .csv file in program’s table.
miSaveActionPerformed(java.awt.event.ActionEven	private void	When Save menu item is selected, it calls miSaveActionPerformed () that

t evt)		calls save() method for saving the table data as .csv file.
mergeSort(ArrayList<EverestComputers> price)	public void	This method divides the array list into subarrays taking input as price value only. It is called in btnAddActionPerformed () method while adding the data into table.
merge(ArrayList<EverestComputers> first, ArrayList<EverestComputers> second, ArrayList<EverestComputers> price)	public static void	This method sorts the divided subarrays and merges them to one array. It is called in mergeSort () method.
binarySearch(ArrayList<EverestComputers> priceSearch, int low, int high, int key) ()	public static int	It takes the sorted array list and keyword to be searched as parameter and returns the matched data. This method is called by btnSearchByPriceActionPerformed () or btnSearchByCategoryActionPerformed ().

Table 2: Method Description

6. Testing

Testing or verification or validation is an activities that aim at checking the correspondence of an implementation with its specifications are called verification activities, whereas the activities that aim at checking the correspondence between a system and users expectations are called Testing activities. (Baresi, 2006)

6.1. Test Scenario A: Running the program in NetBeans

Objective	Run the program in NetBeans
Action	Clicked the Run project button or else the (F9) button is clicked.
Expected Result	The program will be opened successfully.
Actual result	The program was opened without any error.
Conclusion	Test Successful

Table 3: Test Scenario A

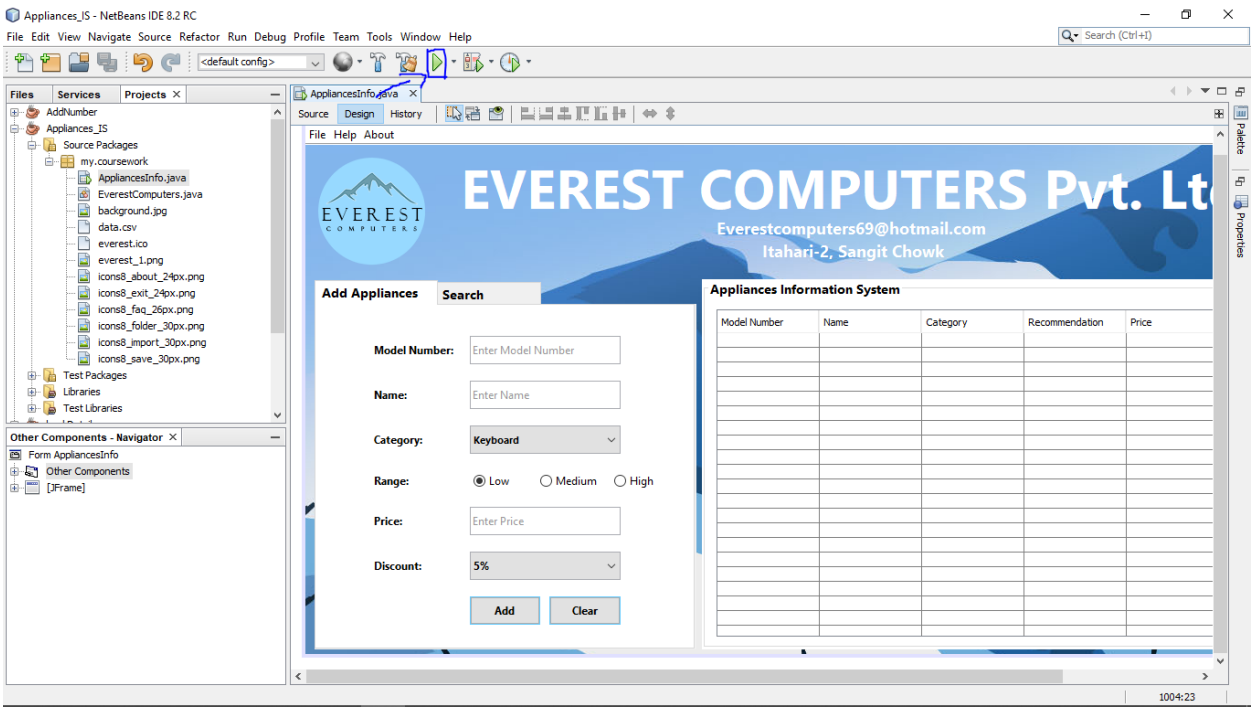


Figure 6: Clicking the Run Project Button

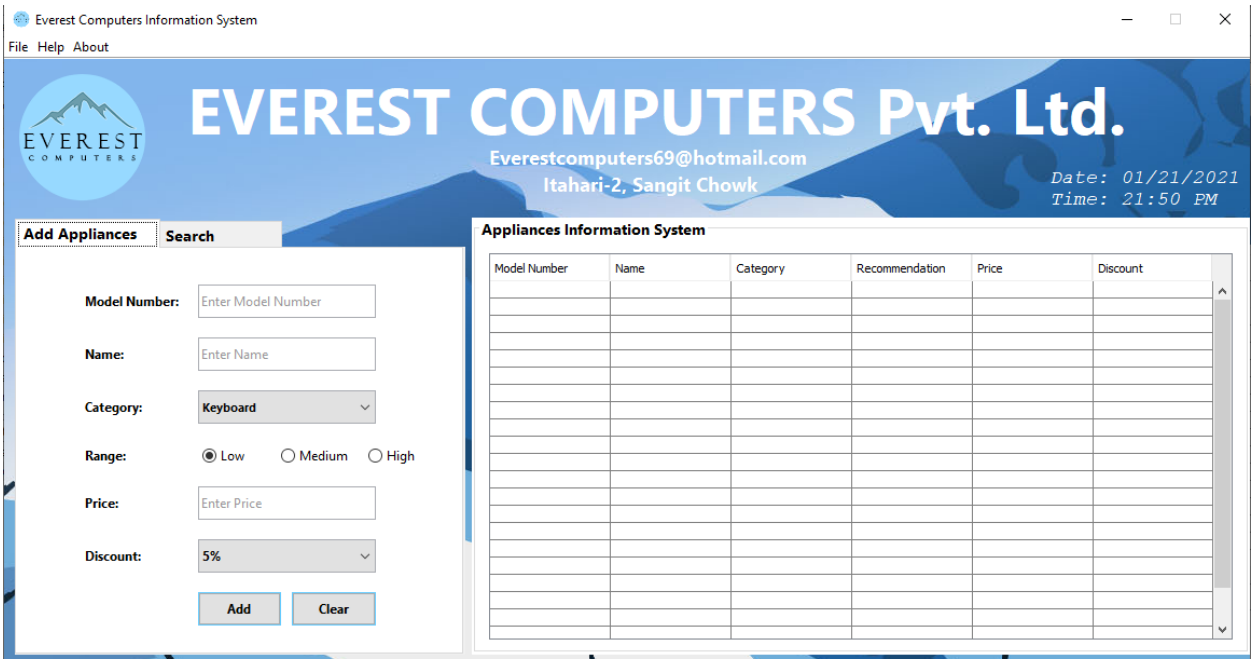


Figure 7: Opening of the Program

6.2. Test Scenario B: Functionality of the Program

6.2.1. Test B (1): Adding the Items to the Table.

Objective	Add the items to the table
Action	Firstly the text fields like: Model Number = 01 Name = Dell Category = Speaker Range = Low Price = 5000 and Discount = 10% Were filled with the description about the Items. Then the Add button is clicked to add the items to the table manually.
Expected Result	The items should be stored to the table from the text fields.
Actual result	The items were stored in the table from the text fields.
Conclusion	Test Successful

Table 4: Test Scenario B (1) Adding the Items to the Table

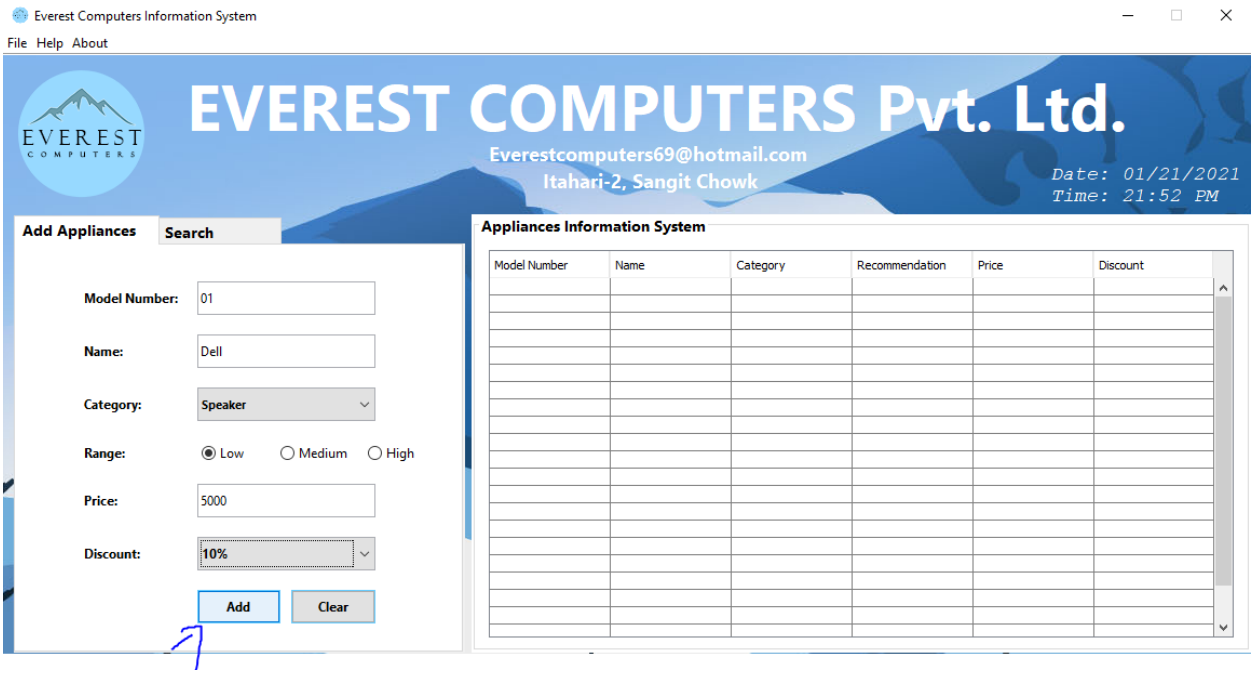


Figure 8: Adding data in text Fields and Clicking the Add Button

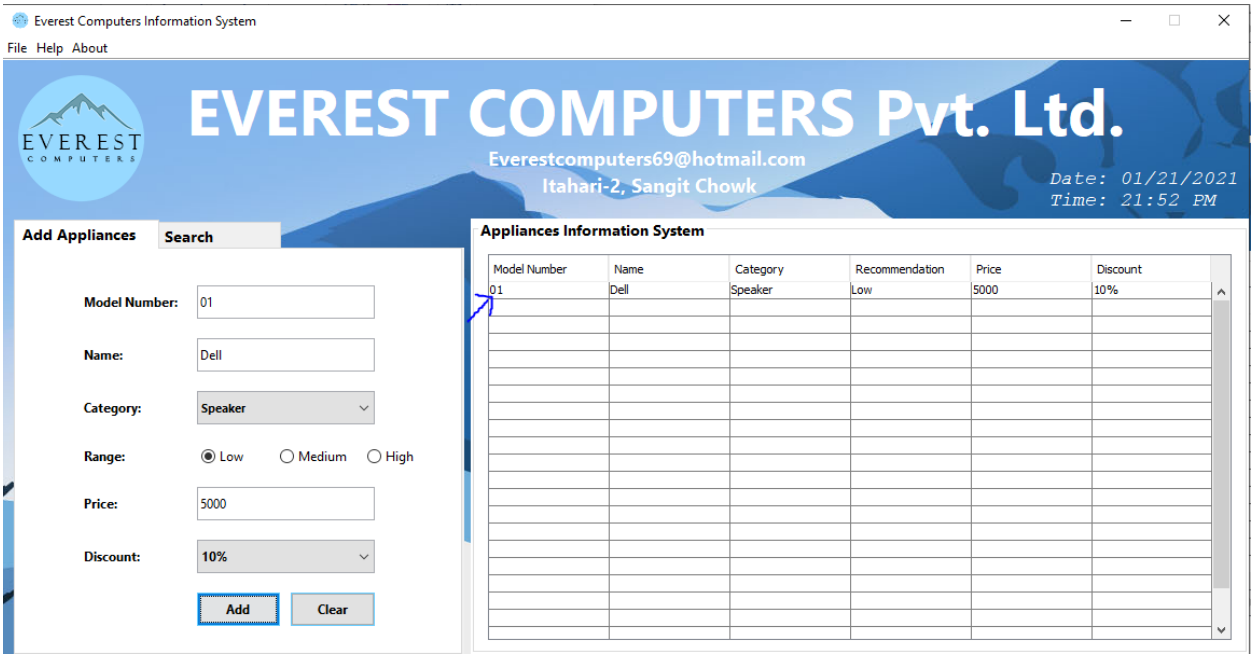


Figure 9: Data Inserted in the Table

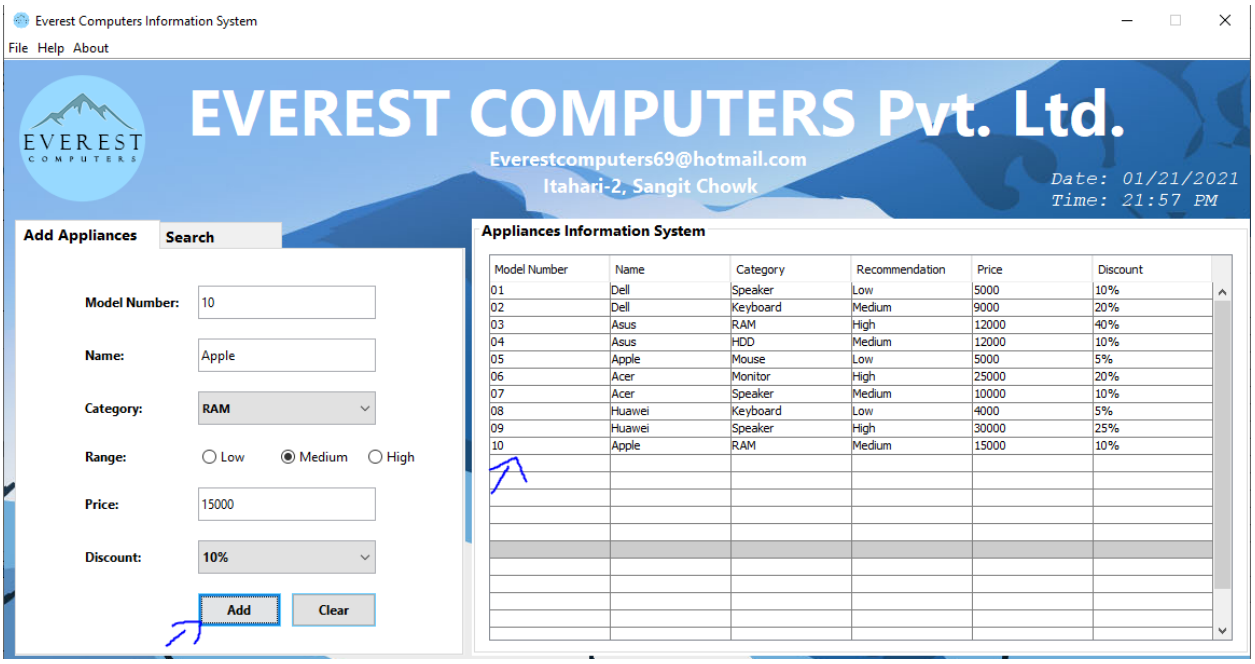


Figure 10: Data Stored in table

6.2.2. Test B (2): Searching for items based on price.

Objective	Search the Items Based on price
Action	Firstly the text field is filled with the price to be searched like 5000 and 25000 then the search Appliance button is Pressed.
Expected Result	Program should display the items which have the same price which is being searched.
Actual result	The items having the same price are displayed.
Conclusion	Test Successful

Table 5: Test Scenario B (2): Searching for items based on price.

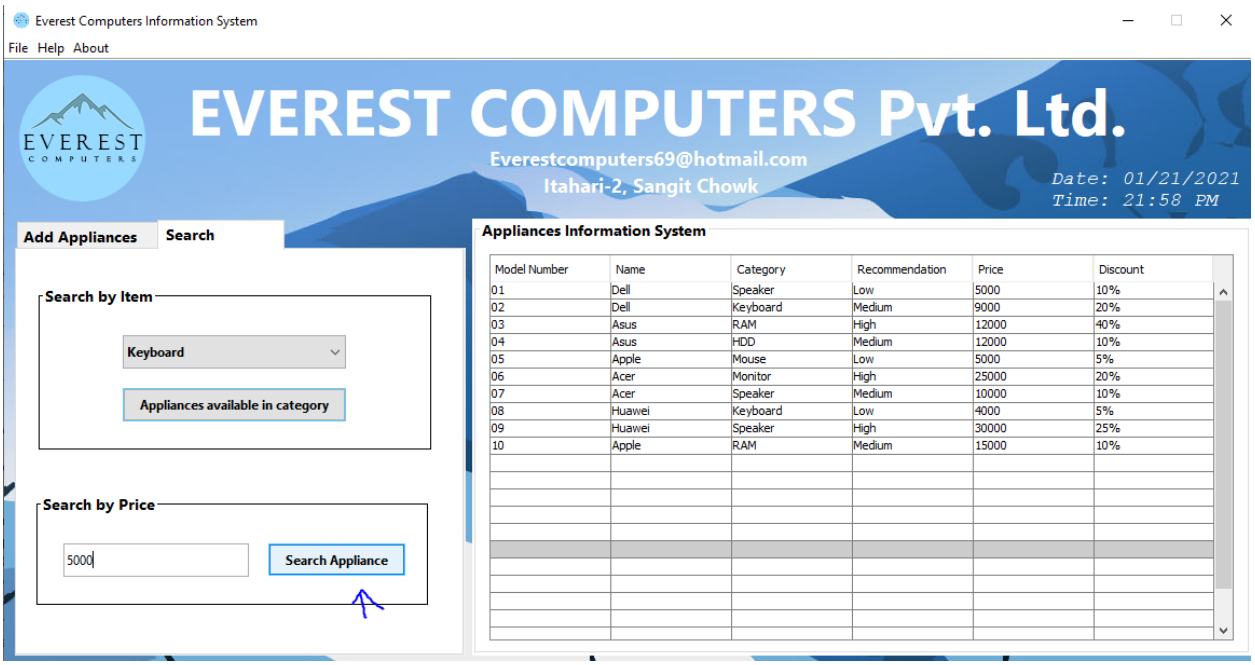


Figure 11: Searching Item which has Price 5000

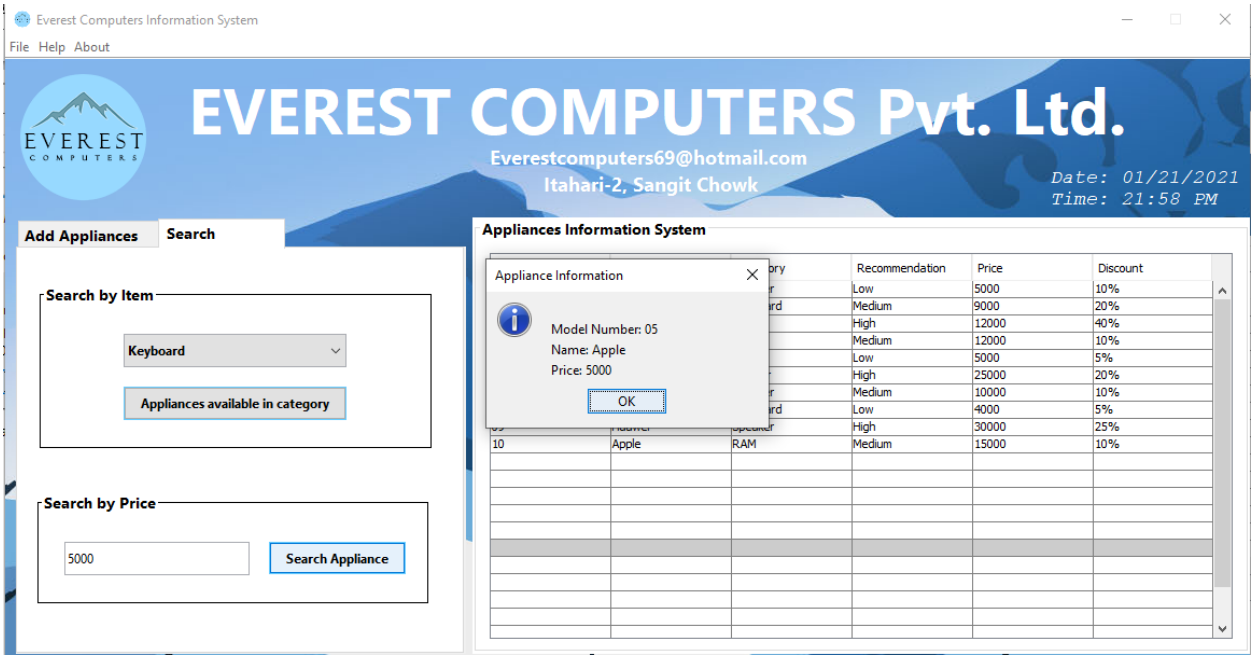


Figure 12: Data displayed after searching for item which has price 5000

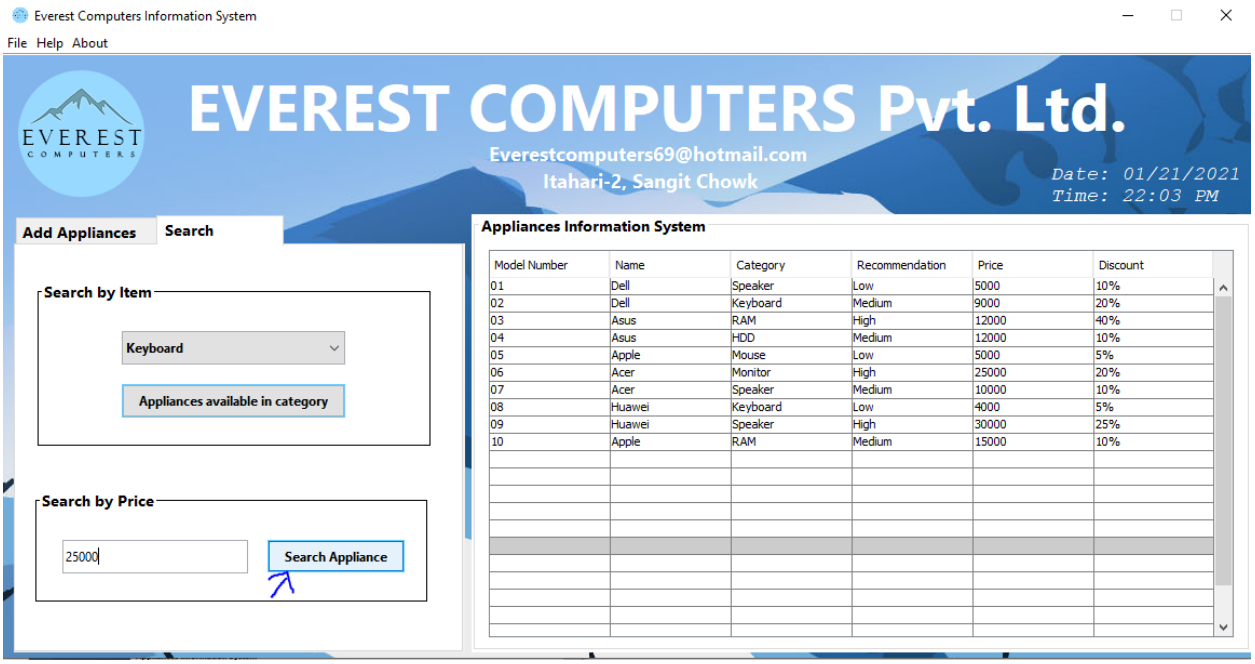


Figure 13: Searching Item which has Price 25000

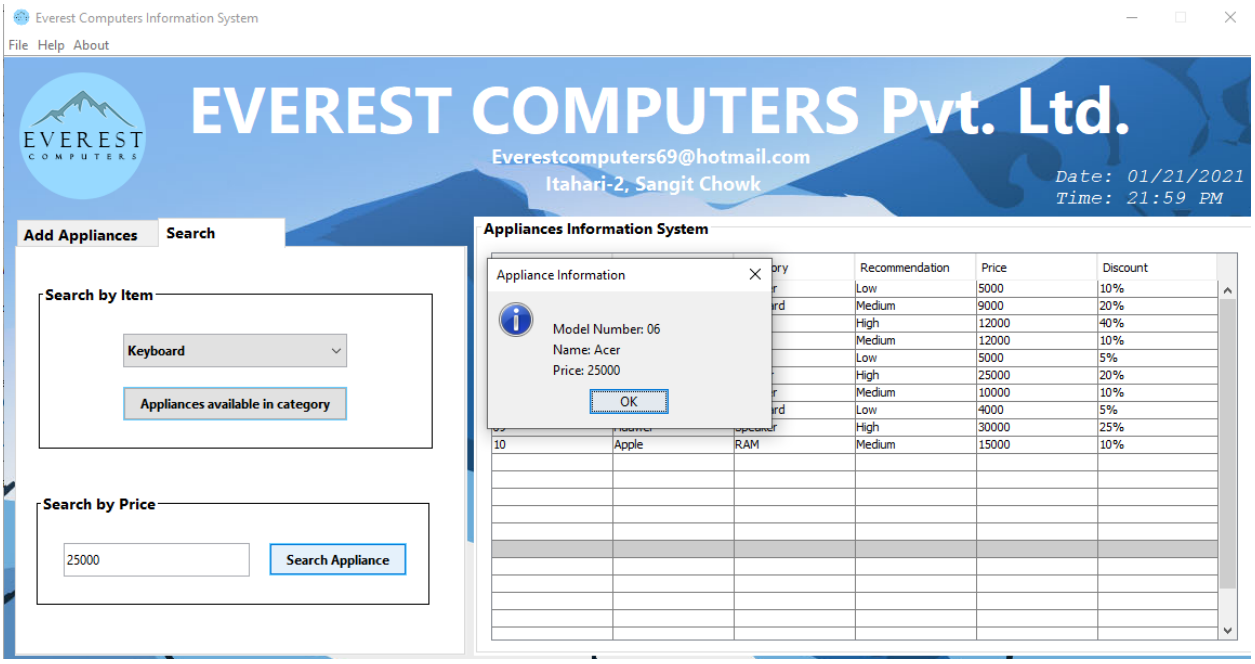


Figure 14: Data displayed after searching for item which has price 25000

6.2.3. Test B (3): Searching for number of dishes in a category.

Objective	Search the Items in Category
Action	Firstly the Category like Speaker, Ram, and Keyboard is selected from the combo box then the Appliance Available in category button is Pressed.
Expected Result	Program should display the items which are available in the category.
Actual result	The items that are present in the category are displayed.
Conclusion	Test Successful

Table 6: Test Scenario B (3) searching for number of dishes in a category.

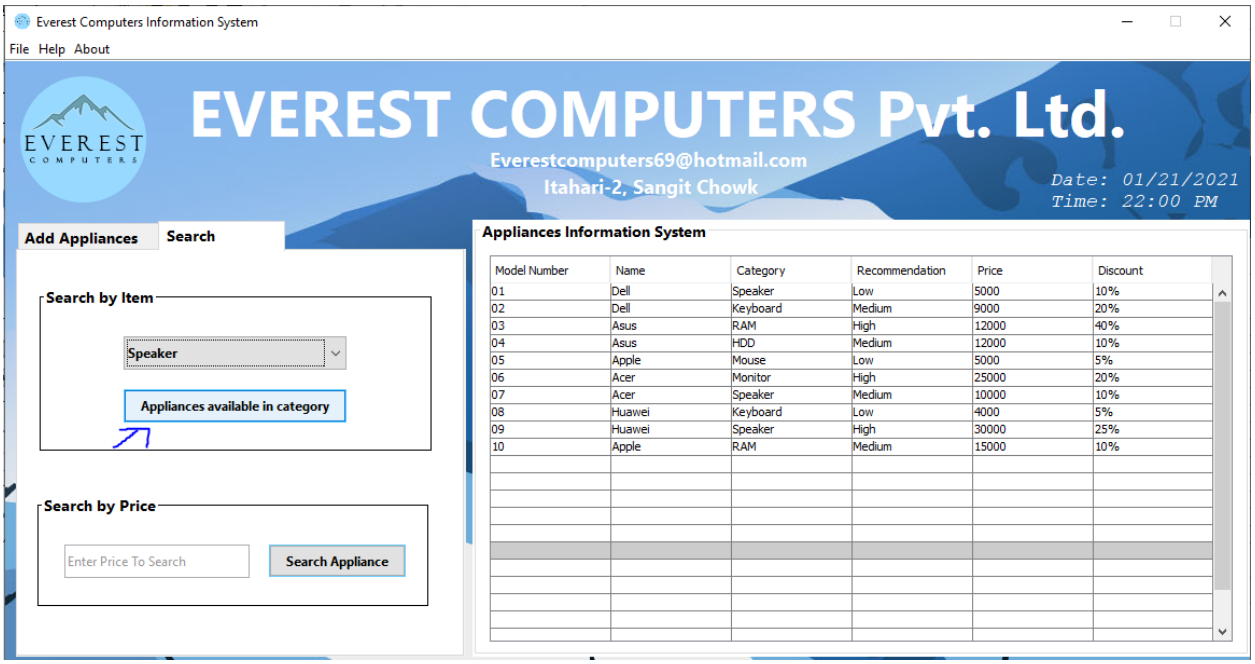


Figure 15: Searching Appliance in Speaker Category

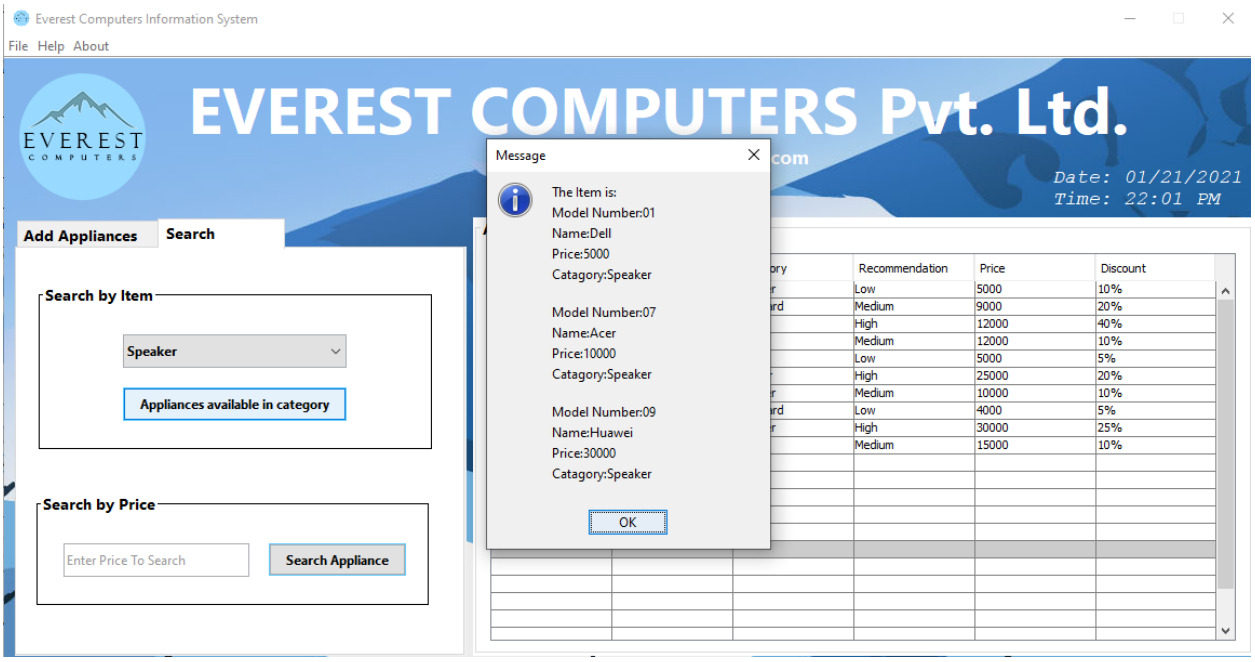


Figure 16: Appliances Displayed after searching the Speaker Category

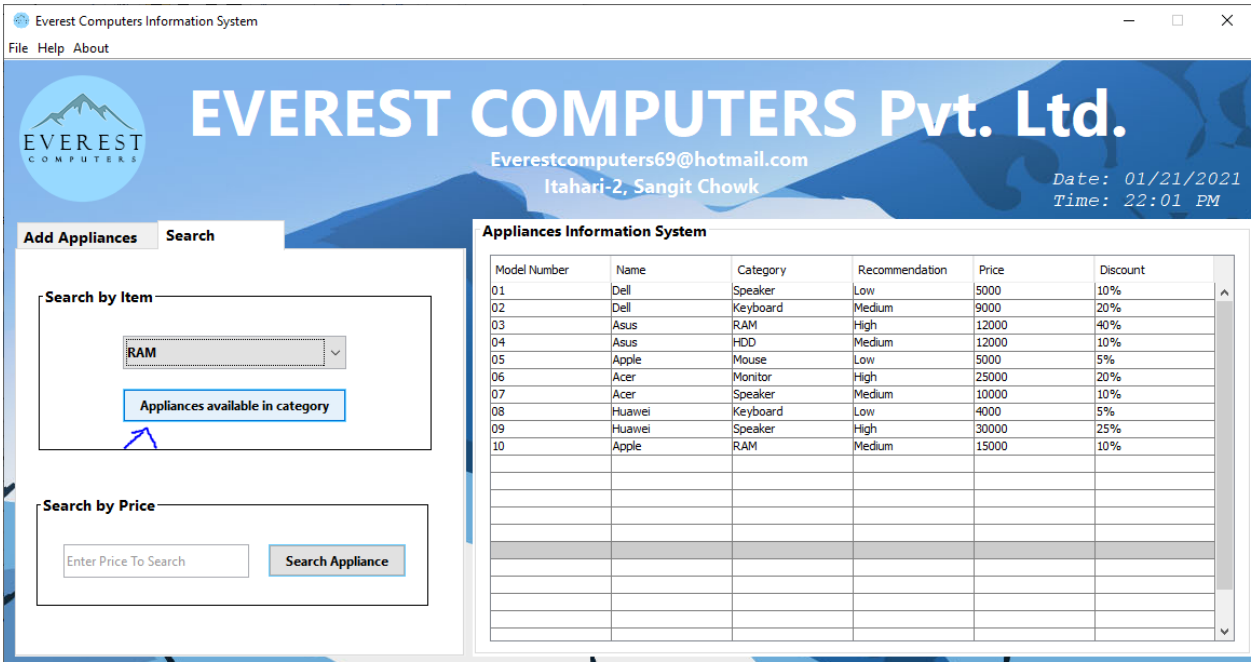


Figure 17: Searching Appliance in RAM Category

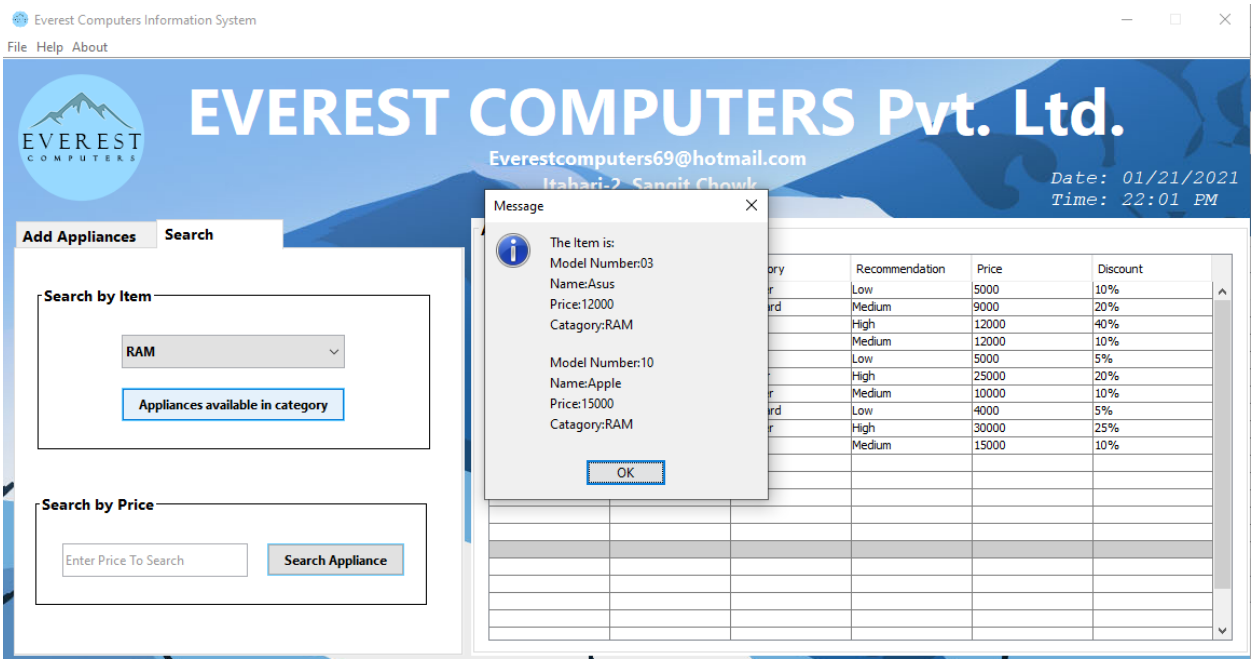


Figure 18: Appliances Displayed after searching the RAM Category

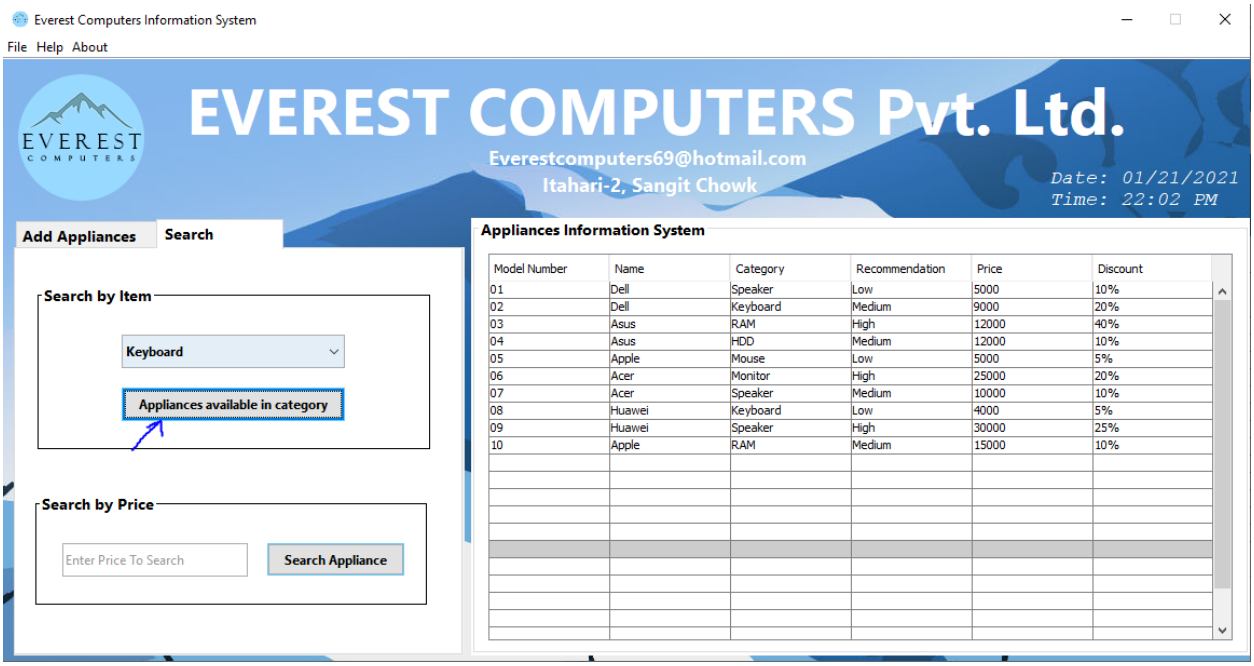


Figure 19: Searching Appliance in Keyboard Category

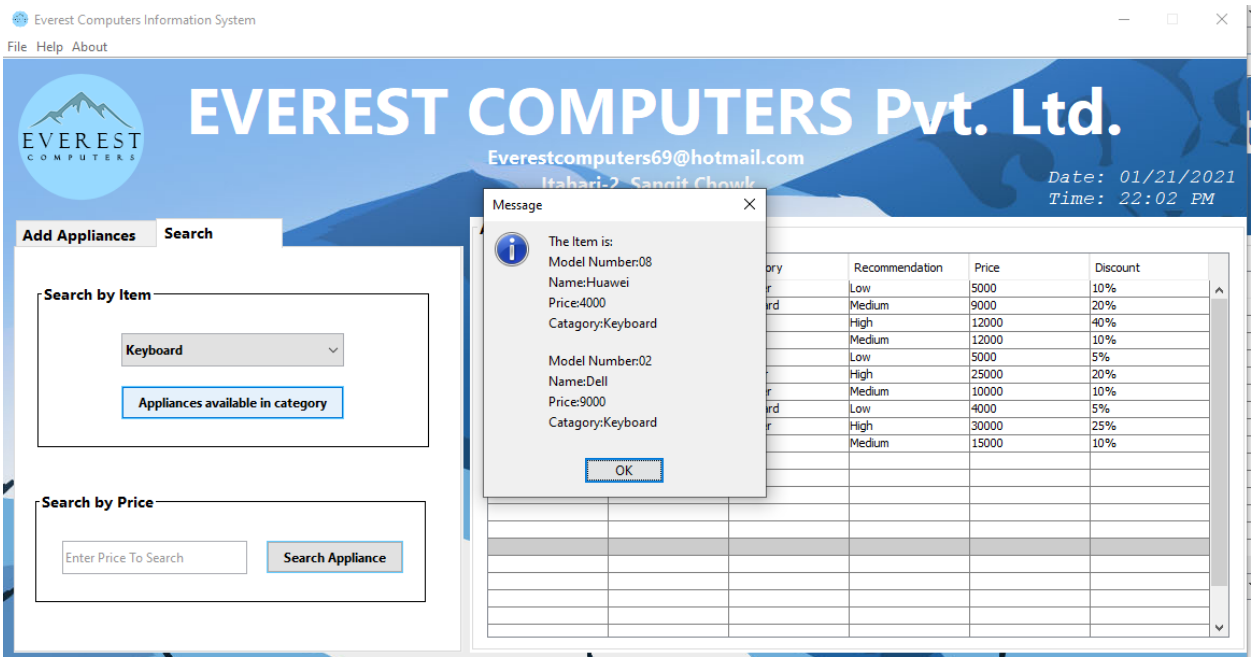


Figure 20: Appliances Displayed after searching the Keyboard Category

6.2.4. Test B (4): Opening a file from menu

Objective	Open a file from the menu.
Action	Firstly the File Menu bar is clicked, and then the open menu item is pressed After which a File is opened.
Expected Result	The data of the file will be imported in the table.
Actual result	The data of the file with the items is imported in the table.
Conclusion	Test Successful

Table 7: Test Scenario B (4): Opening a file from menu

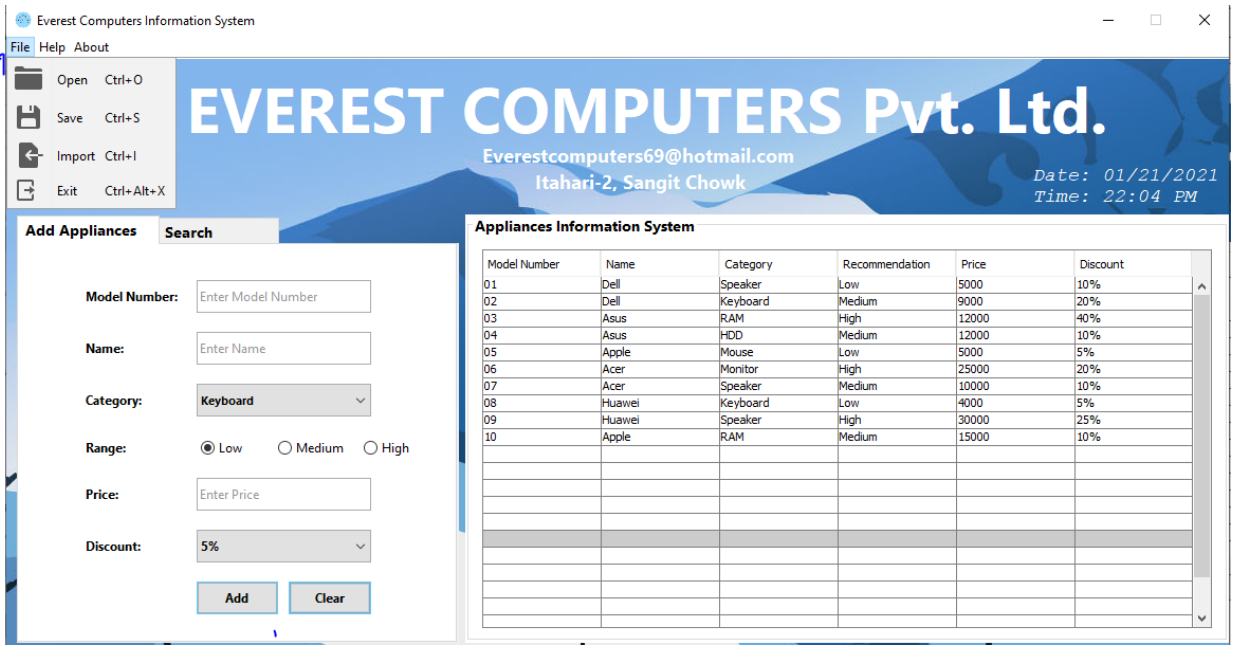


Figure 21: Clicking File Menu to Open File

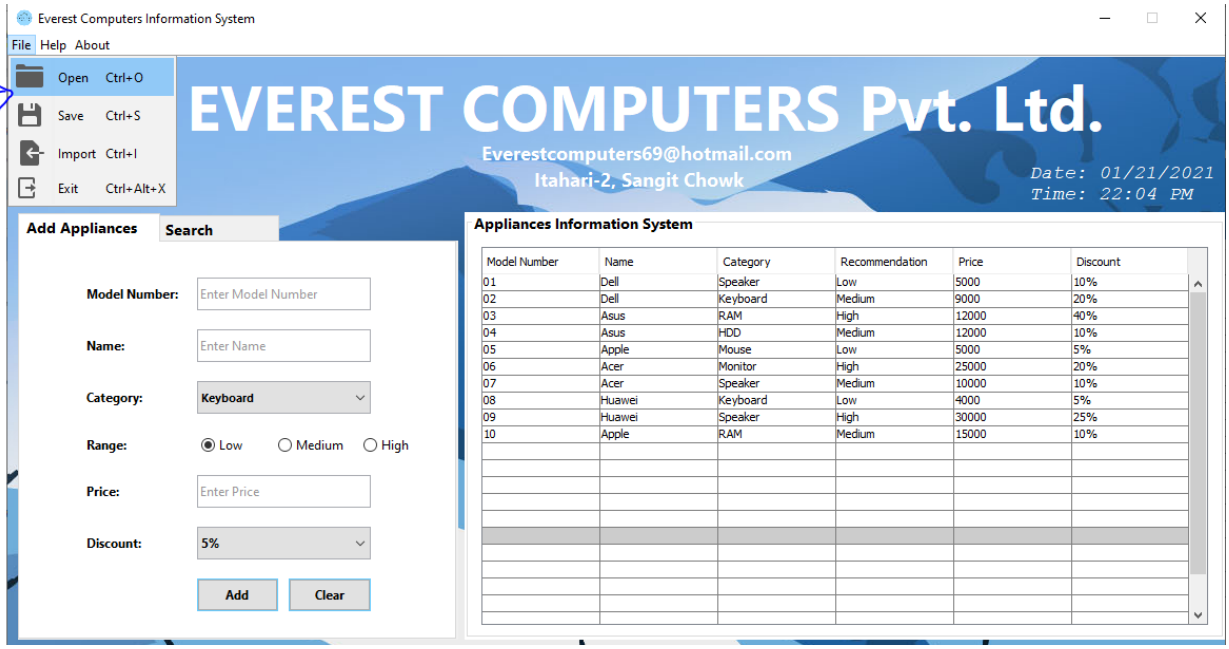
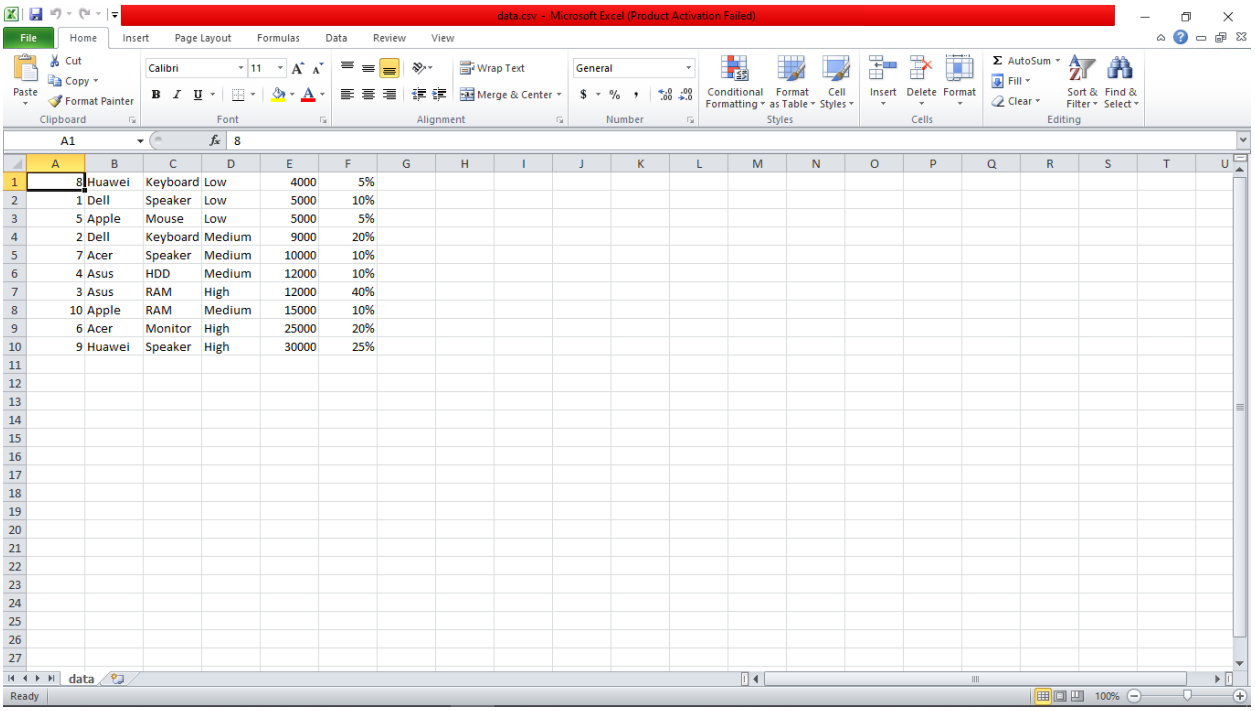


Figure 22: Clicking Open Menu Item to Open File



8	Huawei	Keyboard	Low	4000	5%
1	Dell	Speaker	Low	5000	10%
5	Apple	Mouse	Low	5000	5%
2	Dell	Keyboard	Medium	9000	20%
7	Acer	Speaker	Medium	10000	10%
4	Asus	HDD	Medium	12000	10%
3	Asus	RAM	High	12000	40%
10	Apple	RAM	Medium	15000	10%
6	Acer	Monitor	High	25000	20%
9	Huawei	Speaker	High	30000	25%

Figure 23: Opened File

6.3. Test Scenario C: System Validation

Objective	Validate the text fields
Action	All the validation was checked one by one manually.
Expected Result	Success of the validation
Actual result	The validation was successful
Conclusion	Test Successful

Table 8: Test Scenario C: System Validation

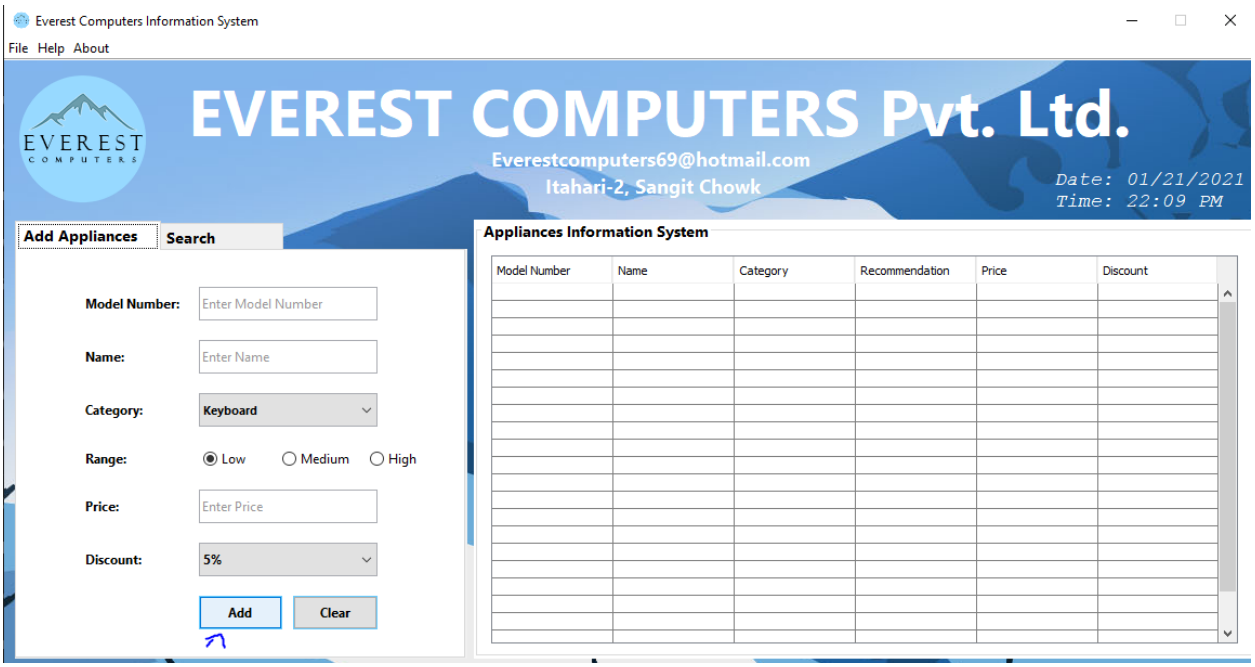


Figure 24: Setting Empty Text fields to check validation in Add Appliances Tabbed Pane

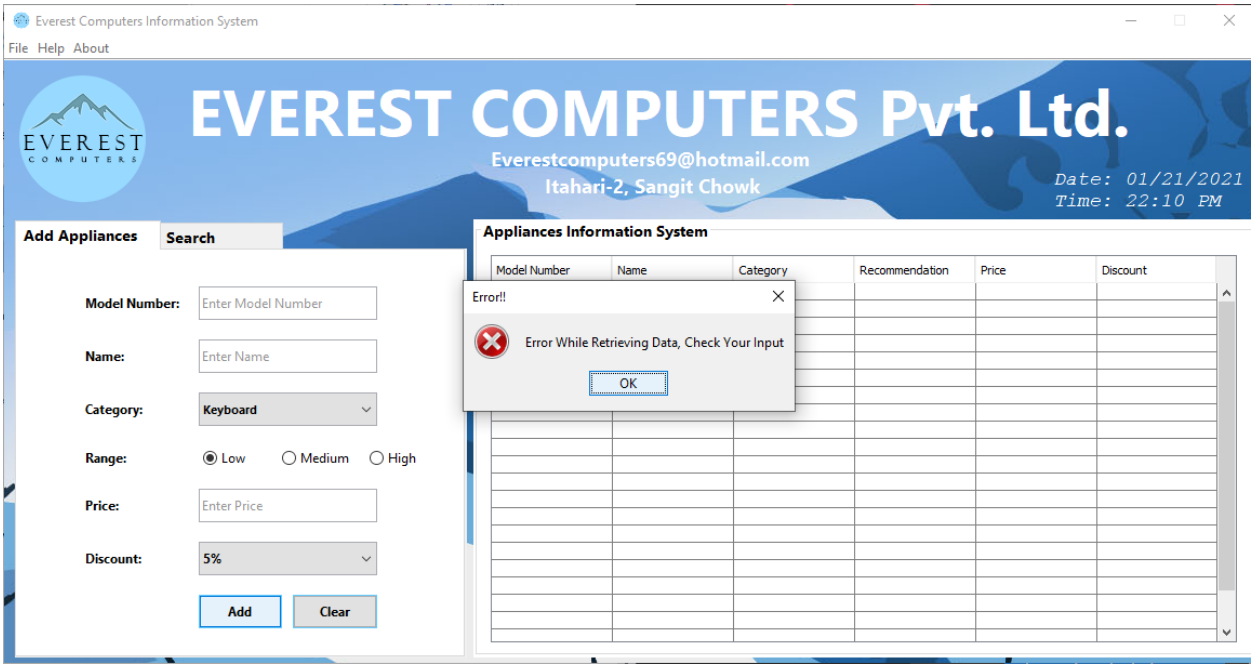


Figure 25: Error message dialogue box for empty fields in Add Appliances Tabbed Pane

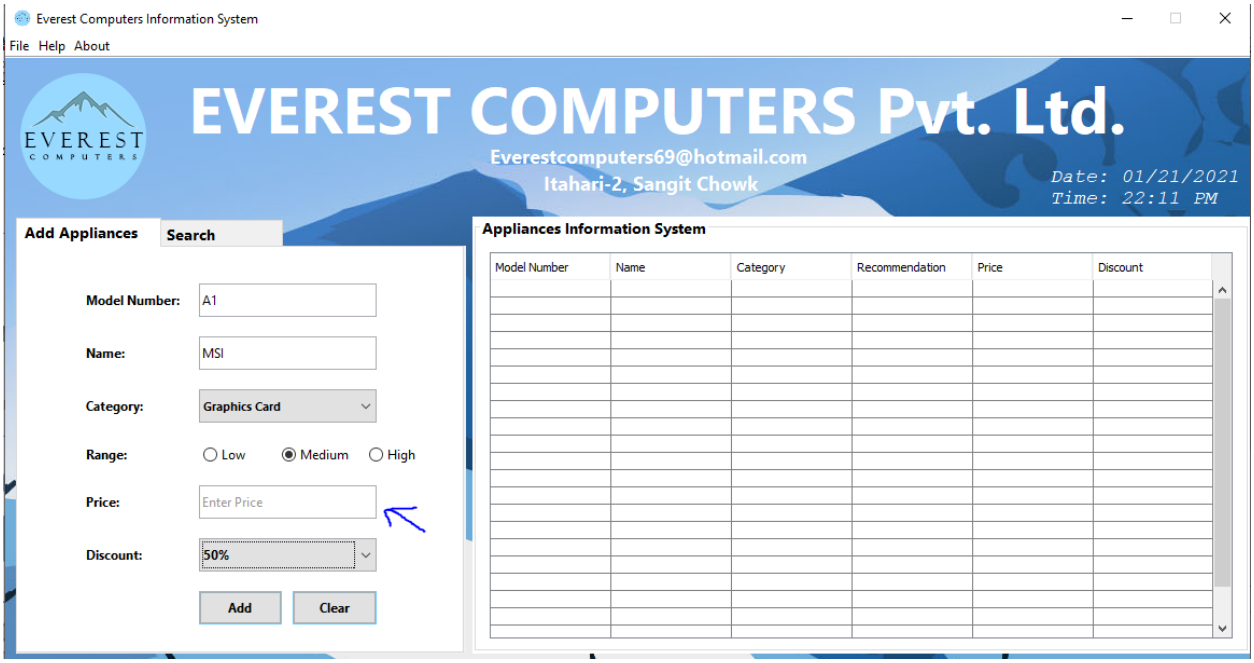


Figure 26: Checking validation using Strings but Price takes only Integer Value

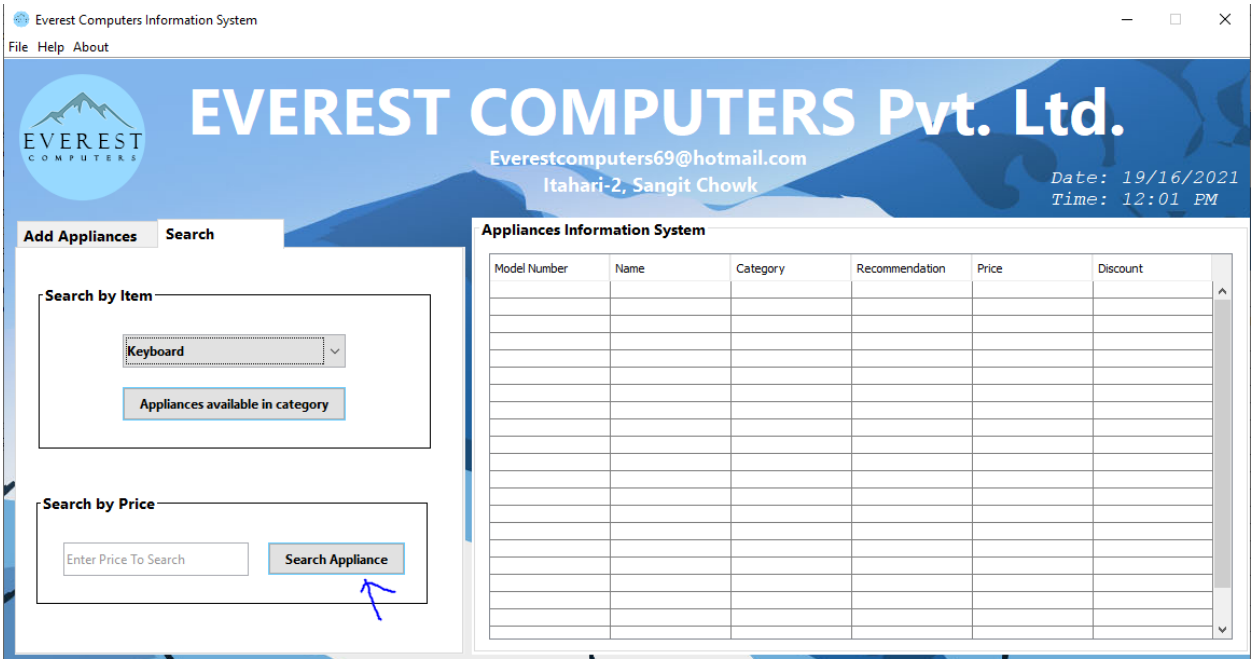


Figure 27: Checking Validation for empty text field in Search by Price Panel

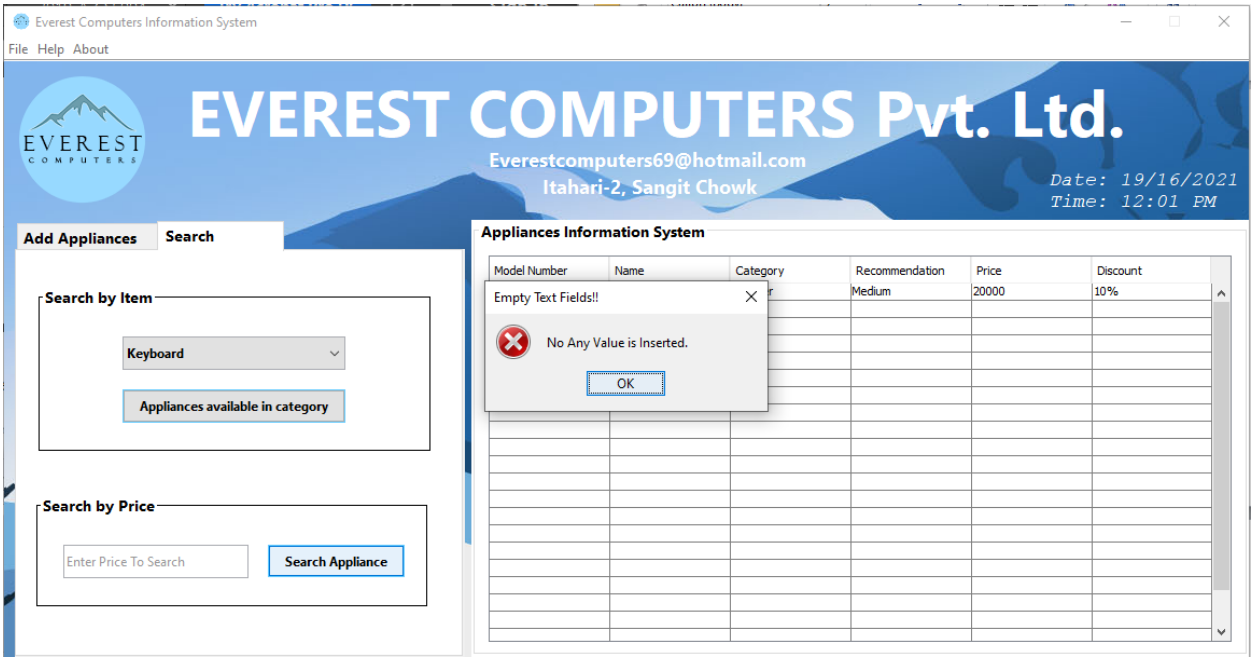


Figure 28: Error Message Dialogue box for empty text field in Search by Price

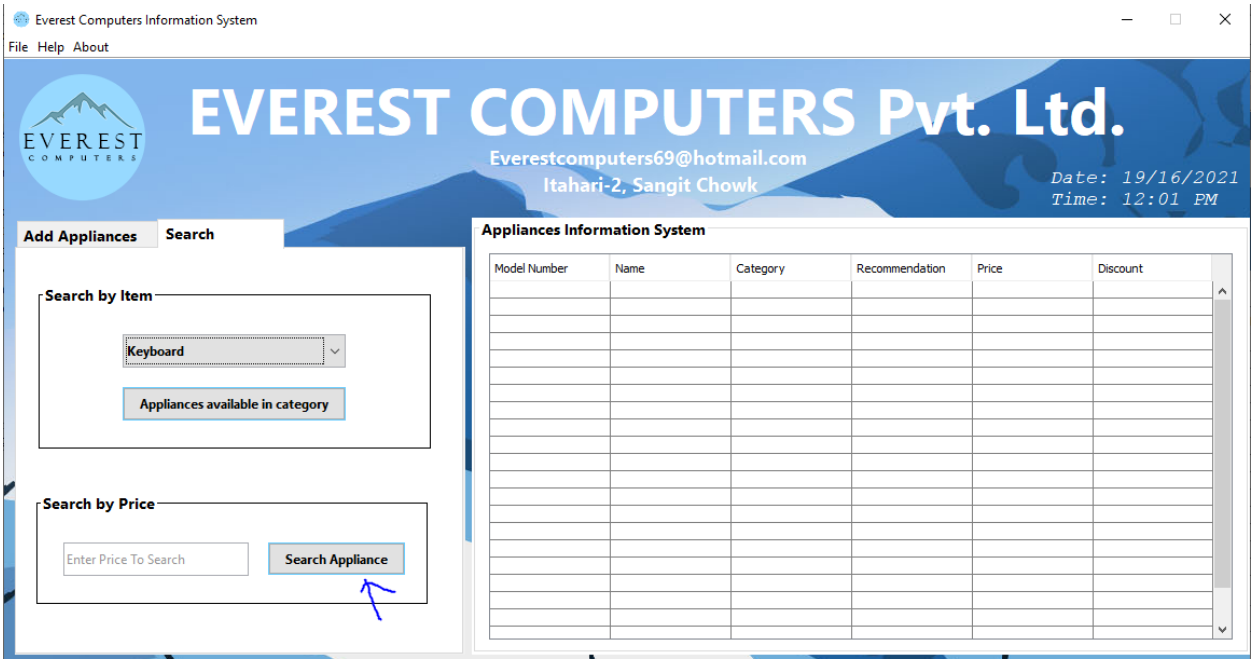


Figure 29: Checking validation using Strings instead of integer in Search by Price

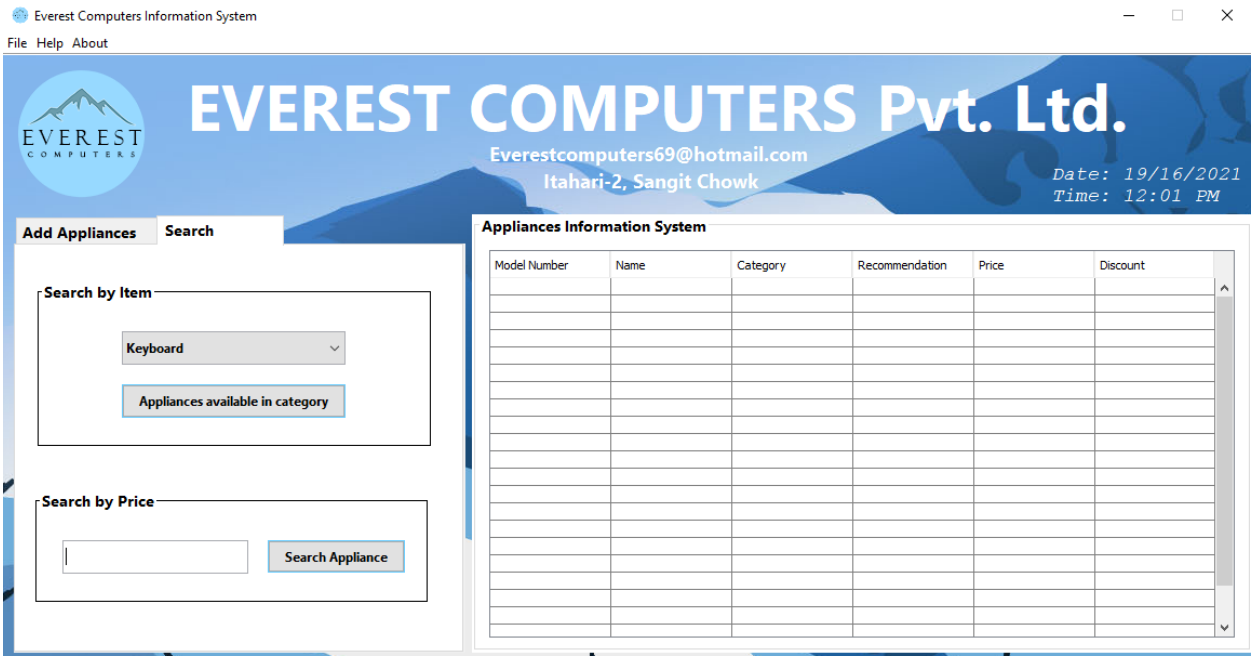


Figure 30: Search by Price Text Field takes only Integer Value

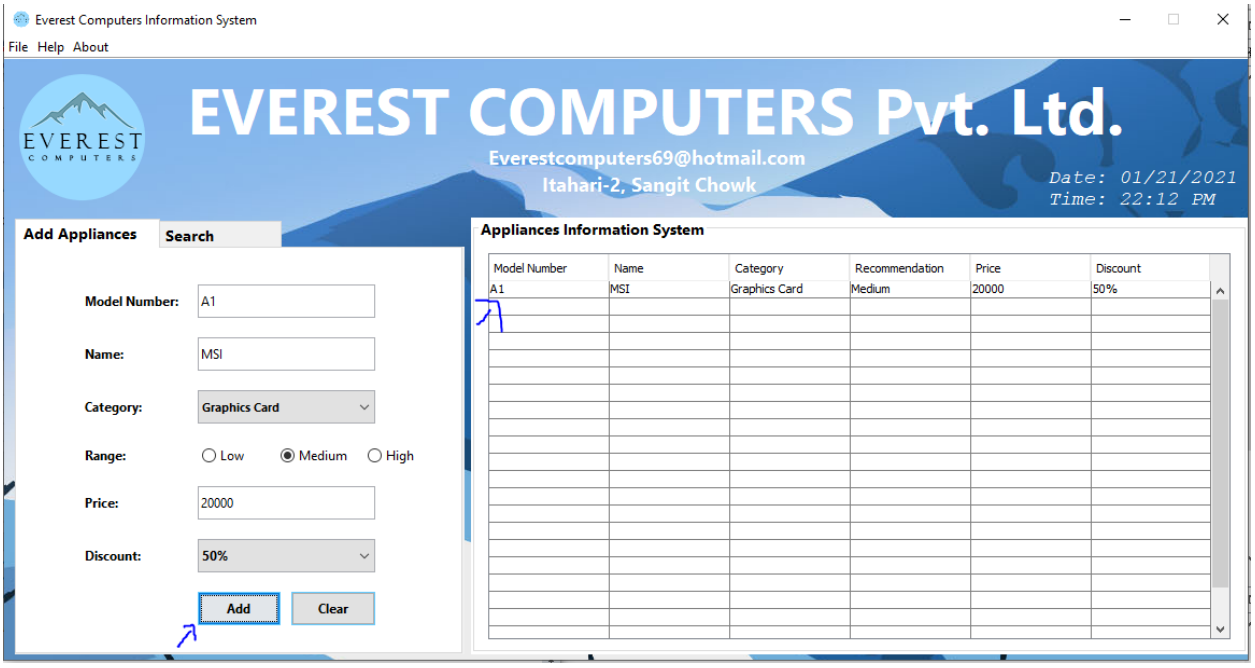


Figure 31: Adding Appliances in the Table

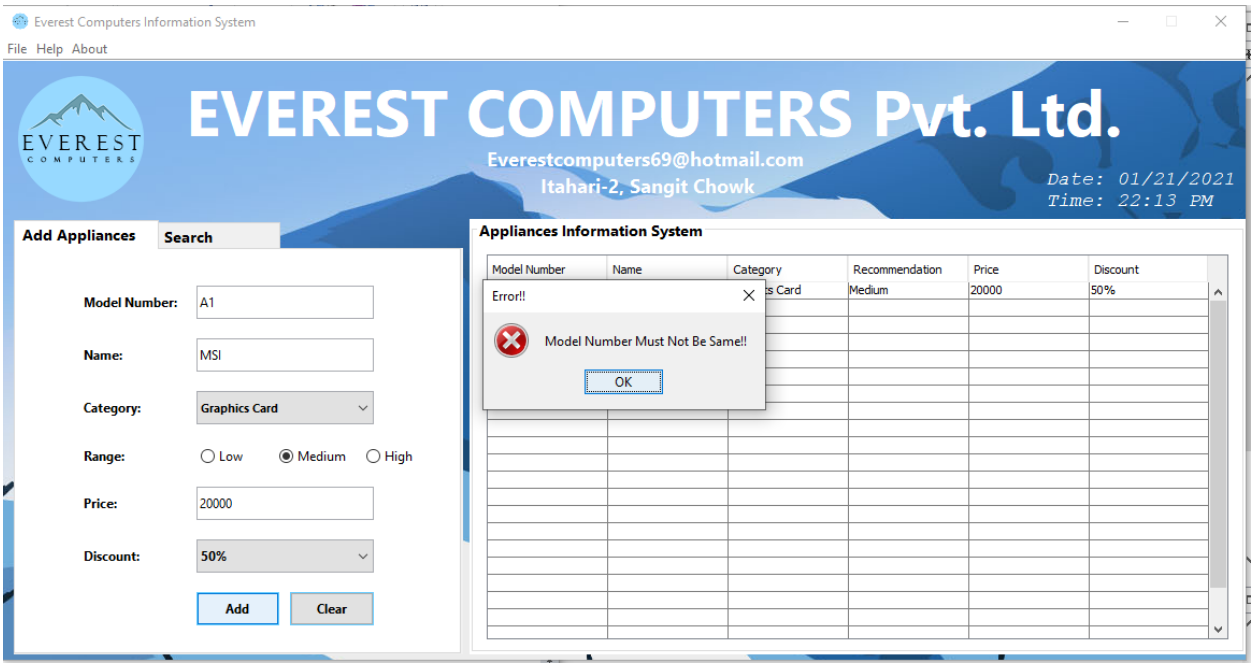


Figure 32: Error message dialogue box for adding the Appliance with same Model Number

7. Conclusion

The Above project is the first coursework of the Emerging Technologies and platform which was provided for this semester. The project was divided into three parts which are Proposal, Coding and Report. All the members in our team worked together and real hard to create a very beautiful and easy to use, user-friendly system that can store the data of the Electronic Accessories; that is provided by the User and also display all the information about the products which are available on the basis of price and category.

Firstly, we created a proposal of the System that is to be provided to the Customer/ User. We need to research through various models, products, problems and the solution to face them that occur in the store. The proposal describes the need or importance of the system in their store with their features problems they are facing and how the system solves it. The coding or the development part was one of the primary focuses of our team which was one of the difficult parts in the process of creating product. We came across to different problems and to solve those problems we need to go through different books, articles, journals and the most important help from the module teacher. The instruction that were provided by the instructor was very helpful, those instructions helped us to solve every problem that we were facing in the process and completed the system. As we know this is not an individual part so all the parts were equally divided to all the members of our team and at last, all the answers were verified by each of the members and final report was generated.

Eventually, we learned about various algorithms, methods, techniques and the way to research through different stuffs to find the best solution that can solve the problem that we are facing during the process of system creation. The system helped every member to gain understanding of different swing components and GUI designing in Java. All these understand and knowledge is a very essential part of all of us and will be very helpful in the near future.

8. References

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9. Appendix

AppliancesInfo Class:

```
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package my.coursework;


import java.awt.Color;
import java.awt.Desktop;
import java.awt.Toolkit;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.io.BufferedReader;
import java.io.File;
import java.io.FileReader;
import java.io.FileWriter;
import java.io.IOException;
import java.text.SimpleDateFormat;
import java.util.ArrayList;
import java.util.Date;
import java.util.logging.Level;
```

```
import java.util.logging.Logger;
import javax.swing.JOptionPane;
import javax.swing.Timer;


/**
 *
 * @author Sulav
 */
public class AppliancesInfo extends javax.swing.JFrame {
    private ArrayList<EverestComputers> Item = new ArrayList();
    /**
     * Creates new form Coursework
     */
    public AppliancesInfo() {
        initComponents();
        setIcon();
        showDate();
        showTime();
    }


    private void showDate() {
        Date d = new Date();
        SimpleDateFormat s = new SimpleDateFormat("MM/dd/yyyy");
```

```
        lblDate.setText("Date: " + s.format(d)); //Displays current date in lblDate
    }

    private void showTime() {
        new Timer(0, new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent e) {
                Date d = new Date();
                SimpleDateFormat s = new SimpleDateFormat("HH:mm a");
                lblTime.setText("Time: " + s.format(d)); ////Displays current time in lblTime
            }
        }).start();
    }

    private void setIcon(){

setIconImage(Toolkit.getDefaultToolkit().getImage(getClass().getResource("everest_1.p
ng")));
    }
    /**
     * This method is called from within the constructor to initialize the form.
     * WARNING: Do NOT modify this code. The content of this method is always
     * regenerated by the Form Editor.
```

```
     */
    @SuppressWarnings("unchecked")
    // <editor-fold defaultstate="collapsed" desc="Generated Code">
    private void initComponents() {


        btnGrpRecommendation = new javax.swing.ButtonGroup();
        dboxAbout = new javax.swing.JDialog();
        jPanel1 = new javax.swing.JPanel();
        lblLogoAbout = new javax.swing.JLabel();
        btnOk = new javax.swing.JButton();
        lblTitle = new javax.swing.JLabel();
        jScrollPane2 = new javax.swing.JScrollPane();
        txtAbout = new javax.swing.JTextArea();
        jTabbedPaneAddSearch = new javax.swing.JTabbedPane();
        jPanelAdd = new javax.swing.JPanel();
        txtName = new javax.swing.JTextField();
        txtPrice = new javax.swing.JTextField();
        cbCategory = new javax.swing.JComboBox<>();
        lblModelNumber = new javax.swing.JLabel();
        lblName = new javax.swing.JLabel();
        lblCategory = new javax.swing.JLabel();
        lblRange = new javax.swing.JLabel();
        lblPrice = new javax.swing.JLabel();
```

```
lblDiscount = new javax.swing.JLabel();
rbtnLow = new javax.swing.JRadioButton();
txtModelNumber = new javax.swing.JTextField();
rbtnMedium = new javax.swing.JRadioButton();
rbtnHigh = new javax.swing.JRadioButton();
btnAdd = new javax.swing.JButton();
btnClear = new javax.swing.JButton();
cbDiscount = new javax.swing.JComboBox<>();
jPanelSearch = new javax.swing.JPanel();
jPanelSearchByItem = new javax.swing.JPanel();
cbSearchByCategory = new javax.swing.JComboBox<>();
btnSearchByCategory = new javax.swing.JButton();
jPanelSearchByPrice = new javax.swing.JPanel();
txtSearchByPrice = new javax.swing.JTextField();
btnSearchByPrice = new javax.swing.JButton();
jPanelTable = new javax.swing.JPanel();
jScrollPane1 = new javax.swing.JScrollPane();
tblInfo = new javax.swing.JTable();
lblEverestComputers = new javax.swing.JLabel();
lblLogo = new javax.swing.JLabel();
lblTime = new javax.swing.JLabel();
lblEmail = new javax.swing.JLabel();
lblAddress = new javax.swing.JLabel();
```

```
        lblDate = new javax.swing.JLabel();
        lblBackground = new javax.swing.JLabel();
        jMenuBar1 = new javax.swing.JMenuBar();
        mFile = new javax.swing.JMenu();
        miOpen = new javax.swing.JMenuItem();
        miSave = new javax.swing.JMenuItem();
        miImport = new javax.swing.JMenuItem();
        miExit = new javax.swing.JMenuItem();
        mHelp = new javax.swing.JMenu();
        miFAQs = new javax.swing.JMenuItem();
        mAbout = new javax.swing.JMenu();
        miAbout = new javax.swing.JMenuItem();

        dboxAbout.setTitle("About");
        dboxAbout.setName("About"); // NOI18N
        dboxAbout.setUndecorated(true);
        dboxAbout.setResizable(false);
        dboxAbout.setSize(new java.awt.Dimension(410, 540));
        dboxAbout.getContentPane().setLayout(null);

        jPanel1.setBackground(new java.awt.Color(252, 252, 255));
        jPanel1.setBorder(javax.swing.BorderFactory.createLineBorder(new
java.awt.Color(204, 204, 255), 3));
```

```
        lblLogoAbout.setIcon(new
javax.swing.ImageIcon(getClass().getResource("/my/coursework/everest_1.png")));      //
NOI18N


        btnOk.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
        btnOk.setText("Ok");
        btnOk.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btnOkActionPerformed(evt);
            }
        });


        lblTitle.setFont(new java.awt.Font("Segoe UI", 1, 26)); // NOI18N
        lblTitle.setText("Everest Computers Pvt. Ltd.");


        txtAbout.setEditable(false);
        txtAbout.setColumns(20);
        txtAbout.setFont(new java.awt.Font("Segoe UI", 0, 16)); // NOI18N
        txtAbout.setLineWrap(true);
        txtAbout.setRows(5);
        txtAbout.setTabSize(10);
```

```
txtAbout.setText(" Everest Computers Pvt. Ltd is an enterprise that offers the best price on computer products, laptop computer and electronic appliances.\n\n This application system is developed for managing data of electronic appliances stock available in the enterprise such as model number, name of item, category, recommendation, price and discount.\n\n This application makes the user easily search and navigate to various appliances item by selecting the specific category or price of an appliance.");

        txtAbout.setBorder(javax.swing.BorderFactory.createEmptyBorder(1, 1, 1, 1));

        jScrollPane2.setViewportView(txtAbout);


        javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);

        jPanel1.setLayout(jPanel1Layout);

        jPanel1Layout.setHorizontalGroup(

jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

            .addGroup(jPanel1Layout.createSequentialGroup()

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

                    .addGroup(jPanel1Layout.createSequentialGroup()

                        .addGap(30, 30, 30)

                        .addComponent(lblTitle))

                    .addGroup(jPanel1Layout.createSequentialGroup()

                        .addContainerGap()
```

```
                .addComponent(jScrollPane2,
javax.swing.GroupLayout.PREFERRED_SIZE,                                    382,
javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGroup(jPanel1Layout.createSequentialGroup()
                .addGap(130, 130, 130)
                .addComponent(lblLogoAbout))
                .addGroup(jPanel1Layout.createSequentialGroup()
                .addGap(162, 162, 162)
                .addComponent(btnOk,    javax.swing.GroupLayout.PREFERRED_SIZE,
76, javax.swing.GroupLayout.PREFERRED_SIZE)))
            .addContainerGap(12, Short.MAX_VALUE))
        );
        jPanel1Layout.setVerticalGroup(

jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel1Layout.createSequentialGroup()
            .addContainerGap()
            .addComponent(lblLogoAbout)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
            .addComponent(lblTitle)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
            .addComponent(jScrollPane2,  javax.swing.GroupLayout.PREFERRED_SIZE,
289, javax.swing.GroupLayout.PREFERRED_SIZE)
```

```
            .addGap(18, 18, 18)
            .addComponent(btnOk)
            .addContainerGap(13, Short.MAX_VALUE))
        );

        dboxAbout.getContentPane().add(jPanel1);
        jPanel1.setBounds(0, 0, 410, 540);

        setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);
        setTitle("Everest Computers Information System");
        setBackground(java.awt.SystemColor.window);
        setName("Everest Computers Information System"); // NOI18N
        setResizable(false);
        getContentPane().setLayout(null);

        jTabbedPaneAddSearch.setBackground(new java.awt.Color(229, 229, 229));
        jTabbedPaneAddSearch.setFont(new java.awt.Font("Segoe UI", 1, 14)); // NOI18N
        jTabbedPaneAddSearch.setName(""); // NOI18N

        jPanelAdd.setBackground(java.awt.SystemColor.window);

        txtName.setFont(new java.awt.Font("Segoe UI", 0, 12)); // NOI18N
        txtName.setForeground(new java.awt.Color(153, 153, 153));
```

```
        txtName.setText("Enter Name");
        txtName.addFocusListener(new java.awt.event.FocusAdapter() {
            public void focusGained(java.awt.event.FocusEvent evt) {
                txtNameFocusGained(evt);
            }
            public void focusLost(java.awt.event.FocusEvent evt) {
                txtNameFocusLost(evt);
            }
        });

        txtPrice.setFont(new java.awt.Font("Segoe UI", 0, 12)); // NOI18N
        txtPrice.setForeground(new java.awt.Color(153, 153, 153));
        txtPrice.setText("Enter Price");
        txtPrice.addFocusListener(new java.awt.event.FocusAdapter() {
            public void focusGained(java.awt.event.FocusEvent evt) {
                txtPriceFocusGained(evt);
            }
            public void focusLost(java.awt.event.FocusEvent evt) {
                txtPriceFocusLost(evt);
            }
        });
        txtPrice.addKeyListener(new java.awt.event.KeyAdapter() {
            public void keyTyped(java.awt.event.KeyEvent evt) {
```

```
            txtPriceKeyTyped(evt);
        }
    });

    cbCategory.setBackground(new java.awt.Color(102, 204, 255));
    cbCategory.setFont(new java.awt.Font("Segoe UI", 1, 11)); // NOI18N
    cbCategory.setModel(new javax.swing.DefaultComboBoxModel<>(new String[] { "Keyboard", "Mouse", "Monitor", "Speaker", "Graphics Card", "RAM", "SSD", "HDD" }));

    lblModelNumber.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
    lblModelNumber.setText("Model Number:");

    lblName.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
    lblName.setText("Name:");

    lblCategory.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
    lblCategory.setText("Category:");

    lblRange.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
    lblRange.setText("Range:");

    lblPrice.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
    lblPrice.setText("Price:");
```

```
lblDiscount.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
lblDiscount.setText("Discount:");

rbtnLow.setBackground(java.awt.SystemColor.window);
btnGrpRecommendation.add(rbtnLow);
rbtnLow.setFont(new java.awt.Font("Segoe UI", 0, 12)); // NOI18N
rbtnLow.setSelected(true);
rbtnLow.setText("Low");

txtModelNumber.setFont(new java.awt.Font("Segoe UI", 0, 12)); // NOI18N
txtModelNumber.setForeground(new java.awt.Color(153, 153, 153));
txtModelNumber.setText("Enter Model Number");
txtModelNumber.addFocusListener(new java.awt.event.FocusAdapter() {
    public void focusGained(java.awt.event.FocusEvent evt) {
        txtModelNumberFocusGained(evt);
    }
    public void focusLost(java.awt.event.FocusEvent evt) {
        txtModelNumberFocusLost(evt);
    }
});

rbtnMedium.setBackground(java.awt.SystemColor.window);
```

```
        btnGrpRecommendation.add(rbtnMedium);
        rbtnMedium.setFont(new java.awt.Font("Segoe UI", 0, 12)); // NOI18N
        rbtnMedium.setText("Medium");

        rbtnHigh.setBackground(java.awt.SystemColor.window);
        btnGrpRecommendation.add(rbtnHigh);
        rbtnHigh.setFont(new java.awt.Font("Segoe UI", 0, 12)); // NOI18N
        rbtnHigh.setText("High");

        btnAdd.setBackground(new java.awt.Color(102, 204, 255));
        btnAdd.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
        btnAdd.setText("Add");
        btnAdd.setPreferredSize(new java.awt.Dimension(70, 31));
        btnAdd.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btnAddActionPerformed(evt);
            }
        });

        btnClear.setBackground(new java.awt.Color(102, 204, 255));
        btnClear.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
        btnClear.setText("Clear");
        btnClear.setPreferredSize(new java.awt.Dimension(61, 27));
```

```
        btnClear.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btnClearActionPerformed(evt);
            }
        });

        cbDiscount.setBackground(new java.awt.Color(102, 204, 255));
        cbDiscount.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
        cbDiscount.setModel(new javax.swing.DefaultComboBoxModel<>(new String[] { "5%", "10%", "20%", "25%", "40%", "50%" }));

        javax.swing.GroupLayout jPanelAddLayout = new javax.swing.GroupLayout(jPanelAdd);
        jPanelAdd.setLayout(jPanelAddLayout);
        jPanelAddLayout.setHorizontalGroup(
            jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanelAddLayout.createSequentialGroup()
                .addContainerGap(63, Short.MAX_VALUE)
            .addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                .addGroup(jPanelAddLayout.createSequentialGroup()
```

```
.addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.L
EADING)
                .addComponent(lblModelNumber,
javax.swing.GroupLayout.DEFAULT_SIZE,   javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
                .addComponent(lblName,   javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                .addComponent(lblCategory,
javax.swing.GroupLayout.Alignment.TRAILING,
javax.swing.GroupLayout.DEFAULT_SIZE,   javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE))
            .addGap(18, 18, 18)

.addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.L
EADING, false)
                .addComponent(txtModelNumber,
javax.swing.GroupLayout.DEFAULT_SIZE, 165, Short.MAX_VALUE)
                .addComponent(txtName)
                .addComponent(cbCategory,                                    0,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)))
            .addGroup(jPanelAddLayout.createSequentialGroup()

.addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.L
EADING, false)
                .addComponent(lblPrice,    javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
```

```
                .addComponent(lblRange, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))

            .addGap(18, 18, 18)

.addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.L
EADING)

                .addGroup(jPanelAddLayout.createSequentialGroup()

                    .addComponent(rbtnLow,
javax.swing.GroupLayout.PREFERRED_SIZE,                    61,
javax.swing.GroupLayout.PREFERRED_SIZE)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

                    .addComponent(rbtnMedium,
javax.swing.GroupLayout.DEFAULT_SIZE,  javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)

                    .addGap(10, 10, 10)

                    .addComponent(rbtnHigh,
javax.swing.GroupLayout.PREFERRED_SIZE,                    62,
javax.swing.GroupLayout.PREFERRED_SIZE))

                .addComponent(txtPrice,
javax.swing.GroupLayout.PREFERRED_SIZE,                    165,
javax.swing.GroupLayout.PREFERRED_SIZE)))

            .addGroup(jPanelAddLayout.createSequentialGroup()

                .addComponent(lblDiscount, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

                .addGap(18, 18, 18)
```

```
.addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
                    .addGroup(jPanelAddLayout.createSequentialGroup()
                        .addComponent(btnAdd, javax.swing.GroupLayout.PREFERRED_SIZE, 77, javax.swing.GroupLayout.PREFERRED_SIZE)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
                        .addComponent(btnClear, javax.swing.GroupLayout.PREFERRED_SIZE, 78, javax.swing.GroupLayout.PREFERRED_SIZE))
                    .addComponent(cbDiscount, 0, javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))))
                .addGap(20, 20, 20))
        );

        jPanelAddLayout.linkSize(javax.swing.SwingConstants.HORIZONTAL, new java.awt.Component[] {rbtnHigh, rbtnLow, rbtnMedium});

        jPanelAddLayout.linkSize(javax.swing.SwingConstants.HORIZONTAL, new java.awt.Component[] {lblCategory, lblDiscount, lblModelNumber, lblName, lblPrice, lblRange});

        jPanelAddLayout.setVerticalGroup(
```

```
jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(jPanelAddLayout.createSequentialGroup()
            .addGap(31, 31, 31)

.addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.
BASELINE)
                .addComponent(txtModelNumber,
javax.swing.GroupLayout.PREFERRED_SIZE,                    31,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(lblModelNumber,
javax.swing.GroupLayout.DEFAULT_SIZE, 28, Short.MAX_VALUE))
            .addGap(18, 18, 18)

.addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.
BASELINE)
                .addComponent(txtName,    javax.swing.GroupLayout.PREFERRED_SIZE,
31, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(lblName,        javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
            .addGap(18, 18, 18)

.addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.
BASELINE)
                .addComponent(cbCategory,
javax.swing.GroupLayout.PREFERRED_SIZE,                    31,
javax.swing.GroupLayout.PREFERRED_SIZE)
```

```
                .addComponent(lblCategory,      javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))

            .addGap(14, 14, 14)

.addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.
BASELINE)

                .addComponent(lblRange,    javax.swing.GroupLayout.PREFERRED_SIZE,
28, javax.swing.GroupLayout.PREFERRED_SIZE)

                .addComponent(rbtnLow)

                .addComponent(rbtnMedium)

                .addComponent(rbtnHigh))

            .addGap(13, 13, 13)

.addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.
BASELINE)

                .addComponent(txtPrice,      javax.swing.GroupLayout.PREFERRED_SIZE,
31, javax.swing.GroupLayout.PREFERRED_SIZE)

                .addComponent(lblPrice,          javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))

            .addGap(18, 18, 18)

.addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.
BASELINE)

                .addComponent(lblDiscount,
javax.swing.GroupLayout.PREFERRED_SIZE,                    31,
javax.swing.GroupLayout.PREFERRED_SIZE)
```

```
                .addComponent(cbDiscount,
javax.swing.GroupLayout.PREFERRED_SIZE,                    31,
javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(18, 18, 18)

.addGroup(jPanelAddLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.
BASELINE)
                .addComponent(btnClear,    javax.swing.GroupLayout.PREFERRED_SIZE,
31, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(btnAdd,      javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
            .addContainerGap(24, Short.MAX_VALUE))
        );

        jPanelAddLayout.linkSize(javax.swing.SwingConstants.VERTICAL,          new
java.awt.Component[] {rbtnHigh, rbtnLow, rbtnMedium});

        jPanelAddLayout.linkSize(javax.swing.SwingConstants.VERTICAL,          new
java.awt.Component[] {lblCategory, lblDiscount, lblModelNumber, lblName, lblPrice,
lblRange});

        jTabbedPaneAddSearch.addTab("Add Appliances    ", jPanelAdd);

        jPanelSearch.setBackground(java.awt.SystemColor.window);
```

```
        jPanelSearchByItem.setBackground(java.awt.SystemColor.window);

jPanelSearchByItem.setBorder(javax.swing.BorderFactory.createTitledBorder(javax.swing.BorderFactory.createLineBorder(new java.awt.Color(0, 0, 0)), "Search by Item", javax.swing.border.TitledBorder.DEFAULT_JUSTIFICATION, javax.swing.border.TitledBorder.DEFAULT_POSITION, new java.awt.Font("Segoe UI", 1, 14))); // NOI18N
        jPanelSearchByItem.setForeground(new java.awt.Color(255, 255, 255));

        cbSearchByCategory.setBackground(new java.awt.Color(102, 204, 255));
        cbSearchByCategory.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
        cbSearchByCategory.setModel(new javax.swing.DefaultComboBoxModel<>(new String[] { "Keyboard", "Mouse", "Monitor", "Speaker", "Graphics Card", "RAM", "SSD", "HDD" }));

        btnSearchByCategory.setBackground(new java.awt.Color(102, 204, 255));
        btnSearchByCategory.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
        btnSearchByCategory.setText("Appliances available in category");
        btnSearchByCategory.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btnSearchByCategoryActionPerformed(evt);
            }
        });
```

```
javax.swing.GroupLayout jPanelSearchByItemLayout = new javax.swing.GroupLayout(jPanelSearchByItem);
jPanelSearchByItem.setLayout(jPanelSearchByItemLayout);
jPanelSearchByItemLayout.setHorizontalGroup(

jPanelSearchByItemLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
    .addGroup(jPanelSearchByItemLayout.createSequentialGroup()
        .addGap(75, 75, 75)

.addGroup(jPanelSearchByItemLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
            .addComponent(btnSearchByCategory, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addComponent(cbSearchByCategory, 0, javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
        .addContainerGap(76, Short.MAX_VALUE))
);
jPanelSearchByItemLayout.setVerticalGroup(

jPanelSearchByItemLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
    .addGroup(jPanelSearchByItemLayout.createSequentialGroup()
        .addGap(25, 25, 25)
```

```
            .addComponent(cbSearchByCategory,
javax.swing.GroupLayout.PREFERRED_SIZE,                    31,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(18, 18, 18)
            .addComponent(btnSearchByCategory,
javax.swing.GroupLayout.PREFERRED_SIZE,                    31,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addContainerGap(23, Short.MAX_VALUE))
        );

        jPanelSearchByPrice.setBackground(java.awt.SystemColor.window);

jPanelSearchByPrice.setBorder(javax.swing.BorderFactory.createTitledBorder(javax.sw
ing.BorderFactory.createTitledBorder(javax.swing.BorderFactory.createLineBorder(new
java.awt.Color(0,  0,  0))),  "Search  by  Price",
javax.swing.border.TitledBorder.DEFAULT_JUSTIFICATION,
javax.swing.border.TitledBorder.TOP,  new  java.awt.Font("Segoe  UI",  1,  14)));  //
NOI18N

        txtSearchByPrice.setFont(new java.awt.Font("Segoe UI", 0, 12)); // NOI18N
        txtSearchByPrice.setForeground(new java.awt.Color(153, 153, 153));
        txtSearchByPrice.setText("Enter Price To Search");
        txtSearchByPrice.addFocusListener(new java.awt.event.FocusAdapter() {
            public void focusGained(java.awt.event.FocusEvent evt) {
                txtSearchByPriceFocusGained(evt);
```

```
            }
            public void focusLost(java.awt.event.FocusEvent evt) {
                txtSearchByPriceFocusLost(evt);
            }
        });
        txtSearchByPrice.addKeyListener(new java.awt.event.KeyAdapter() {
            public void keyTyped(java.awt.event.KeyEvent evt) {
                txtSearchByPriceKeyTyped(evt);
            }
        });

        btnSearchByPrice.setBackground(new java.awt.Color(102, 204, 255));
        btnSearchByPrice.setFont(new java.awt.Font("Segoe UI", 1, 12)); // NOI18N
        btnSearchByPrice.setText("Search Appliance");
        btnSearchByPrice.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                btnSearchByPriceActionPerformed(evt);
            }
        });

        javax.swing.GroupLayout jPanelSearchByPriceLayout = new
javax.swing.GroupLayout(jPanelSearchByPrice);
        jPanelSearchByPrice.setLayout(jPanelSearchByPriceLayout);
```

```
        jPanelSearchByPriceLayout.setHorizontalGroup(

jPanelSearchByPriceLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.L
EADING)
            .addGroup(jPanelSearchByPriceLayout.createSequentialGroup()
                .addGap(22, 22, 22)
                .addComponent(txtSearchByPrice,
javax.swing.GroupLayout.PREFERRED_SIZE,                                    172,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGap(18, 18, 18)
                .addComponent(btnSearchByPrice,
javax.swing.GroupLayout.PREFERRED_SIZE,                                    127,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addContainerGap(18, Short.MAX_VALUE))
        );
        jPanelSearchByPriceLayout.setVerticalGroup(

jPanelSearchByPriceLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.L
EADING)
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanelSearchByPriceLayout.createSequentialGroup()
                .addContainerGap(25, Short.MAX_VALUE)

.addGroup(jPanelSearchByPriceLayout.createParallelGroup(javax.swing.GroupLayout.
Alignment.BASELINE)
```

```
                .addComponent(txtSearchByPrice,
javax.swing.GroupLayout.PREFERRED_SIZE,                    31,
javax.swing.GroupLayout.PREFERRED_SIZE)

                .addComponent(btnSearchByPrice,
javax.swing.GroupLayout.PREFERRED_SIZE,                    30,
javax.swing.GroupLayout.PREFERRED_SIZE))

            .addGap(23, 23, 23))

        );


        javax.swing.GroupLayout jPanelSearchLayout = new
javax.swing.GroupLayout(jPanelSearch);

        jPanelSearch.setLayout(jPanelSearchLayout);

        jPanelSearchLayout.setHorizontalGroup(


jPanelSearchLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADIN
G)

            .addGroup(jPanelSearchLayout.createSequentialGroup()

                .addGap(18, 18, 18)


.addGroup(jPanelSearchLayout.createParallelGroup(javax.swing.GroupLayout.Alignme
nt.LEADING)

                .addComponent(jPanelSearchByItem,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
```

```
                .addComponent(jPanelSearchByPrice,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
            .addContainerGap(27, Short.MAX_VALUE))
        );
        jPanelSearchLayout.setVerticalGroup(

jPanelSearchLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADIN
G)
            .addGroup(jPanelSearchLayout.createSequentialGroup()
                .addGap(30, 30, 30)
                .addComponent(jPanelSearchByItem,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGap(38, 38, 38)
                .addComponent(jPanelSearchByPrice,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addContainerGap(44, Short.MAX_VALUE))
        );

        jTabbedPaneAddSearch.addTab("Search              ", jPanelSearch);
```

```
        getContentPane().add(jTabbedPaneAddSearch);
        jTabbedPaneAddSearch.setBounds(10, 147, 418, 405);


        jPanelTable.setBackground(new java.awt.Color(255, 255, 255));
        jPanelTable.setBorder(javax.swing.BorderFactory.createTitledBorder(null,
"Appliances Information System",
javax.swing.border.TitledBorder.DEFAULT_JUSTIFICATION,
javax.swing.border.TitledBorder.TOP, new java.awt.Font("Segoe UI", 1, 14))); //
NOI18N


        tblInfo.setModel(new javax.swing.table.DefaultTableModel(
            new Object [][] {
                {null, null, null, null, null, null},
                {null, null, null, null, null, null},
                {null, null, null, null, null, null},
                {null, null, null, null, null, null},
                {null, null, null, null, null, null},
                {null, null, null, null, null, null},
                {null, null, null, null, null, null},
                {null, null, null, null, null, null},
                {null, null, null, null, null, null},
                {null, null, null, null, null, null},
                {null, null, null, null, null, null},
                {null, null, null, null, null, null},
                {null, null, null, null, null, null},
```

```
            {null, null, null, null, null, null},
            {null, null, null, null, null, null},
            {null, null, null, null, null, null},
            {null, null, null, null, null, null},
            {null, null, null, null, null, null},
            {null, null, null, null, null, null},
            {null, null, null, null, null, null},
            {null, null, null, null, null, null},
            {null, null, null, null, null, null},
            {null, null, null, null, null, null},
            {null, null, null, null, null, null}
        },
        new String [] {
            "Model Number", "Name", "Category", "Recommendation", "Price", "Discount"
        }
    ) {
        boolean[] canEdit = new boolean [] {
            false, false, false, false, false, false
        };

        public boolean isCellEditable(int rowIndex, int columnIndex) {
            return canEdit [columnIndex];
        }
```

```
        });
        tblInfo.setSelectionBackground(new java.awt.Color(204, 204, 204));
        tblInfo.getTableHeader().setReorderingAllowed(false);
        jScrollPane1.setViewportView(tblInfo);
        if (tblInfo.getColumnModel().getColumnCount() > 0) {
            tblInfo.getColumnModel().getColumn(0).setResizable(false);
            tblInfo.getColumnModel().getColumn(1).setResizable(false);
            tblInfo.getColumnModel().getColumn(2).setResizable(false);
            tblInfo.getColumnModel().getColumn(3).setResizable(false);
            tblInfo.getColumnModel().getColumn(4).setResizable(false);
            tblInfo.getColumnModel().getColumn(5).setResizable(false);
        }

        javax.swing.GroupLayout jPanelTableLayout = new
javax.swing.GroupLayout(jPanelTable);
        jPanelTable.setLayout(jPanelTableLayout);
        jPanelTableLayout.setHorizontalGroup(

jPanelTableLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanelTableLayout.createSequentialGroup()
                .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
```

```
            .addComponent(jScrollPane1,  javax.swing.GroupLayout.PREFERRED_SIZE,
690, javax.swing.GroupLayout.PREFERRED_SIZE)
            .addContainerGap())
        );
        jPanelTableLayout.setVerticalGroup(

jPanelTableLayout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanelTableLayout.createSequentialGroup()
            .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
            .addComponent(jScrollPane1,  javax.swing.GroupLayout.PREFERRED_SIZE,
358, javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(32, 32, 32))
        );

        getContentPane().add(jPanelTable);
        jPanelTable.setBounds(434, 147, 722, 405);

        lblEverestComputers.setFont(new java.awt.Font("Segoe UI", 1, 60)); // NOI18N
        lblEverestComputers.setForeground(new java.awt.Color(255, 255, 255));
        lblEverestComputers.setText("EVEREST COMPUTERS Pvt. Ltd.");
        getContentPane().add(lblEverestComputers);
        lblEverestComputers.setBounds(170, 10, 880, 70);
```

```
        lblLogo.setIcon(new
javax.swing.ImageIcon(getClass().getResource("/my/coursework/everest_1.png")));      //
NOI18N
        getContentPane().add(lblLogo);
        lblLogo.setBounds(10, 10, 125, 125);

        lblTime.setFont(new java.awt.Font("Courier New", 2, 18)); // NOI18N
        lblTime.setForeground(new java.awt.Color(255, 255, 255));
        getContentPane().add(lblTime);
        lblTime.setBounds(970, 120, 180, 20);

        lblEmail.setBackground(new java.awt.Color(255, 255, 255));
        lblEmail.setFont(new java.awt.Font("Segoe UI", 1, 18)); // NOI18N
        lblEmail.setForeground(new java.awt.Color(255, 255, 255));
        lblEmail.setText("Everestcomputers69@hotmail.com");
        getContentPane().add(lblEmail);
        lblEmail.setBounds(450, 70, 310, 40);

        lblAddress.setBackground(new java.awt.Color(255, 255, 255));
        lblAddress.setFont(new java.awt.Font("Segoe UI", 1, 18)); // NOI18N
        lblAddress.setForeground(new java.awt.Color(255, 255, 255));
        lblAddress.setText("Itahari-2, Sangit Chowk");
```

```
        getContentPane().add(lblAddress);
        lblAddress.setBounds(500, 100, 210, 30);

        lblDate.setFont(new java.awt.Font("Courier New", 2, 18)); // NOI18N
        lblDate.setForeground(new java.awt.Color(251, 251, 251));
        getContentPane().add(lblDate);
        lblDate.setBounds(970, 100, 180, 20);

        lblBackground.setIcon(new
javax.swing.ImageIcon(getClass().getResource("/my/coursework/background.jpg")));    //
NOI18N
        lblBackground.setText("jLabel1");
        getContentPane().add(lblBackground);
        lblBackground.setBounds(-50, -10, 1380, 1220);

        jMenuBar1.setBackground(new java.awt.Color(102, 102, 102));

        mFile.setText("File");

miOpen.setAccelerator(javax.swing.KeyStroke.getKeyStroke(java.awt.event.KeyEvent.
VK_O, java.awt.event.InputEvent.CTRL_MASK));
```

```
        miOpen.setIcon(new
javax.swing.ImageIcon(getClass().getResource("/my/coursework/icons8_folder_30px.pn
g"))); // NOI18N
        miOpen.setText("Open");
        miOpen.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                miOpenActionPerformed(evt);
            }
        });
        mFile.add(miOpen);



miSave.setAccelerator(javax.swing.KeyStroke.getKeyStroke(java.awt.event.KeyEvent.V
K_S, java.awt.event.InputEvent.CTRL_MASK));
        miSave.setIcon(new
javax.swing.ImageIcon(getClass().getResource("/my/coursework/icons8_save_30px.pn
g"))); // NOI18N
        miSave.setText("Save");
        miSave.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                miSaveActionPerformed(evt);
            }
        });
        mFile.add(miSave);
```

```
miImport.setAccelerator(javax.swing.KeyStroke.getKeyStroke(java.awt.event.KeyEvent.
VK_I, java.awt.event.InputEvent.CTRL_MASK));
        miImport.setIcon(new
javax.swing.ImageIcon(getClass().getResource("/my/coursework/icons8_import_30px.p
ng"))); // NOI18N
        miImport.setText("Import");
        miImport.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                miImportActionPerformed(evt);
            }
        });
        mFile.add(miImport);



miExit.setAccelerator(javax.swing.KeyStroke.getKeyStroke(java.awt.event.KeyEvent.VK
_X, java.awt.event.InputEvent.ALT_MASK | java.awt.event.InputEvent.CTRL_MASK));
        miExit.setIcon(new
javax.swing.ImageIcon(getClass().getResource("/my/coursework/icons8_exit_24px.png"
))); // NOI18N
        miExit.setText("Exit");
        miExit.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                miExitActionPerformed(evt);
```

```
        }
    });
    mFile.add(miExit);

    jMenuBar1.add(mFile);

    mHelp.setText("Help");

miFAQs.setAccelerator(javax.swing.KeyStroke.getKeyStroke(java.awt.event.KeyEvent.
VK_F, java.awt.event.InputEvent.CTRL_MASK));
    miFAQs.setIcon(new
javax.swing.ImageIcon(getClass().getResource("/my/coursework/icons8_faq_26px.png"
))); // NOI18N
    miFAQs.setText("FAQs");
    miFAQs.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            miFAQsActionPerformed(evt);
        }
    });
    mHelp.add(miFAQs);

    jMenuBar1.add(mHelp);
```

```
        mAbout.setText("About");



miAbout.setAccelerator(javax.swing.KeyStroke.getKeyStroke(java.awt.event.KeyEvent.
VK_A, java.awt.event.InputEvent.CTRL_MASK));
        miAbout.setIcon(new
javax.swing.ImageIcon(getClass().getResource("/my/coursework/icons8_about_24px.pn
g"))); // NOI18N
        miAbout.setText("About");
        miAbout.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                miAboutActionPerformed(evt);
            }
        });
        mAbout.add(miAbout);


        jMenuBar1.add(mAbout);


        setJMenuBar(jMenuBar1);


        setSize(new java.awt.Dimension(1172, 617));
        setLocationRelativeTo(null);
    }// </editor-fold>
```

```
    private void miOpenActionPerformed(java.awt.event.ActionEvent evt) {
        try {
            File file = new File("D:\\data.csv"); //sets file location


            if(file.exists()) {
                if(Desktop.isDesktopSupported()) {
                    Desktop.getDesktop().open(file); //Opens the previously saved file
                }
                else {
                    JOptionPane.showMessageDialog(rootPane,"Not Supported in Desktop"
,"Error!!",JOptionPane.ERROR_MESSAGE);
                }
            }
            else {
                JOptionPane.showMessageDialog(rootPane,"File Doesn't Exists."
,"Error!!",JOptionPane.ERROR_MESSAGE);
            }
        }
        catch (Exception ex) {
            Logger.getLogger(AppliancesInfo.class.getName()).log(Level.SEVERE, null,
ex);
        }
    }
```

```
    private void miExitActionPerformed(java.awt.event.ActionEvent evt) {
        int result = JOptionPane.showConfirmDialog(rootPane,"Do You Want To Close?","Warning!!",JOptionPane.YES_NO_OPTION); //Asks user to exit the program
        if(result == 0) {
            System.exit(0);
        }
        else {
            return;
        }
    }

    private void txtSearchByPriceFocusGained(java.awt.event.FocusEvent evt) {
        if(txtSearchByPrice.getText().equals("Enter Price To Search")) {
            txtSearchByPrice.setText("");
            txtSearchByPrice.setForeground(new Color(0,0,0));
        }
    }

    private void txtSearchByPriceFocusLost(java.awt.event.FocusEvent evt) {
        if(txtSearchByPrice.getText().equals("")) {
            txtSearchByPrice.setText("Enter Price To Search");
            txtSearchByPrice.setForeground(new Color(153,153,153));
```

```
        }
    }

    private void btnSearchByPriceActionPerformed(java.awt.event.ActionEvent evt) {
        try {

            mergeSort(Item); //calls mergeSort() andd pass the array list as parameter
            int price = Integer.parseInt(txtSearchByPrice.getText().trim()); //converts string to integer type
            int i = binarySearch(Item,0,Item.size()-1,price);

            if (i == -1) {
                JOptionPane.showMessageDialog(rootPane,"There is No Data with that Price." ,"No Any Data!!",JOptionPane.INFORMATION_MESSAGE);
            }

            else { //displaying searched details
                JOptionPane.showMessageDialog(rootPane,"\n"+" Model Number: "+Item.get(i).getModelNumber()+"\n Name: "+Item.get(i).getName()+"\n Price: "+Item.get(i).getPrice(),"Appliance Information",JOptionPane.INFORMATION_MESSAGE);
            }
        }
        catch(NumberFormatException nfe) { //exception handling
```

```
            if (txtSearchByPrice.getText().equals("Enter Price To Search")) {
                JOptionPane.showMessageDialog(rootPane,"No Any Value is Inserted."
,"Empty Text Fields!!",JOptionPane.ERROR_MESSAGE);
            }
            else {
                JOptionPane.showMessageDialog(rootPane,"Please Enter Correct Data
Type" ,"Error Data Type!!",JOptionPane.ERROR_MESSAGE);
            }
        }
    }

    private void btnSearchByCategoryActionPerformed(java.awt.event.ActionEvent evt) {
        String categorySearch = "";
        String cKey = (String)cbSearchByCategory.getSelectedItem(); //selecting key value
from comboBox

        for(EverestComputers c:Item) {
            if(c.getCategory().equals(cKey)) {
                categorySearch += " Model Number:"+c.getModelNumber()+"\n
Name:"+c.getName()+"\n Price:"+c.getPrice()+"\n Catagory:"+c.getCategory()+"\n\n";
//printing searched values
            }
        }
```

```
        if(!categorySearch.equals("")) {
            JOptionPane.showMessageDialog(rootPane," The Item is:"+"\n" + categorySearch);
        }
        else {
            JOptionPane.showMessageDialog(rootPane,"No Values in this Category" ,"No Such Data",JOptionPane.ERROR_MESSAGE);
        }
    }

    private void btnClearActionPerformed(java.awt.event.ActionEvent evt) {
        int result = JOptionPane.showConfirmDialog(rootPane,"Do You Want To Clear All The Text Fields?","Warning!!",JOptionPane.YES_NO_OPTION); //asks user to clear form
        if(result == 0) {
            txtModelNumber.setText("Enter Model Number");
            txtModelNumber.setForeground(new Color(153,153,153));
            txtName.setText("Enter Name");
            txtName.setForeground(new Color(153,153,153));
            cbCategory.setSelectedIndex(0);
            rbtnLow.setSelected(true);
            txtPrice.setText("Enter Price");
            txtPrice.setForeground(new Color(153,153,153));
            cbDiscount.setSelectedIndex(0);
```

```
            txtSearchByPrice.setText("Enter Price To Search");
            txtSearchByPrice.setForeground(new Color(153,153,153));
        }
        else {
            return;
        }
    }

    private void btnAddActionPerformed(java.awt.event.ActionEvent evt) {
        try {
            String modelNumber = txtModelNumber.getText().trim();
            String name = txtName.getText().trim();
            String category = (String)cbCategory.getSelectedItem();
            String recommendationType;

            //selecting recommendation from radio button
            if(rbtnLow.isSelected() == true){
                recommendationType = "Low";
            }
            else if(rbtnMedium.isSelected() == true){
                recommendationType = "Medium";
            }
            else {
```

```
            recommendationType = "High";
        }
        String recommendation = recommendationType;

        int price = Integer.parseInt(txtPrice.getText().trim());
        String discount = (String)cbDiscount.getSelectedItem();
        boolean emptyRowFlag = false;

        if (!modelNumber.equals("Enter Model Number") && !name.equals("Enter Name") && !recommendation.equals("Enter Recommendation") && !discount.equals("Enter Discount") && price > 0) {
            String[] value = {modelNumber, name, category, recommendation, Integer.toString(price), discount};
            int rowCount = tblInfo.getRowCount();
            int nextRow = 0;
            String p;

            do {
                p = (String) tblInfo.getValueAt(nextRow, 0);
                if (p != null && p.length() != 0) {
                    nextRow++;
                }
```

```
            else {
                emptyRowFlag = true;
            }
        }
        while (nextRow < rowCount && !emptyRowFlag);

        if (Item.size() >= 1) {

            for (EverestComputers n : Item) {

                if (modelNumber.equals(n.getModelNumber())) {
                    emptyRowFlag = false;
                    JOptionPane.showMessageDialog(rootPane, "Model Number Must Not Be Same!!", "Error!!", JOptionPane.ERROR_MESSAGE);
                    return  ;
                }

                else {
                    emptyRowFlag = true;
                }
            }
        }
        else{
```

```
                emptyRowFlag = true;
            }

            if (emptyRowFlag) {
                int colCount = tblInfo.getColumnCount();

                if (nextRow < rowCount) {

                    EverestComputers Object = new EverestComputers(modelNumber, name, category, recommendation, price, discount);
                    Item.add(Object);
                    mergeSort(Item);

                    for (int i = 0; i < colCount; i++) {
                        tblInfo.setValueAt(value[i], nextRow, i);
                    }
                }
                else {
                    JOptionPane.showMessageDialog(rootPane, "No Empty Row Found!!", "Error!!", JOptionPane.ERROR_MESSAGE);
                }
                save(); //calls save() method for saving the data to created file
            }
```

```
            }
            else if(price < 1){
               JOptionPane.showMessageDialog(rootPane,"Input Value Not Valid For Price." ,"Invalid Input!!", JOptionPane.ERROR_MESSAGE);
            }
            else {
               JOptionPane.showMessageDialog(rootPane, "Do Not Leave The Textfields Empty", "Error!!", JOptionPane.ERROR_MESSAGE);
            }
        }
        catch (NullPointerException npe) {
            JOptionPane.showMessageDialog(rootPane, "No Data, Check Your Input", "Error!!", JOptionPane.ERROR_MESSAGE);
        }
        catch (NumberFormatException nfe) {
            JOptionPane.showMessageDialog(rootPane, "Error While Retrieving Data, Check Your Input", "Error!!", JOptionPane.ERROR_MESSAGE);
        }
    }

    private void save() {
        File file = new File("D:\\data.csv");//Loading of file

        try (FileWriter wr = new FileWriter(file)) {
```

```
            if (file.isFile()) {
                file.createNewFile();
            }

            for (EverestComputers s : Item) {
                String v[] = {s.getModelNumber(), s.getName(), s.getCategory(),
s.getRecommendation(), Integer.toString(s.getPrice()), s.getDiscount()};

                for (int i = 0; i < v.length; i++) {
                    wr.append(v[i]);
                    if (i == v.length - 1) {
                        break;
                    }
                    wr.append(",");//CSV comma separated value
                }
                wr.append("\n");
            }
            wr.flush();
        }
        catch (IOException ex) {
            Logger.getLogger(AppliancesInfo.class.getName()).log(Level.SEVERE,      null,
ex);
```

```
    }
}

private void txtModelNumberFocusLost(java.awt.event.FocusEvent evt) {
    if(txtModelNumber.getText().equals("")) {
        txtModelNumber.setText("Enter Model Number");
        txtModelNumber.setForeground(new Color(153,153,153));
    }
}

private void txtModelNumberFocusGained(java.awt.event.FocusEvent evt) {
    if(txtModelNumber.getText().equals("Enter Model Number")) {
        txtModelNumber.setText("");
        txtModelNumber.setForeground(new Color(0,0,0));
    }
}

private void txtPriceFocusLost(java.awt.event.FocusEvent evt) {
    if(txtPrice.getText().equals("")) {
        txtPrice.setText("Enter Price");
        txtPrice.setForeground(new Color(153,153,153));
    }
}
```

```
    private void txtPriceFocusGained(java.awt.event.FocusEvent evt) {
        if(txtPrice.getText().equals("Enter Price")) {
            txtPrice.setText("");
            txtPrice.setForeground(new Color(0,0,0));
        }
    }

    private void txtNameFocusLost(java.awt.event.FocusEvent evt) {
        if(txtName.getText().equals("")) {
            txtName.setText("Enter Name");
            txtName.setForeground(new Color(153,153,153));
        }
    }

    private void txtNameFocusGained(java.awt.event.FocusEvent evt) {
        if(txtName.getText().equals("Enter Name")) {
            txtName.setText("");
            txtName.setForeground(new Color(0,0,0));
        }
    }

    private void miAboutActionPerformed(java.awt.event.ActionEvent evt) {
```

```
        dboxAbout.show();
        dboxAbout.setLocationRelativeTo(null);
    }

    private void txtPriceKeyTyped(java.awt.event.KeyEvent evt) {
        char c = evt.getKeyChar();
        if(!Character.isDigit(c)) {
            evt.consume();
        }
    }

    private void txtSearchByPriceKeyTyped(java.awt.event.KeyEvent evt) {
        char c = evt.getKeyChar();
        if(!Character.isDigit(c)) {
            evt.consume();
        }
    }

    private void miFAQsActionPerformed(java.awt.event.ActionEvent evt) {
       // TODO add your handling code here:
        try {
```

```
            Runtime.getRuntime().exec("rundll32 url.dll,FileProtocolHandler " +
"C:\\Users\\Sulav\\OneDrive\\Documents\\NetBeansProjects\\Program\\src\\my\\coursework\\manual.pdf");
        }
        catch (Exception e) {
            JOptionPane.showMessageDialog(rootPane, "Sorry, There is no FAQs", "
Error.", JOptionPane.ERROR_MESSAGE);
        }
    }

    private void btnOkActionPerformed(java.awt.event.ActionEvent evt) {
        dboxAbout.hide();
    }

    private void miImportActionPerformed(java.awt.event.ActionEvent evt) {
        try {
            File selectedFile = new File("D:\\data.csv");
            if(selectedFile.exists()) {
                if(selectedFile.length()==0) {
                    JOptionPane.showMessageDialog(rootPane,"There is No Previously
Saved Data" ,"Error!!",JOptionPane.ERROR_MESSAGE);
                }
                else{
                    BufferedReader br = new BufferedReader(new FileReader(selectedFile));
```

```
Object[] lines = br.lines().toArray();
int rowCount = tblInfo.getRowCount();
int nextRow = 0;
boolean emptyRowFlag = false;
String p;

for (int i = 0; i < lines.length; i++) {
    String[] row = lines[i].toString().split(",");
    do {
        p = (String) tblInfo.getValueAt(nextRow, 0);

        if (p != null && p.length() != 0) {
            nextRow++;
        }

        else {
            emptyRowFlag = true;
        }
    }
    while (nextRow < rowCount && !emptyRowFlag);

    if (emptyRowFlag) {
        int colCount = tblInfo.getColumnCount();
```

```
                    if (nextRow < rowCount) {


                        for (int j = 0; j < colCount; j++) {
                            tblInfo.setValueAt(row[j], nextRow, j);
                        }
                    }
                }
                else {
                    JOptionPane.showMessageDialog(rootPane, "No Empty Row Found!!", "Error!!", JOptionPane.ERROR_MESSAGE);
                }
            }
        }
        else{
            selectedFile.createNewFile();
            JOptionPane.showMessageDialog(rootPane,"There is No Previously Saved Data" ,"Error!!",JOptionPane.ERROR_MESSAGE);
            return;
        }
    }
```

```
        catch (Exception ex) {
            Logger.getLogger(AppliancesInfo.class.getName()).log(Level.SEVERE,        null,
ex);
        }
    }

    private void miSaveActionPerformed(java.awt.event.ActionEvent evt) {
        if(Item.size()>=1) {
            save();
        }
        else {
            JOptionPane.showMessageDialog(rootPane, "No Any Data Inserted in Table!!",
"Error!!", JOptionPane.ERROR_MESSAGE);
        }
    }

    public void mergeSort(ArrayList<EverestComputers> price) {
        if (price.size() <= 1) {
            return;
        }

        int firstLength = price.size() / 2;
        int secondLength = price.size() - firstLength;
```

```
        ArrayList<EverestComputers> first = new ArrayList();
        ArrayList<EverestComputers> second = new ArrayList();

        for (int i = 0; i < firstLength; i++) {
            first.add(price.get(i));
        }

        for (int i = 0; i < secondLength; i++) {
            second.add(price.get(firstLength + i));
        }

        mergeSort(first);
        mergeSort(second);
        merge(first, second, price);
    }

    public static void merge(ArrayList<EverestComputers> first,
ArrayList<EverestComputers> second, ArrayList<EverestComputers> price) {
        int iFirst = 0;
        int iSecond = 0;
        int j = 0;

        while (iFirst < first.size() && iSecond < second.size()) {
```

```
            if (first.get(iFirst).getPrice() < second.get(iSecond).getPrice()) {
                price.set(j, first.get(iFirst));
                iFirst++;
            }
            else {
                price.set(j, second.get(iSecond));
                iSecond++;
            }
            j++;
        }

        while (iFirst < first.size()) {
            price.set(j, first.get(iFirst));
            iFirst++;
            j++;
        }

        while (iSecond < second.size()) {
            price.set(j, second.get(iSecond));
            iSecond++;
            j++;
        }
    }
```

```
    public static int binarySearch(ArrayList<EverestComputers> priceSearch, int low, int high, int key) {
        int mid = (low + high)/2;
        if (low <= high){

            if ( priceSearch.get(mid).getPrice() == key ){
                return mid;
            }

            else if ( priceSearch.get(mid).getPrice() > key ){
                return binarySearch(priceSearch, low, mid-1, key);
            }

            else{
                return binarySearch(priceSearch, mid+1, high, key);
            }
        }

        else {
            return -1;
        }
    }
```

```
    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
        /* If Nimbus (introduced in Java SE 6) is not available, stay with the default look and feel.
         * For details see http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info : javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Windows".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
                    break;
                }
            }
        } catch (ClassNotFoundException ex) {
```

```
java.util.logging.Logger.getLogger(AppliancesInfo.class.getName()).log(java.util.logging.
Level.SEVERE, null, ex);
        } catch (InstantiationException ex) {

java.util.logging.Logger.getLogger(AppliancesInfo.class.getName()).log(java.util.logging.
Level.SEVERE, null, ex);
        } catch (IllegalAccessException ex) {

java.util.logging.Logger.getLogger(AppliancesInfo.class.getName()).log(java.util.logging.
Level.SEVERE, null, ex);
        } catch (javax.swing.UnsupportedLookAndFeelException ex) {

java.util.logging.Logger.getLogger(AppliancesInfo.class.getName()).log(java.util.logging.
Level.SEVERE, null, ex);
        }
        //</editor-fold>
        //</editor-fold>

        /* Create and display the form */
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
                new AppliancesInfo().setVisible(true);
            }
        });
```

```
    }


    // Variables declaration - do not modify
    private javax.swing.JButton btnAdd;
    private javax.swing.JButton btnClear;
    private javax.swing.ButtonGroup btnGrpRecommendation;
    private javax.swing.JButton btnOk;
    private javax.swing.JButton btnSearchByCategory;
    private javax.swing.JButton btnSearchByPrice;
    private javax.swing.JComboBox<String> cbCategory;
    private javax.swing.JComboBox<String> cbDiscount;
    private javax.swing.JComboBox<String> cbSearchByCategory;
    private javax.swing.JDialog dboxAbout;
    private javax.swing.JMenuBar jMenuBar1;
    private javax.swing.JPanel jPanel1;
    private javax.swing.JPanel jPanelAdd;
    private javax.swing.JPanel jPanelSearch;
    private javax.swing.JPanel jPanelSearchByItem;
    private javax.swing.JPanel jPanelSearchByPrice;
    private javax.swing.JPanel jPanelTable;
    private javax.swing.JScrollPane jScrollPane1;
    private javax.swing.JScrollPane jScrollPane2;
    private javax.swing.JTabbedPane jTabbedPaneAddSearch;
```

```
    private javax.swing.JLabel lblAddress;
    private javax.swing.JLabel lblBackground;
    private javax.swing.JLabel lblCategory;
    private javax.swing.JLabel lblDate;
    private javax.swing.JLabel lblDiscount;
    private javax.swing.JLabel lblEmail;
    private javax.swing.JLabel lblEverestComputers;
    private javax.swing.JLabel lblLogo;
    private javax.swing.JLabel lblLogoAbout;
    private javax.swing.JLabel lblModelNumber;
    private javax.swing.JLabel lblName;
    private javax.swing.JLabel lblPrice;
    private javax.swing.JLabel lblRange;
    private javax.swing.JLabel lblTime;
    private javax.swing.JLabel lblTitle;
    private javax.swing.JMenu mAbout;
    private javax.swing.JMenu mFile;
    private javax.swing.JMenu mHelp;
    private javax.swing.JMenuItem miAbout;
    private javax.swing.JMenuItem miExit;
    private javax.swing.JMenuItem miFAQs;
    private javax.swing.JMenuItem miImport;
    private javax.swing.JMenuItem miOpen;
```

```
    private javax.swing.JMenuItem miSave;
    private javax.swing.JRadioButton rbtnHigh;
    private javax.swing.JRadioButton rbtnLow;
    private javax.swing.JRadioButton rbtnMedium;
    private javax.swing.JTable tblInfo;
    private javax.swing.JTextArea txtAbout;
    private javax.swing.JTextField txtModelNumber;
    private javax.swing.JTextField txtName;
    private javax.swing.JTextField txtPrice;
    private javax.swing.JTextField txtSearchByPrice;
    // End of variables declaration
}
```

EverestComputers Class:

```
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package my.coursework;


/**
 *
 * @author Sulav
 */
class EverestComputers {



    private String modelNumber, name, category, discount, recommendation;
    private int price;


    public EverestComputers(String modelNumber, String name, String category, String recommendation, int price, String discount) {
        this.modelNumber = modelNumber;
        this.name = name;
```

```
        this.category = category;
        this.discount = discount;
        this.recommendation = recommendation;
        this.price = price;
    }

    public String getModelNumber() {
        return modelNumber;
    }

    public String getName() {
        return name;
    }

    public String getCategory() {
        return category;
    }

    public String getRecommendation() {
        return recommendation;
    }

    public String getDiscount() {
```

```
        return discount;
    }

    public int getPrice() {
        return price;
    }
}
```