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islington college
(इस्लिङ्टन कलेज)

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CS5004NA Emerging Programming Platforms and Technologies

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Group Name: Group 1 Computer Accessories			
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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 marks of zero will be awarded.

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1. Proposal

1.1. Introduction

A **"Computer Accessories Information System"** program is to be developed where computer accessories items are added and displayed, which is the requirement of the coursework. The program should also be capable of searching items based on the categories and price according to the user command. Our topmost goal is to make this Information system user-friendly.

1.2. List of Data

The "Computer Accessories Information System" consists of a form where the user is required to fill details in the input fields. The given followings are the type of inputs:

- Accessory ID: Unique key representing each hardware components. (Integer)

- Accessory Name: Name of the computer accessories within each category.(String)

- Accessory Category: The categories for computer accessories like hardware components, network components, storage devices etc. which is selected from combo box. (String)

- Company/Brand: The Company/Brand of the accessories which is selected from combo box. (String).

- Price: The price of the accessories. (Integer)

- Paid Via: The payment method for the accessories. (String)

1.3. List of Features

- The system will have the function of adding and displaying new computer accessories to the store according to the information from the user's input.

- The stored data will be showed on table i.e. jtable1

- The system will have a search by price button and search by category button for searching the data.

- A message dialogue box will pop-up including the result for the search button.

1.4. Tools Used:

The tools which should be used are Apache NetBeans IDE 12.1 and Balsamiq.

- NetBeans:

NetBeans is an incorporated advancement climate (IDE) for Java. NetBeans permits applications to be created from a bunch of measured programming segments called modules. NetBeans runs on Windows, mac OS, Linux, and Solaris.

Since, our coursework required a GUI design, NetBeans is used to design GUI because it is simple to use and helps to identify the errors in the coding. Also, it shows the specific line where the errors are generated. It also provides hints about the methods and functions used in the program. The NetBeans IDE provides a great set of tools that lets us quickly design and code.

- Balsamiq:

Balsamiq is an online UI configuration apparatus for making wireframes. You can utilize it to produce computerized representations of your thought or idea for an application or site, to encourage conversation and comprehension before any

code is composed. The finished wireframes can be utilized for client testing, explaining your vision, or getting endorsement to begin improvement.

2. Individual Task

Group Members	**Responsibilities**
Prashanna GC	• The main GUI of the program i.e. computer accessories form. • Search by Price and Search by Category button. • Both Update button functions. • Binary Search and Merge Sort program. • Testing.
Prajesh Kayastha	• The Loading screen program. • Search by Price and Search by Category button. • Add and Clear button. • Open menu item and its txt extension file. • Documentation about Binary Search and Method Description.
Priyanka Shakya	• The Login form program. • Search by Price and Search by Category button. • Help menu item function and its pdf file. • Delete Button functions. • Testing.
Astitwa Paudel	• Documentation about Merge Sort and Method Description. • Search by Price and Search by Category button. • Exit menu item function

	• Documentation about introduction , conclusion and remainings.

Table 1: Individual Task

3. Introduction

In this coursework we were asked to create an Inventory Information System. Here since this system is for a shop so it's GUI should be interactive and attractive. We used netbeans to create a GUI. NetBeans is an incorporated improvement climate for Java. NetBeans permits applications to be created from a bunch of secluded programming segments called modules. Different classes with different GUI are made and combined to make a complete project.

(Netbeans, 2017)

This **"Computer Accessories Information System"** program is developed in a way where computer accessories items can added, imported and can be searched in the basis of price and category. The detail information about the accessories can be stored and imported in the table and based on the price and categories, the details can be searched according to the user command. This Information system user-friendly, it provides all the error message and information messages if the user is missing some important fields to fill or any incorrect input is provided. According to the requirement of the coursework, different buttons with their different functions are given in the program. Also, different files are linked with the program to import data in the table or to look for help to use the program. In addition with the requirements some other buttons with different functions like updating, deleting functions etc. are also provided.

Also, for the uniqueness the program has loading screen to open with and a login system which leads to the Computer Accessories form.

4. Binary Search

- It is a sorted array which works by repeatedly dividing the search interval in half until you've narrowed down the possible locations to just one. The idea of binary search is to utilize the data that the array is sorted and diminish the time multifaceted nature to O(log n).

  (GeeksforGeeks, Binary search, 2020)

  Binary Search is used in search by price button and search by category button. The array in binary class and the mid index of the array is passed in the arguments. The price entered by the user in the text field or the category selected from combo box is search among the rows in the table and compared with the others values. If the value is similar then it gets the information of the rows and displays. And if the value isn’t similar then it displays “accessory not found” message.

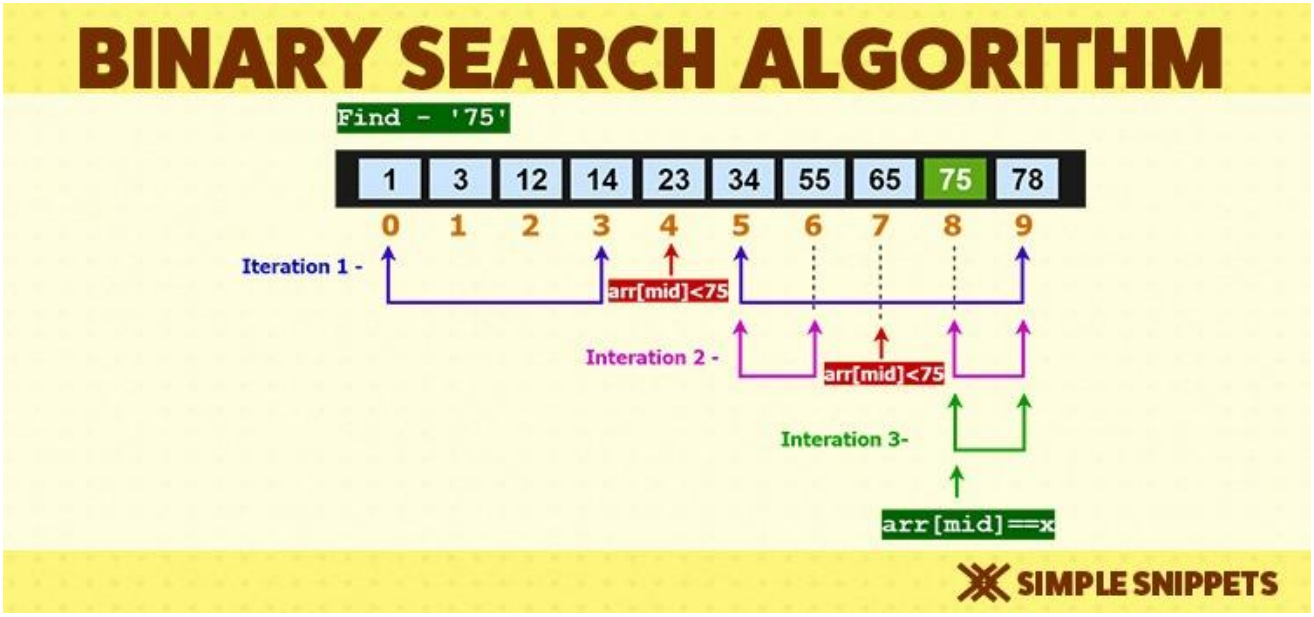

Figure 1: BInary Search

(Sakpal, 2019)

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4.1 Working Mechanism of Binary Search Algorithm

- The algorithm of binary search works in a sorted array. It finds the targeted value from the sorted array. For this the lowest and the highest index of the elements of the array is divided in half. It then compares the search element with middle element and the position of the targeted value is determined either the left side or the right side from the mid-point. If the given number is smaller than the mid element then it is divided in half with the lowest and highest index of that left side again, and if it is larger than in right side. It repeatedly divides the search interval in half until it narrows down the possible locations to just one.

4.2 Implementation of Binary Search in program

- The binary search is implemented in following steps:

    i. It reads the search element from the user and finds its position in the sorted array.

    ii. The middle element in the sorted list was found after the dividing lowest and highest index with 2.

    iii. It then compares the search element with middle element.

    iv. If it matches then it displays the result and it will terminate the function.

    v. If it doesn't match then it will check whether the search element is smaller or larger than the middle element.

vi. If it is smaller then it will repeat steps 2, 3, 4 and 5 for the left sublist of the middle element and if it is larger then it will repeat 2, 3, 4 and 5 for the right sublist of the middle element.

vii. It will repeat the same process until it finds the search element in the list or until sublist contains only one element.

viii. If that element also doesn't match with the search element, then it will return index value -1 and terminate the function.

5. Merge Sort

Merge Sort is a Divide and Conquer algorithm. It divides the input array into equal parts, calls itself for the two parts, and afterward merges the two sorted parts. The merge() function is utilized for consolidating two parts. The merge(arr, l, m, r) is a key process that accepts that arr[l..m] and arr[m+1..r] are sorted and merges the two arranged arrays into one.

(GeeksforGeeks, Merge sort, 2020)

5.1 Working Mechanism of Binary Search Algorithm

The algorithm of Merge Sort is to sort numbers in an array. It separates the array into two halves and the two halves act individually as a separate array. When the two arrays are sorted then the merge function is used to combine the two sorted arrays which will result a single sorted array.

5.2 Implementation of Binary Search in program

In the program, merge sort is used to sort the price to search the accessories from price. Two methods which are sort and merge are used in this merge sort class. The sort method functions to separate the given array into two halves and, sorts the array individually. The merge method has the function to merge the two sorted array into single array. The price was sorted and merged in this program which allows search by price button to compare price with all the rows in order to give the correct corresponding details.

6. Method Description

6.1. Sort Method

In this method given array is separated into two halves. Both are considered as separate arrays and are sorted individually. The elements in the each arrays are kept in a loop and sorted one after another.

6.2. Merge Method

In this method the two arrays which are sorted in sort method are combined. The next element to consider in the first array and the second array is both given 0 in different variables. As long as the elements reach the end, the smaller elements are moved into the array.

6.3. add_buttonActionPerformed(java.awt.event.ActionEvent evt)

This method is used to add all the details provided by the user in the form to table. A total detail of 12 accessories can be added to the table.

6.4. clear_buttonActionPerformed(java.awt.event.ActionEvent evt)

This method is used to clear all the input fields in the computer accessories form entered by the user.

6.5. searchPrice_buttonActionPerformed(java.awt.event.ActionEvent evt)

This method is used to search the details of the accessories by price. The information of accessories of given price entered by the user is displayed.

6.6. searchCategory_buttonActionPerformed(java.awt.event.ActionEvent evt)

This method is used to search the details of the accessories by category. The information of accessories of selected category by the user is displayed.

6.7. update_buttonActionPerformed(java.awt.event.ActionEvent evt)

This method is used to get values from table and update those details to the computer accessories form.

6.8. secondupdate_buttonActionPerformed(java.awt.event.ActionEvent evt)

This method is used to get values from computer accessories form and update those details to the table.

6.9. delete_buttonActionPerformed(java.awt.event.ActionEvent evt)

This method is used to delete the specific row from the table. Only one row can be deleted at a time.

6.10. open_jMenuItemActionPerformed(java.awt.event.ActionEvent evt)

This method is used to import values from the txt extension file saved in the given path to the table. Buffer reader class from java library is used in this method.

6.11. exit_MenuItemActionPerformed(java.awt.event.ActionEvent evt)

This method is used to close the program.

6.12. help_MenuItemActionPerformed(java.awt.event.ActionEvent evt)

This method is used to open a help pdf file which consists of information and is located at a given path.

6.13. login_jButtonActionPerformed(java.awt.event.ActionEvent evt)

This method is used to login to the program, when correct username and password is entered it leads to the form.

6.14. reset_jButtonActionPerformed(java.awt.event.ActionEvent evt)

This method is used to clear the username and password input fields.

7. Testing

7.1. Testing - 1

Objective	To test whether add button works or not by inserting data in all the required fields.
Action	The required datas were inserted and add button was hit.
Expected Result	A message box should pop-up displaying “Added to cart.”
Actual Result	A message box popped-up displaying “Added to cart.”
Conclusion	The test was successful.

Table 2: Testing add button

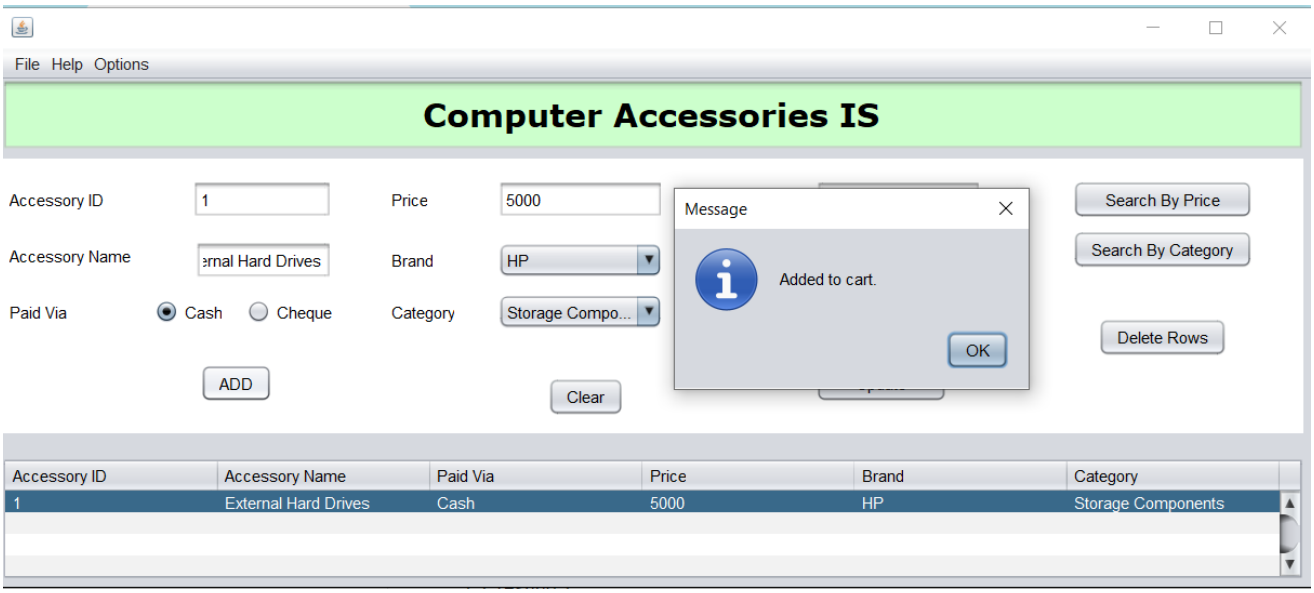

Figure 2: Testing of add button

7.2. Testing - 2

Objective	To import values in jTable from open button from Menu bar.
Action	The open button inside File button on menu bar was opened
Expected Result	A message box should pop-up displaying “Successful.”
Actual Result	A message box popped-up displaying “Successful.”
Conclusion	The test was successful.

Table 3: Testing open button from menu bar

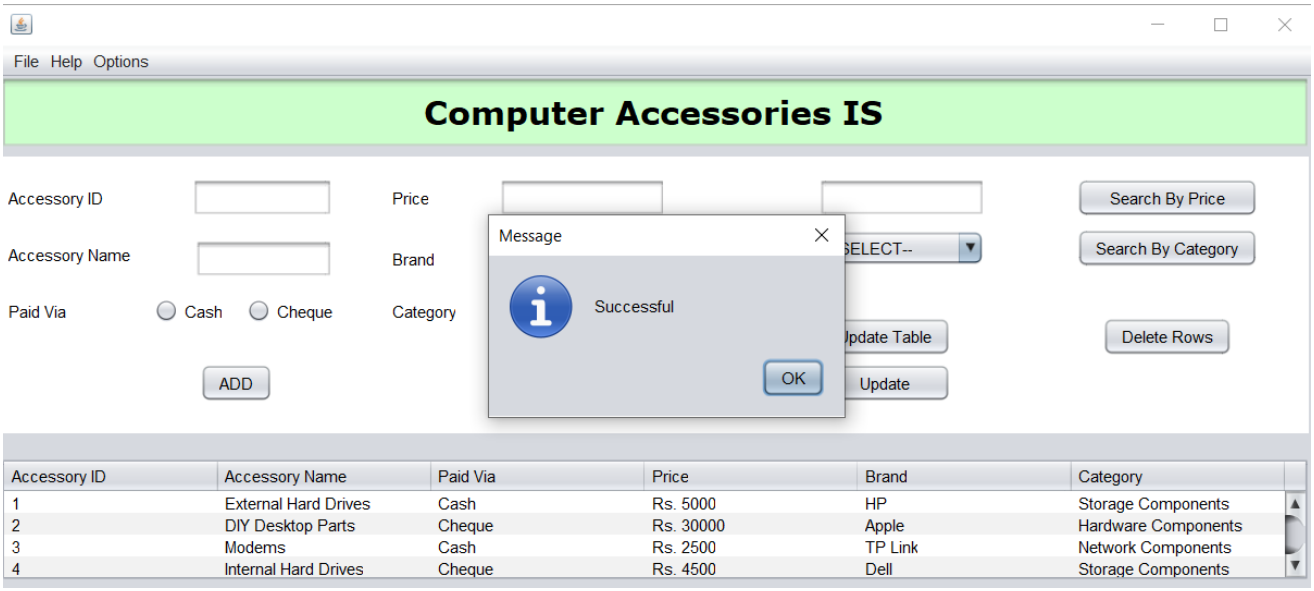

Figure 3: Testing of open button from menu bar

7.3. Testing - 3

Objective	To update values from JTable.
Action	The update button was used to update the datas.
Expected Result	A message box should pop-up displaying “UPDATED SUCESSFULLY.”
Actual Result	A message box popped-up displaying “UPDATED SUCESSFULLY.”

Conclusion	The test was successful.

Table 4: Testing update button

Figure 4: Testing of update button

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7.4. Testing - 4

Objective	To test if the help button provides the helping files or not.
Action	From the menu bar help menu item was clicked to see the helping files.
Expected Result	A pdf consisting of information should be opened.
Actual Result	A pdf consisting of information should be opened.
Conclusion	Test pass

Table 5: Testing help button

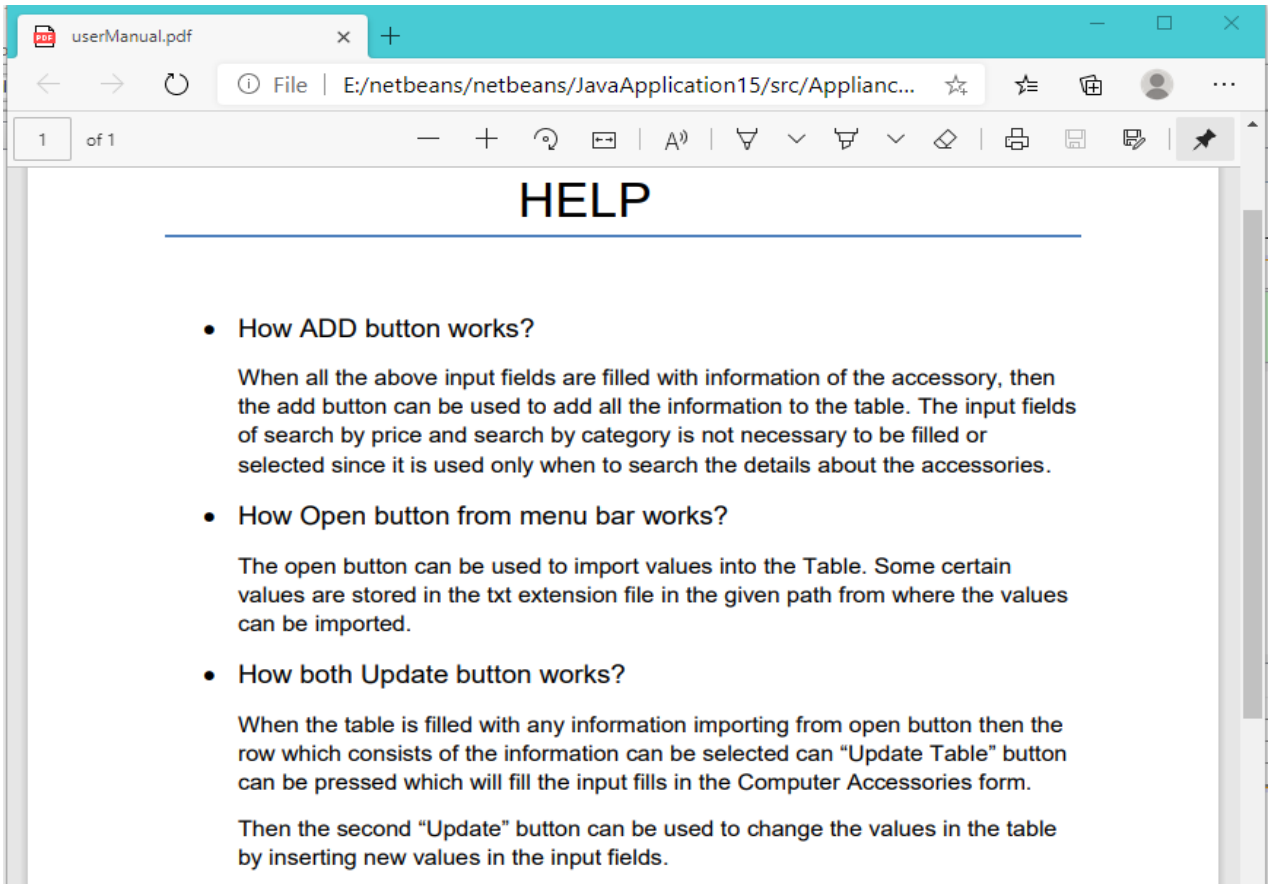

userManual.pdf
File | E:/netbeans/netbeans/JavaApplication15/src/Applianc...
1 of 1
HELP
How ADD button works?
When all the above input fields are filled with information of the accessory, then the add button can be used to add all the information to the table. The input fields of search by price and search by category is not necessary to be filled or selected since it is used only when to search the details about the accessories.
How Open button from menu bar works?
The open button can be used to import values into the Table. Some certain values are stored in the txt extension file in the given path from where the values can be imported.
How both Update button works?
When the table is filled with any information importing from open button then the row which consists of the information can be selected can “Update Table” button can be pressed which will fill the input fills in the Computer Accessories form.
Then the second “Update” button can be used to change the values in the table by inserting new values in the input fields.

Figure 5: Testing of help button

7.5. Testing - 5

Objective	To test whether error message box pops-up or not.
Action	The required datas were filled except in accessory name.
Expected Result	A message box should pop-up displaying “Please enter the name of the item.”
Actual Result	A message box popped-up displaying “Please enter the name of the item.”
Conclusion	The test was successful.

Table 6: Testing pop-up message box

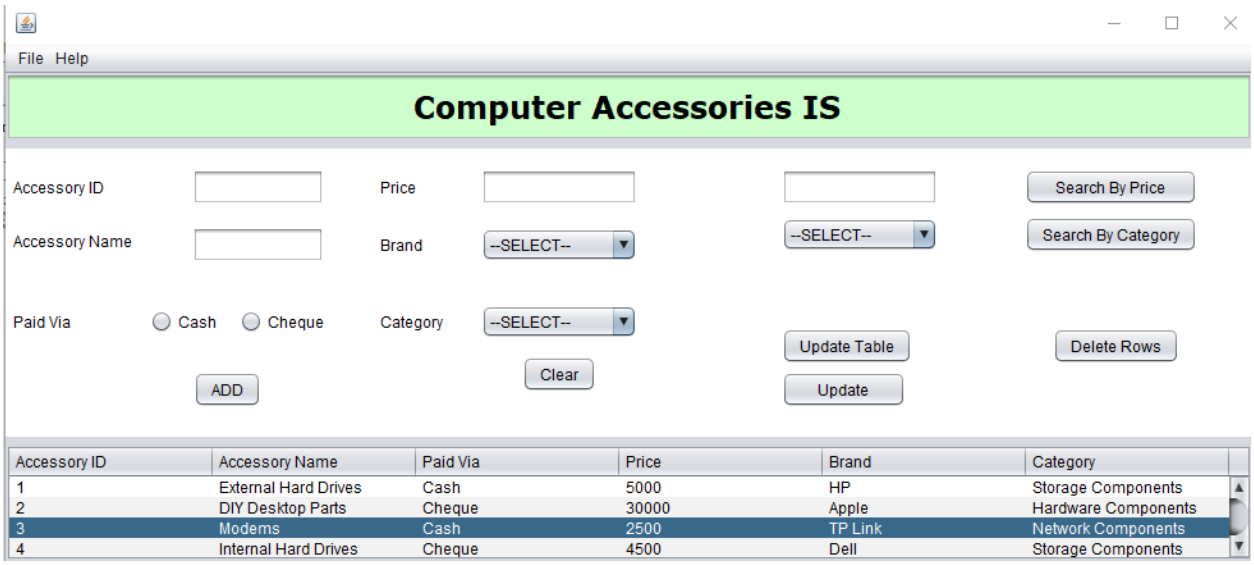
Figure 6: Testing of pop-up message box

7.6. Testing - 6

Objective	To delete the selected row from the Table.
Action	The row of accessory ID 2 was selected and delete button was pressed.
Expected Result	The selected row should be deleted.

Actual Result	The selected row was deleted.
Conclusion	Test pass

Table 7: Testing delete button



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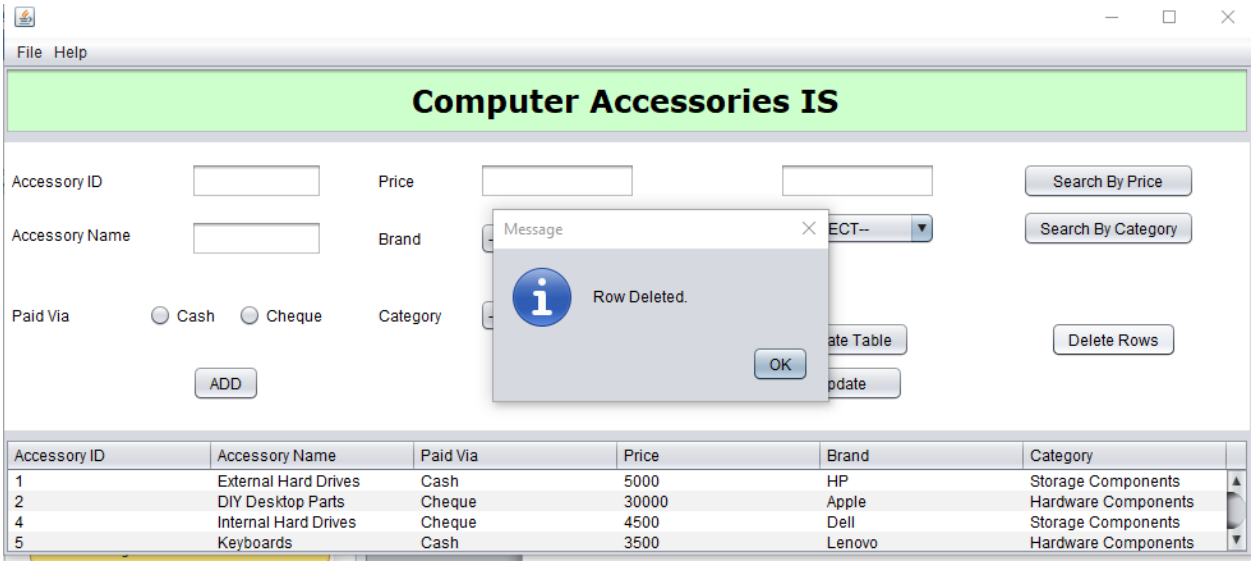


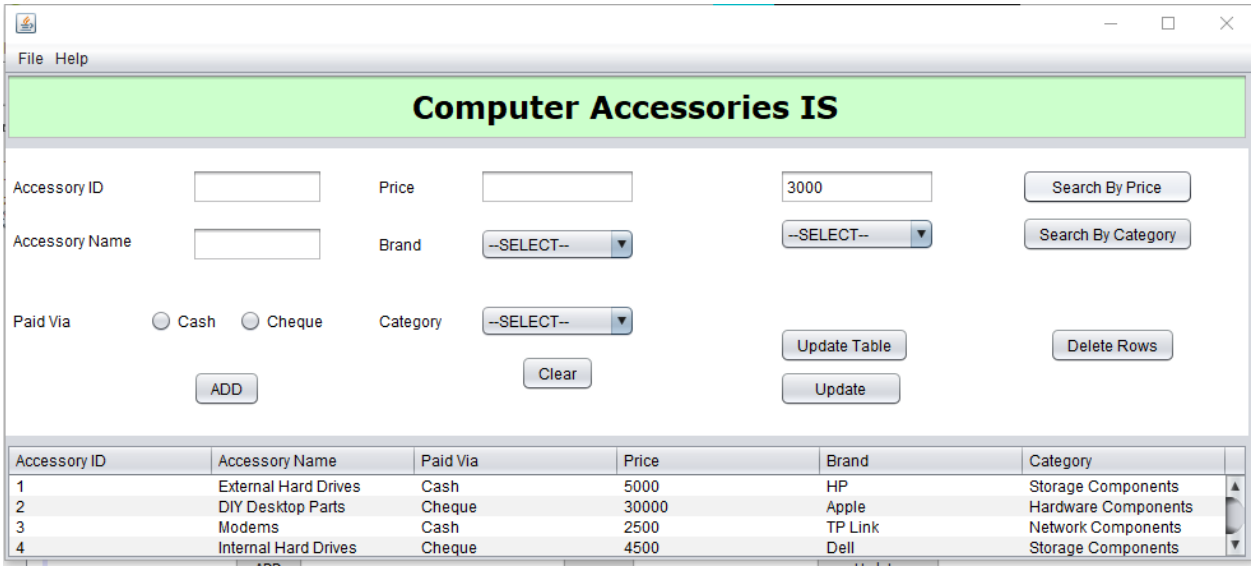
Figure 7: Testing of delete button

7.7. Testing – 7

Objective	To search details from Table using search by price button.
Action	In details of the accessory priced 3000 was searched in the Table.
Expected Result	The details of the accessory priced 3000 should be displayed in message box.
Actual Result	The details of the accessory priced 3000 was displayed

	in message box.
Conclusion	Test pass

Table 8: Testing to search details by using search by price button



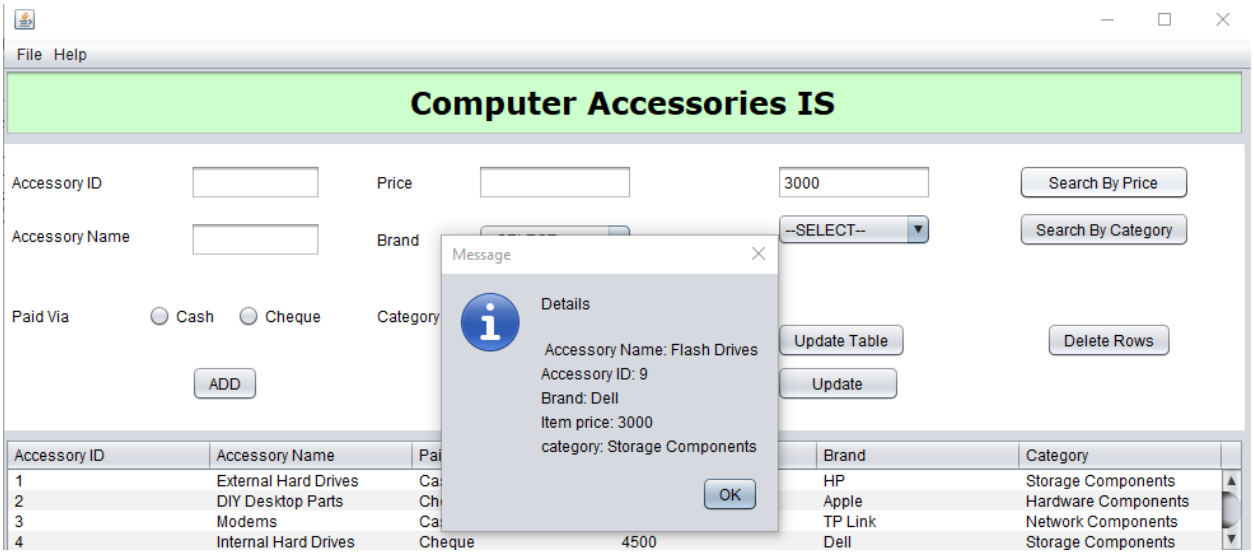


Figure 8: Testing to search details by using search by price button

7.8. Testing – 8

Objective	To use search by price button with the price which is not added in the Jtable.
Action	In details of the accessory priced 999999999 was searched in the Table.
Expected Result	No any details of the accessory priced 999999999 should be displayed in message box.
Actual Result	No any details of the accessory priced 999999999 was displayed in message box.
Conclusion	Test pass

Table 9: Testing search by price button

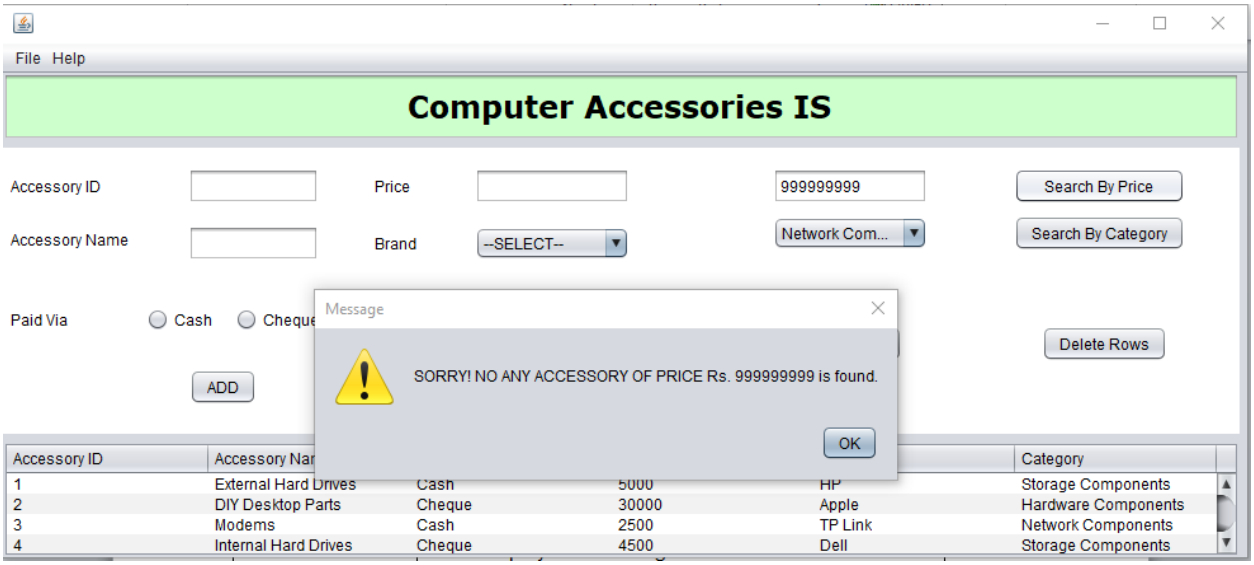


Figure 9: Testing of search by price button

7.9. Testing – 9

Objective	To use search by price button with empty price shell.
Action	The search by price button was clicked without filling the price input field.
Expected Result	A message box to inform the user to fill the price input field should be displayed.

Actual Result	A message box to inform the user to fill the price input field was displayed.
Conclusion	Test pass

Table 10: Testing of error pop-up message when required fields are left empty

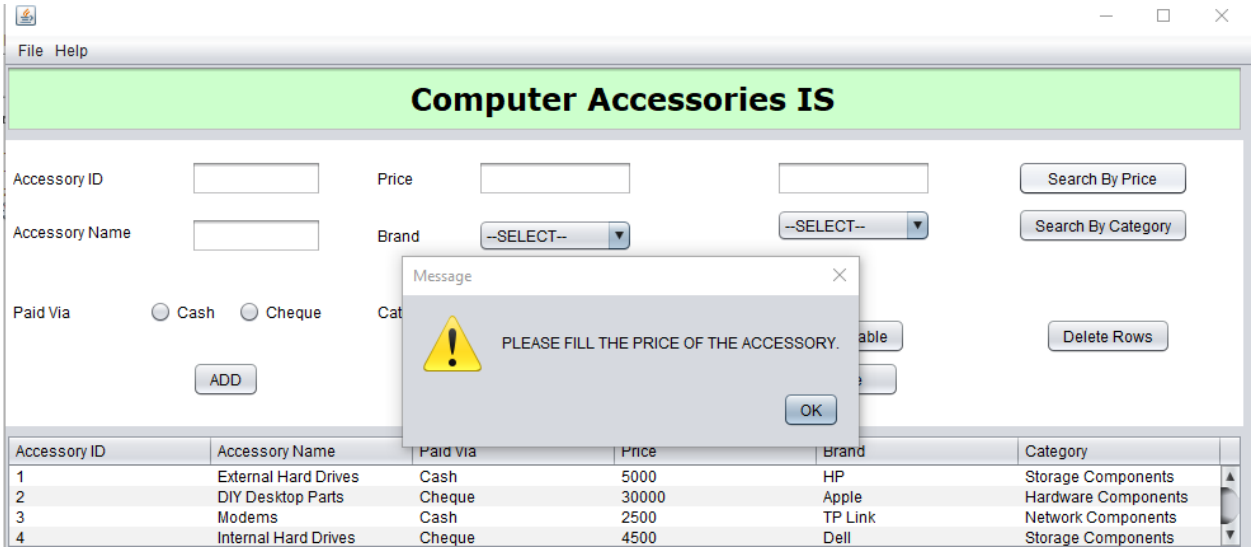


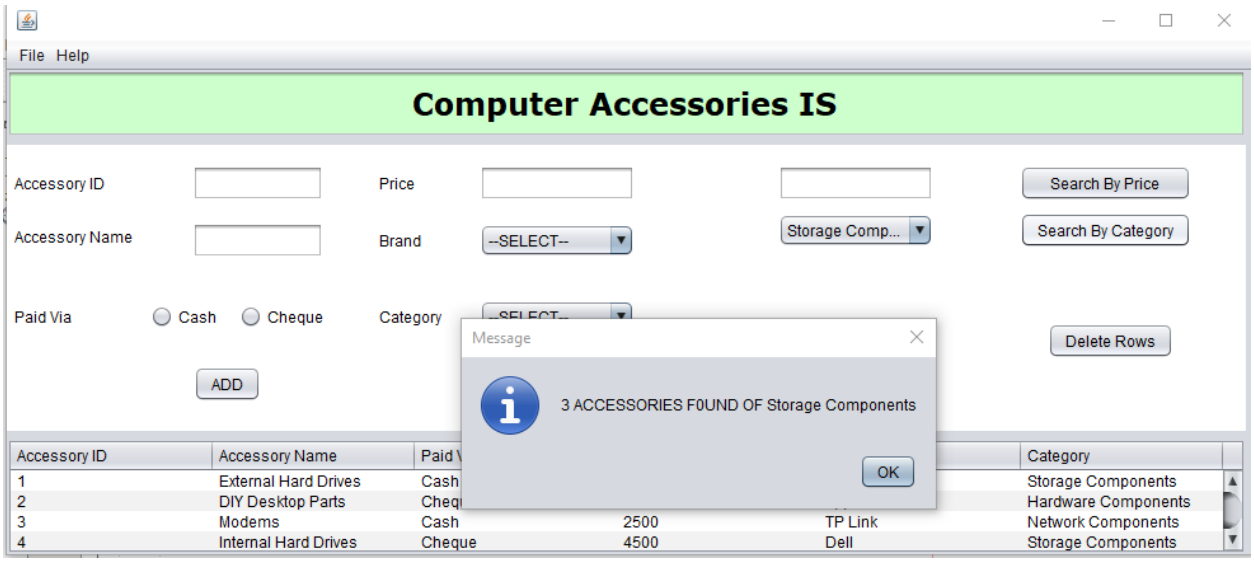
Figure 10:Testing of error pop-up message when required fields are left empty

7.10. Testing – 10

Objective	To search details from Table using search by category button.

Action	In details of the accessory of storage components was searched in the Table.
Expected Result	The details of the accessory of storage components should be displayed in message box.
Actual Result	The details of the accessory of storage components were displayed in message box.
Conclusion	Test pass

Table 11: Testing search by category button



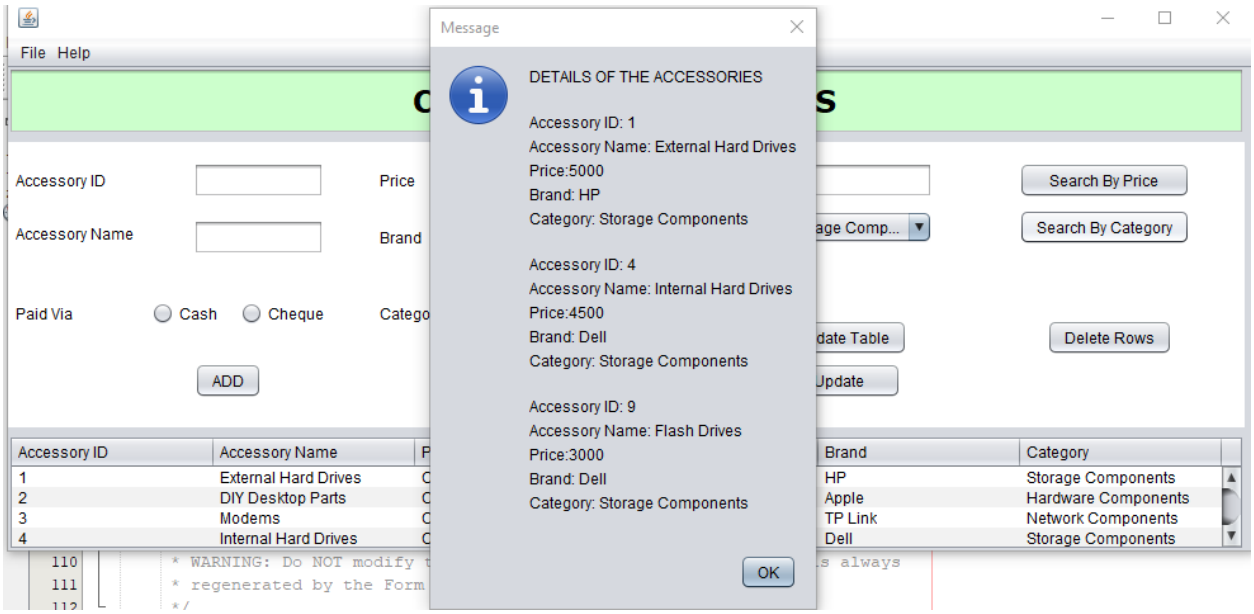


Figure 11: Testing of search by category button

8. Conclusion

This was one of the major assignment with was also difficult and a very important coursework for us. A lot of new knowledgeable things were gained while completing this coursework. Even though this coursework was done while working in a group but it was not an easy one us. We were facing a lot of errors with the algorithm of search button. Every time we were facing new errors and exceptions which took a lot of time to complete correctly. Also when the code had no errors, the output was not obtained as we wanted due to the exceptions. Every member of the group involved together gathering data and share their information and opinions to solve the errors.

This coursework made us research a lot and even made us call the teacher to explain some errors. Our module leader were a lot of help for this coursework. Also some valuable codes were provided by the teacher via Google Classroom. We also discussed a lot with teacher via hangouts to solve the error. The different functions of the program as per the requirements of the assignment were divided to each member, and everyone did their part of program with proper discussion in group via discord. All the steps that were needed to be carried out were done one step after another. While working in a group we were able to minimize many errors.

9. Bibliography

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Sakpal, T. (2019). *Simple Snippets*. Retrieved January 15, 2021, from https://simplesnippets.tech/binary-search-algorithm-with-cpp-code-data-structures-algorithms/

10. Appendix A

10.1. 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 AppliancesInfo;

import java.awt.Component;
import java.awt.Desktop;
import java.io.BufferedReader;
import java.io.File;
import java.io.FileNotFoundException;
import java.io.FileReader;
import java.io.IOException;
import java.lang.System.Logger;
import java.util.ArrayList;
import java.util.Arrays;
import javax.swing.JOptionPane;
import javax.swing.table.DefaultTableModel;

/**
 *
 * @author Dell
 */
public class AppliancesInfo extends javax.swing.JFrame {
```

```
    /**
     * Creates new form AppliancesInfo
     */
    public AppliancesInfo() {

        initComponents();

//  Table.setValueAt(1, 0, 0);
//        Table.setValueAt(2, 1, 0);
//        Table.setValueAt(3, 2, 0);
        Table.setValueAt(4, 3, 0);
        Table.setValueAt(5, 4, 0);
        Table.setValueAt(6, 5, 0);
        Table.setValueAt(7, 6, 0);
        Table.setValueAt(8, 7, 0);
        Table.setValueAt(9, 8, 0);
        Table.setValueAt(10, 9, 0);
        Table.setValueAt(11, 10, 0);
        Table.setValueAt(12, 11, 0);
//  Table.setValueAt(5000, 0, 3);
//        Table.setValueAt(30000, 1, 3);
//        Table.setValueAt(2500, 2, 3);
        Table.setValueAt(4500, 3, 3);
        Table.setValueAt(3500, 4, 3);
        Table.setValueAt(5100, 5, 3);
        Table.setValueAt(27000, 6, 3);
        Table.setValueAt(1700, 7, 3);
```

```
        Table.setValueAt(3000, 8, 3);
        Table.setValueAt(1000, 9, 3);
        Table.setValueAt(500, 10, 3);
        Table.setValueAt(2000, 11, 3);
// Table.setValueAt("External Hard Drives", 0, 1);
//      Table.setValueAt("DIY Desktop Parts", 1, 1);
//      Table.setValueAt("Modems", 2, 1);
        Table.setValueAt("Internal Hard Drives", 3, 1);
        Table.setValueAt("Keyboards", 4, 1);
        Table.setValueAt("Routers", 5, 1);
        Table.setValueAt("Monitors", 6, 1);
        Table.setValueAt("Network Switches", 7, 1);
        Table.setValueAt("Flash Drives", 8, 1);
        Table.setValueAt("Mouse", 9, 1);
        Table.setValueAt("Wireless USB Adapter", 10, 1);
        Table.setValueAt("PC Audio", 11, 1);
// Table.setValueAt("Cash", 0, 2);
//      Table.setValueAt("Cheque", 1, 2);
//      Table.setValueAt("Cash", 2, 2);
        Table.setValueAt("Cheque", 3, 2);
        Table.setValueAt("Cash", 4, 2);
        Table.setValueAt("Cash", 5, 2);
        Table.setValueAt("Cheque", 6, 2);
        Table.setValueAt("Cash", 7, 2);
        Table.setValueAt("Cheque", 8, 2);
        Table.setValueAt("Cash", 9, 2);
        Table.setValueAt("Cheque", 10, 2);
```

```
        Table.setValueAt("Cash", 11, 2);
//Table.setValueAt("HP", 0, 4);
//        Table.setValueAt("Apple", 1, 4);
//        Table.setValueAt("TP Link", 2, 4);
        Table.setValueAt("Dell", 3, 4);
        Table.setValueAt("Lenovo", 4, 4);
        Table.setValueAt("TP Link", 5, 4);
        Table.setValueAt("Apple", 6, 4);
        Table.setValueAt("TP Link", 7, 4);
        Table.setValueAt("Dell", 8, 4);
        Table.setValueAt("Lenovo", 9, 4);
        Table.setValueAt("TP Link", 10, 4);
        Table.setValueAt("Lenovo", 11, 4);
//Table.setValueAt("Storage Components", 0, 5);
//        Table.setValueAt("Hardware Components", 1, 5);
//        Table.setValueAt("Network Components", 2, 5);
        Table.setValueAt("Storage Components", 3, 5);
        Table.setValueAt("Hardware Components", 4, 5);
        Table.setValueAt("Network Components", 5, 5);
        Table.setValueAt("Hardware Components", 6, 5);
        Table.setValueAt("Network Components", 7, 5);
        Table.setValueAt("Storage Components", 8, 5);
        Table.setValueAt("Hardware Components", 9, 5);
        Table.setValueAt("Network Components", 10, 5);
        Table.setValueAt("Hardware Components", 11, 5);
    }
```

```
/**
 * 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() {

    buttonGroup1 = new javax.swing.ButtonGroup();
    jScrollPane1 = new javax.swing.JScrollPane();
    jTable1 = new javax.swing.JTable();
    jScrollPane3 = new javax.swing.JScrollPane();
    jTable3 = new javax.swing.JTable();
    jMenuBar1 = new javax.swing.JMenuBar();
    jMenu1 = new javax.swing.JMenu();
    jMenu2 = new javax.swing.JMenu();
    jMenu5 = new javax.swing.JMenu();
    jPanel1 = new javax.swing.JPanel();
    jPanel2 = new javax.swing.JPanel();
    accessoryID_jlabel = new javax.swing.JLabel();
    accessoryID_textfield = new javax.swing.JTextField();
    accessoryName_jlabel = new javax.swing.JLabel();
    accessoryName_textfield = new javax.swing.JTextField();
    price_jlabel = new javax.swing.JLabel();
    brand_jlabel = new javax.swing.JLabel();
    price_textfield = new javax.swing.JTextField();
```

```
paidVia_jlabel = new javax.swing.JLabel();
cash_radiobutton = new javax.swing.JRadioButton();
cheque_radiobutton = new javax.swing.JRadioButton();
category_jlabel = new javax.swing.JLabel();
category_jcombobox = new javax.swing.JComboBox<>();
add_button = new javax.swing.JButton();
clear_button = new javax.swing.JButton();
searchPrice_textfield = new javax.swing.JTextField();
searchPrice_button = new javax.swing.JButton();
searchCategory_button = new javax.swing.JButton();
searchCategory_jcombobox = new javax.swing.JComboBox<>();
brand_jcombobox = new javax.swing.JComboBox<>();
update_button = new javax.swing.JButton();
delete_button = new javax.swing.JButton();
secondupdate_button = new javax.swing.JButton();
jTextField0 = new javax.swing.JTextField();
jScrollPane4 = new javax.swing.JScrollPane();
Table = new javax.swing.JTable();
jMenuBar2 = new javax.swing.JMenuBar();
File_menu = new javax.swing.JMenu();
open_jMenuItem = new javax.swing.JMenuItem();
exit_MenuItem = new javax.swing.JMenuItem();
Help_menu = new javax.swing.JMenu();
help_MenuItem = new javax.swing.JMenuItem();

jTable1.setModel(new javax.swing.table.DefaultTableModel(
    new Object [][] {
```

```
            {null, null, null, null},
            {null, null, null, null},
            {null, null, null, null},
            {null, null, null, null}
        },
        new String [] {
            "Title 1", "Title 2", "Title 3", "Title 4"
        }
    ));
    jScrollPane1.setViewportView(jTable1);

    jTable3.setModel(new javax.swing.table.DefaultTableModel(
        new Object [][] {
            {null, null, null, null},
            {null, null, null, null},
            {null, null, null, null},
            {null, null, null, null}
        },
        new String [] {
            "Title 1", "Title 2", "Title 3", "Title 4"
        }
    ));
    jScrollPane3.setViewportView(jTable3);

    jMenu1.setText("File");
    jMenuBar1.add(jMenu1);
```

```
        jMenu2.setText("Edit");
        jMenuBar1.add(jMenu2);

        jMenu5.setText("jMenu5");

        setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);

        jPanel2.setBackground(new java.awt.Color(204, 204, 255));

        accessoryID_jlabel.setText("Accessory ID");

        accessoryID_textfield.addKeyListener(new java.awt.event.KeyAdapter() {
            public void keyPressed(java.awt.event.KeyEvent evt) {
                accessoryID_textfieldKeyPressed(evt);
            }
        });

        accessoryName_jlabel.setText("Accessory Name");

        accessoryName_textfield.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                accessoryName_textfieldActionPerformed(evt);
            }
        });

        price_jlabel.setText("Price");
```

```
brand_jlabel.setText("Brand");

price_textfield.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        price_textfieldActionPerformed(evt);
    }
});
price_textfield.addKeyListener(new java.awt.event.KeyAdapter() {
    public void keyPressed(java.awt.event.KeyEvent evt) {
        price_textfieldKeyPressed(evt);
    }
});

paidVia_jlabel.setText("Paid Via");

buttonGroup1.add(cash_radiobutton);
cash_radiobutton.setText("Cash");
cash_radiobutton.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        cash_radiobuttonActionPerformed(evt);
    }
});

buttonGroup1.add(cheque_radiobutton);
cheque_radiobutton.setText("Cheque");
cheque_radiobutton.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
```

```
            cheque_radiobuttonActionPerformed(evt);
        }
    });

    category_jlabel.setText("Category");

    category_jcombobox.setModel(new javax.swing.DefaultComboBoxModel<>(new
String[] { "--SELECT--", "Network Components", "Hardware Components", "Storage
Components" }));

    add_button.setBackground(new java.awt.Color(204, 255, 204));
    add_button.setText("ADD");
    add_button.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            add_buttonActionPerformed(evt);
        }
    });

    clear_button.setBackground(new java.awt.Color(204, 255, 204));
    clear_button.setText("Clear");
    clear_button.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            clear_buttonActionPerformed(evt);
        }
    });

    searchPrice_textfield.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
```

```
            searchPrice_textfieldActionPerformed(evt);
        }
    });
    searchPrice_textfield.addKeyListener(new java.awt.event.KeyAdapter() {
        public void keyPressed(java.awt.event.KeyEvent evt) {
            searchPrice_textfieldKeyPressed(evt);
        }
    });

    searchPrice_button.setBackground(new java.awt.Color(204, 255, 204));
    searchPrice_button.setText("Search By Price");
    searchPrice_button.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            searchPrice_buttonActionPerformed(evt);
        }
    });

    searchCategory_button.setBackground(new java.awt.Color(204, 255, 204));
    searchCategory_button.setText("Search By Category");
    searchCategory_button.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            searchCategory_buttonActionPerformed(evt);
        }
    });

    searchCategory_jcombobox.setModel(new
javax.swing.DefaultComboBoxModel<>(new String[] { "--SELECT--", "Network
Components", "Hardware Components", "Storage Components" }));
```

```
        brand_jcombobox.setModel(new javax.swing.DefaultComboBoxModel<>(new
String[] { "--SELECT--", "Apple", "Dell", "TP Link", "HP", "Lenovo" }));
        brand_jcombobox.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                brand_jcomboboxActionPerformed(evt);
            }
        });

        update_button.setBackground(new java.awt.Color(204, 255, 204));
        update_button.setText("Update Table");
        update_button.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                update_buttonActionPerformed(evt);
            }
        });

        delete_button.setBackground(new java.awt.Color(204, 255, 204));
        delete_button.setText("Delete Rows");
        delete_button.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                delete_buttonActionPerformed(evt);
            }
        });

        secondupdate_button.setBackground(new java.awt.Color(204, 255, 204));
        secondupdate_button.setText("Update");
        secondupdate_button.addActionListener(new java.awt.event.ActionListener() {
```

```
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            secondupdate_buttonActionPerformed(evt);
        }
    });

    javax.swing.GroupLayout jPanel2Layout = new javax.swing.GroupLayout(jPanel2);
    jPanel2.setLayout(jPanel2Layout);
    jPanel2Layout.setHorizontalGroup(

jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
            .addGroup(jPanel2Layout.createSequentialGroup()
                .addContainerGap()

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
                    .addGroup(jPanel2Layout.createSequentialGroup()
                        .addComponent(paidVia_jlabel,
javax.swing.GroupLayout.PREFERRED_SIZE, 73,
javax.swing.GroupLayout.PREFERRED_SIZE)
                        .addGap(42, 42, 42)
                        .addComponent(cash_radiobutton)
                        .addGap(18, 18, 18)
                        .addComponent(cheque_radiobutton))

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TR
AILING, false)
```

```
                    .addGroup(javax.swing.GroupLayout.Alignment.LEADING,
jPanel2Layout.createSequentialGroup()
                        .addComponent(accessoryName_jlabel)
                        .addGap(47, 47, 47)
                        .addComponent(accessoryName_textfield))
                    .addGroup(jPanel2Layout.createSequentialGroup()
                        .addComponent(accessoryID_jlabel,
javax.swing.GroupLayout.PREFERRED_SIZE, 73,
javax.swing.GroupLayout.PREFERRED_SIZE)
                        .addGap(53, 53, 53)
                        .addComponent(accessoryID_textfield,
javax.swing.GroupLayout.PREFERRED_SIZE, 111,
javax.swing.GroupLayout.PREFERRED_SIZE))))

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
                    .addGroup(jPanel2Layout.createSequentialGroup()
                        .addGap(36, 36, 36)
                        .addComponent(price_jlabel,
javax.swing.GroupLayout.PREFERRED_SIZE, 73,
javax.swing.GroupLayout.PREFERRED_SIZE))
                    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                        .addComponent(brand_jlabel,
javax.swing.GroupLayout.PREFERRED_SIZE, 73,
javax.swing.GroupLayout.PREFERRED_SIZE)))
                .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
```

```
.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)

                    .addComponent(category_jlabel,
javax.swing.GroupLayout.PREFERRED_SIZE, 73,
javax.swing.GroupLayout.PREFERRED_SIZE)))

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

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)

                .addComponent(price_textfield,
javax.swing.GroupLayout.PREFERRED_SIZE, 122,
javax.swing.GroupLayout.PREFERRED_SIZE)

                .addComponent(brand_jcombobox,
javax.swing.GroupLayout.PREFERRED_SIZE, 122,
javax.swing.GroupLayout.PREFERRED_SIZE)

                .addComponent(category_jcombobox,
javax.swing.GroupLayout.PREFERRED_SIZE, 122,
javax.swing.GroupLayout.PREFERRED_SIZE))

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 113,
Short.MAX_VALUE))

            .addGroup(jPanel2Layout.createSequentialGroup()

                .addGap(149, 149, 149)

                .addComponent(add_button)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)

                .addComponent(clear_button)

                .addGap(145, 145, 145)))

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING, false)

            .addGroup(jPanel2Layout.createSequentialGroup()
```

```
.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING, false)
                    .addComponent(searchCategory_jcombobox, 0, 122,
Short.MAX_VALUE)
                    .addComponent(searchPrice_textfield))
                .addGap(68, 68, 68)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING, false)
                    .addComponent(searchPrice_button,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
                    .addComponent(searchCategory_button,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE))
                .addGap(38, 38, 38))
            .addGroup(jPanel2Layout.createSequentialGroup()
                .addGap(16, 16, 16)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
                    .addGroup(jPanel2Layout.createSequentialGroup()
                        .addComponent(secondupdate_button,
javax.swing.GroupLayout.PREFERRED_SIZE, 97,
javax.swing.GroupLayout.PREFERRED_SIZE)
                        .addContainerGap())
                    .addGroup(jPanel2Layout.createSequentialGroup()
                        .addComponent(update_button)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 94,
Short.MAX_VALUE)
                        .addComponent(delete_button)
```

```
                    .addGap(57, 57, 57))))))
        );
        jPanel2Layout.setVerticalGroup(

jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel2Layout.createSequentialGroup()

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TR
AILING)
                .addGroup(jPanel2Layout.createSequentialGroup()
                    .addGap(9, 9, 9)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BA
SELINE)
                        .addComponent(price_textfield,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
                        .addComponent(price_jlabel)
                        .addComponent(accessoryID_textfield,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
                        .addComponent(accessoryID_jlabel)
                        .addComponent(searchPrice_textfield,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
                        .addComponent(searchPrice_button))

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
                        .addGroup(jPanel2Layout.createSequentialGroup()
```

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

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
                    .addComponent(searchCategory_jcombobox,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addComponent(searchCategory_button))

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 36,
Short.MAX_VALUE))
                .addGroup(jPanel2Layout.createSequentialGroup()
                    .addGap(26, 26, 26)
                    .addComponent(accessoryName_jlabel)
                    .addGap(0, 0, Short.MAX_VALUE))))
            .addGroup(jPanel2Layout.createSequentialGroup()
                .addContainerGap(javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BA
SELINE)
                .addComponent(brand_jcombobox,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(brand_jlabel)
                .addComponent(accessoryName_textfield,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(27, 27, 27)))
```

```
.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
                .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
                    .addComponent(delete_button)
                    .addGap(6, 6, 6))
                .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BA
SELINE)
                        .addComponent(update_button)
                        .addComponent(category_jcombobox,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
                        .addComponent(cash_radiobutton)
                        .addComponent(cheque_radiobutton)
                        .addComponent(paidVia_jlabel)
                        .addComponent(category_jlabel))

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

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
                .addGroup(jPanel2Layout.createSequentialGroup()
                    .addComponent(secondupdate_button)
                    .addGap(23, 23, 23))
                .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
```

```
.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BA
SELINE)
                    .addComponent(clear_button)
                    .addComponent(add_button))
                .addContainerGap())))
    );

    jTextField0.setBackground(new java.awt.Color(204, 255, 204));
    jTextField0.setFont(new java.awt.Font("Verdana", 1, 24)); // NOI18N
    jTextField0.setHorizontalAlignment(javax.swing.JTextField.CENTER);
    jTextField0.setText("Computer Accessories IS");
    jTextField0.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            jTextField0ActionPerformed(evt);
        }
    });

    Table.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}
        },
        new String [] {
            "Accessory ID", "Accessory Name", "Paid Via", "Price", "Brand", "Category"
        }
    ));
    Table.setToolTipText("");
    jScrollPane4.setViewportView(Table);
    if (Table.getColumnModel().getColumnCount() > 0) {
        Table.getColumnModel().getColumn(0).setResizable(false);
        Table.getColumnModel().getColumn(1).setResizable(false);
        Table.getColumnModel().getColumn(2).setResizable(false);
        Table.getColumnModel().getColumn(3).setResizable(false);
        Table.getColumnModel().getColumn(4).setResizable(false);
        Table.getColumnModel().getColumn(5).setResizable(false);
    }

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

jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addComponent(jTextField0)
        .addComponent(jScrollPane4, javax.swing.GroupLayout.Alignment.TRAILING)
```

```
            .addComponent(jPanel2, javax.swing.GroupLayout.Alignment.TRAILING,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

        );

        jPanel1Layout.setVerticalGroup(


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

            .addGroup(jPanel1Layout.createSequentialGroup()

                .addComponent(jTextField0, javax.swing.GroupLayout.PREFERRED_SIZE,
44, javax.swing.GroupLayout.PREFERRED_SIZE)

                .addGap(0, 0, Short.MAX_VALUE)

                .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)

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

                .addComponent(jScrollPane4, javax.swing.GroupLayout.PREFERRED_SIZE,
91, javax.swing.GroupLayout.PREFERRED_SIZE))

        );


        jMenuBar2.setBackground(new java.awt.Color(204, 204, 255));


        File_menu.setText("File");



open_jMenuItem.setAccelerator(javax.swing.KeyStroke.getKeyStroke(java.awt.event.K
eyEvent.VK_O, java.awt.event.InputEvent.CTRL_DOWN_MASK));

        open_jMenuItem.setText("Open");

        open_jMenuItem.addActionListener(new java.awt.event.ActionListener() {

            public void actionPerformed(java.awt.event.ActionEvent evt) {

                open_jMenuItemActionPerformed(evt);
```

```
        }
    });
    File_menu.add(open_jMenuItem);

    exit_MenuItem.setText("Exit");
    exit_MenuItem.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            exit_MenuItemActionPerformed(evt);
        }
    });
    File_menu.add(exit_MenuItem);

    jMenuBar2.add(File_menu);

    Help_menu.setText("Help");
    Help_menu.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            Help_menuActionPerformed(evt);
        }
    });

    help_MenuItem.setText("Help");
    help_MenuItem.addActionListener(new java.awt.event.ActionListener() {
        public void actionPerformed(java.awt.event.ActionEvent evt) {
            help_MenuItemActionPerformed(evt);
        }
    });
```

```
        Help_menu.add(help_MenuItem);


        jMenuBar2.add(Help_menu);


        setJMenuBar(jMenuBar2);


        javax.swing.GroupLayout layout = new
javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGap(0, 0, Short.MAX_VALUE))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
        );


        pack();
        setLocationRelativeTo(null);
    }// </editor-fold>


    private void jTextField0ActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
```

```
    }


    private void searchCategory_buttonActionPerformed(java.awt.event.ActionEvent evt)
{
        String categorySearch = (String) (searchCategory_jcombobox.getSelectedItem());
        int categoryCount = 0;
        String item = "";
        if (searchCategory_jcombobox.getSelectedIndex() == 0) {
            JOptionPane.showMessageDialog(null, "PLEASE SELECT A CATEGORY !!!",
"Message", JOptionPane.WARNING_MESSAGE);


        } else {


            DefaultTableModel model = (DefaultTableModel) Table.getModel();
            int row = model.getRowCount();
            for (int i = 0; i < row; i++) {
                String category_result = Table.getValueAt(i, 5).toString();
                if (category_result.equals(categorySearch)) {
                    categoryCount++;
                    item = item + "\n" + "Accessory ID: " + Table.getValueAt(i, 0) +
"\nAccessory Name: " + Table.getValueAt(i, 1) + "\nPrice:" + Table.getValueAt(i, 3) +
"\nBrand: " + Table.getValueAt(i, 4) + "\nCategory: " + Table.getValueAt(i, 5) + "\n";
                }
            }
            if (categoryCount == 0) {


                JOptionPane.showMessageDialog(null, "NO ANY ITEM OF " +
categorySearch + " CATEGORY IS FOUND.");
            } else {
```

```
            JOptionPane.showMessageDialog(null, categoryCount + " ACCESSORIES
F0UND OF " + categorySearch);
            JOptionPane.showMessageDialog(null, "DETAILS OF THE ACCESSORIES"
+ "\n" + item + "\n");
        }
    }

    // TODO add your handling code here:
  }

  private void searchPrice_buttonActionPerformed(java.awt.event.ActionEvent evt) {

    try {
        int rowCount = Table.getRowCount();
        int columnCount = Table.getColumnCount();
        boolean empty = false;
        int Index = 3;
        String search_array[] = new String[Table.getRowCount()];
        for (int i = 0; i < Table.getRowCount(); i++) {//rows //columns
            search_array[i] = ((Table.getValueAt(i, 3).toString()));

        }
        int[] numbers = new int[search_array.length];
        for (int i = 0; i < search_array.length; i++) {

            numbers[i] = Integer.parseInt(search_array[i]);

        }
```

```
MergeSorter.sort(numbers);

int priceSearch = Integer.parseInt(searchPrice_textfield.getText());

if (searchPrice_textfield.getText() != "") {
    int rows = 0;
    for (int i = 0; i < rowCount; i++) {
        if ((Table.getValueAt(i, Index)) == null) {
            break;
        }
        rows++;
    }
    if (!"".equals(priceSearch) && rows != 0) {

        int start = 0;
        int end = numbers.length - 1;

        int Result = BinarySearch.binarySearch(numbers, priceSearch);
        //int Result=Arrays.binarySearch(sortedPrice, priceSearch);

        //DefaultTableModel table= (DefaultTableModel) Table.getModel();
        if (Result != -1) {

            for (int i = 0; i < Table.getRowCount(); i++) {

                if (Integer.parseInt(Table.getValueAt(i, Index).toString()) == Result) {
                    String accessory_id = Table.getValueAt(i, 0).toString();
```

```
                    String accessory_name = Table.getValueAt(i, 1).toString();
                    String paid_via = Table.getValueAt(i, 2).toString();
                    String price = Table.getValueAt(i, 3).toString();
                    String brand = Table.getValueAt(i, 4).toString();
                    String category = Table.getValueAt(i, 5).toString();

                    JOptionPane.showMessageDialog(rootPane, "Details\n" + "\n
Accessory Name: " + accessory_name + "\nAccessory ID: " + accessory_id + "\nBrand:
" + brand + "\nItem price: " + price + "\ncategory: " + category, "Message",
JOptionPane.INFORMATION_MESSAGE);
                    break;
                }
            }
        } else {
            JOptionPane.showMessageDialog(rootPane, "SORRY! NO ANY
ACCESSORY OF PRICE Rs. " + searchPrice_textfield.getText() + " is found.",
"Message", JOptionPane.WARNING_MESSAGE);
        }
    }
}
} catch (Exception g) {
    if (searchPrice_textfield.getText().isEmpty()) {
        JOptionPane.showMessageDialog(rootPane, "PLEASE FILL THE PRICE OF
THE ACCESSORY.", "Message", JOptionPane.WARNING_MESSAGE);
        searchPrice_textfield.grabFocus();
    } else {
        JOptionPane.showMessageDialog(rootPane, "PLEASE FILL ALL THE
ROWS.", "Message", JOptionPane.WARNING_MESSAGE);
    }
}
```

```
    }

    private void cash_radiobuttonActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
    }

    private void price_textfieldActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
    }

    private void add_buttonActionPerformed(java.awt.event.ActionEvent evt) {

        String accessory_id = accessoryID_textfield.getText();
        String accessory_name = accessoryName_textfield.getText();
        String price = price_textfield.getText();
        String brand = brand_jcombobox.getSelectedItem().toString();
        String category = category_jcombobox.getSelectedItem().toString();

        String paid_via = "";
        if (cash_radiobutton.isSelected()) {
            paid_via = paid_via.concat(cash_radiobutton.getText());
        }
        if (cheque_radiobutton.isSelected()) {
            paid_via = paid_via.concat(cheque_radiobutton.getText());
        }
```

```
        Component jButton1ActionPerformed = null;
        if (!accessory_id.isEmpty()) {

            if (!accessory_name.isEmpty()) {

                if (!paid_via.isEmpty()) {

                    if (!price.isEmpty()) {

                        if (brand_jcombobox.getSelectedIndex() != 0) {

                            if (category_jcombobox.getSelectedIndex() != 0) {

                            } else {
                                JOptionPane.showMessageDialog(null, "Please select the category
of the item.");

                            }
                        } else {
                            JOptionPane.showMessageDialog(jButton1ActionPerformed, "Please
select the brand of the item.");
                        }

                    } else {
                        JOptionPane.showMessageDialog(jButton1ActionPerformed, "Please
enter the price of the item.");
                        price_textfield.grabFocus();
```

```
                }

            } else {

                JOptionPane.showMessageDialog(jButton1ActionPerformed, "Please enter
the payment method.");

            }

        } else {
            JOptionPane.showMessageDialog(jButton1ActionPerformed, "Please enter
the name of the item.");
            accessoryName_textfield.grabFocus();

        }

    } else {
        JOptionPane.showMessageDialog(jButton1ActionPerformed, "Please enter the
accesory ID of the item.");
        accessoryID_textfield.grabFocus();
    }

    String details[] = {accessory_id, accessory_name, paid_via, price, brand,
category};

    String value;
    int nextRow = 0;
    int rowCount = Table.getRowCount();
    int columnCount = Table.getColumnCount();
```

```
        boolean empty = false;


        try {
            do {
                value = (String) Table.getValueAt(nextRow, 0);


                if (value != null && value.length() != 0) {
                    nextRow++;
                } else {
                    empty = true;
                }
            } while (nextRow < rowCount && !empty);
            if (brand_jcombobox.getSelectedIndex() != 0 &&
category_jcombobox.getSelectedIndex() != 0) {
                for (int i = 0; i < columnCount; i++) {
                    Table.setValueAt(details[i], nextRow, i);


                }
                JOptionPane.showMessageDialog(jButton1ActionPerformed, "Added to
cart.");
            }
        } catch (Exception e) {
            JOptionPane.showMessageDialog(jButton1ActionPerformed, "Rows Full");
        }
    }


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

```
    }

    private void exit_MenuItemActionPerformed(java.awt.event.ActionEvent evt) {
        dispose();     // TODO add your handling code here:
    }

    private void delete_buttonActionPerformed(java.awt.event.ActionEvent evt) {
        DefaultTableModel model = (DefaultTableModel) this.Table.getModel();
        int[] rows = Table.getSelectedRows();
        for (int i = 0; i < rows.length; i++) {
            model.removeRow(rows[i] - i);
        }
        JOptionPane.showMessageDialog(rootPane, "Row Deleted.");// TODO add your
handling code here:
    }

    private void price_textfieldKeyPressed(java.awt.event.KeyEvent evt) {
        // TODO add your handling code here:
        char c = evt.getKeyChar();
        if (Character.isLetter(c)) {
            price_textfield.setEditable(false);
        } else {
            price_textfield.setEditable(true);
        }



    }
```

```
    private void accessoryID_textfieldKeyPressed(java.awt.event.KeyEvent evt) {
        // TODO add your handling code here:
        char c = evt.getKeyChar();
        if (Character.isLetter(c)) {
            accessoryID_textfield.setEditable(false);
        } else {
            accessoryID_textfield.setEditable(true);
        }
    }

    private void searchPrice_textfieldKeyPressed(java.awt.event.KeyEvent evt) {
        char c = evt.getKeyChar();
        if (Character.isLetter(c)) {
            searchPrice_textfield.setEditable(false);
        } else {
            searchPrice_textfield.setEditable(true);
        }       // TODO add your handling code here:
    }

    private void update_buttonActionPerformed(java.awt.event.ActionEvent evt) {

        int selectedRow = Table.getSelectedRow();

        if (selectedRow >= 0) {
            DefaultTableModel model = (DefaultTableModel) Table.getModel();

            accessoryID_textfield.setText(model.getValueAt(selectedRow, 0).toString());
```

```
        accessoryName_textfield.setText(model.getValueAt(selectedRow, 1).toString());
        price_textfield.setText(model.getValueAt(selectedRow, 3).toString());

        if (model.getValueAt(selectedRow, 2).toString().equals("Cash")) {
            cash_radiobutton.setSelected(true);
        }
        if (model.getValueAt(selectedRow, 2).toString().equals("Cheque")) {
            cheque_radiobutton.setSelected(true);
        }

        if (model.getValueAt(selectedRow, 4).toString().equals("Apple")) {
            brand_jcombobox.setSelectedItem("Apple");
        }
        if (model.getValueAt(selectedRow, 4).toString().equals("Dell")) {
            brand_jcombobox.setSelectedItem("Dell");
        }
        if (model.getValueAt(selectedRow, 4).toString().equals("Acer")) {
            brand_jcombobox.setSelectedItem("Acer");
        }
        if (model.getValueAt(selectedRow, 4).toString().equals("HP")) {
            brand_jcombobox.setSelectedItem("HP");
        }
        if (model.getValueAt(selectedRow, 4).toString().equals("Lenovo")) {
            brand_jcombobox.setSelectedItem("Lenovo");
        }

        if (model.getValueAt(selectedRow, 5).toString().equals("Network Components"))
{
```

```
            category_jcombobox.setSelectedItem("Network Components");
        }
        if (model.getValueAt(selectedRow, 5).toString().equals("Hardware
Components")) {
            category_jcombobox.setSelectedItem("Hardware Components");
        }

        if (model.getValueAt(selectedRow, 5).toString().equals("Storage Components"))
{
            category_jcombobox.setSelectedItem("Storage Components");
        }
        JOptionPane.showMessageDialog(rootPane, "Table Updated.");
    } else {
        JOptionPane.showMessageDialog(rootPane, "PLEASE SELECT A ROW TO
UPDATE");
    }

  }

  private void accessoryName_textfieldActionPerformed(java.awt.event.ActionEvent
evt) {
    // TODO add your handling code here:
  }

  private void searchPrice_textfieldActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
  }

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

```
    }

    private void help_MenuItemActionPerformed(java.awt.event.ActionEvent evt) {
        File file = new File("src/AppliancesInfo/userManual.pdf");
        try {
            Desktop.getDesktop().open(file);
        } catch (Exception ex) {
            JOptionPane.showMessageDialog(this, "File not found");
        }
    }

    private void open_jMenuItemActionPerformed(java.awt.event.ActionEvent evt) {

        String filePath = "E:/Emerging/data.txt";

        try {
            BufferedReader br = new BufferedReader(new FileReader(filePath));
            String firstLine = br.readLine();
            DefaultTableModel model = (DefaultTableModel) Table.getModel();
            Object[] tableLines = br.lines().toArray();

            for (int i = 0; i < tableLines.length; i++) {
                String line = tableLines[i].toString().trim();
                String[] dataRow = line.split(", ");
                model.addRow(dataRow);
```

```
        }

        JOptionPane.showMessageDialog(rootPane, "Opened Successfully.");

    } catch (Exception ex) {
        JOptionPane.showMessageDialog(rootPane, "File Not found.");

    }

}

private void cheque_radiobuttonActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
}

private void secondupdate_buttonActionPerformed(java.awt.event.ActionEvent evt) {
    int i = Table.getSelectedRow();
    DefaultTableModel model1 = (DefaultTableModel) Table.getModel();
    if (i >= 0) {

        model1.setValueAt(accessoryID_textfield.getText(), i, 0);
        model1.setValueAt(accessoryName_textfield.getText(), i, 1);
        model1.setValueAt(price_textfield.getText(), i, 3);
        if (cash_radiobutton.isSelected()) {
            model1.setValueAt(cash_radiobutton.getText(), i, 2);
        }
        if (cheque_radiobutton.isSelected()) {
```

```
            model1.setValueAt(cheque_radiobutton.getText(), i, 2);
        }
        model1.setValueAt(brand_jcombobox.getSelectedItem().toString(), i, 4);
        model1.setValueAt(category_jcombobox.getSelectedItem().toString(), i, 5);

        JOptionPane.showMessageDialog(rootPane, "UPDATED SUCCESSFULLY");

    } else {
        JOptionPane.showMessageDialog(null, "PLEASE SELECT A ROW TO
UPDATE");
    }       // TODO add your handling code here:
}

private void clear_buttonActionPerformed(java.awt.event.ActionEvent evt) {
    accessoryID_textfield.setText(null);
    accessoryName_textfield.setText(null);
    price_textfield.setText(null);
    buttonGroup1.clearSelection();
    brand_jcombobox.setSelectedIndex(0);
    category_jcombobox.setSelectedIndex(0);

}

/**
 * @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 ("Nimbus".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>

        /* 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.JMenu File_menu;
    private javax.swing.JMenu Help_menu;
    private javax.swing.JTable Table;
    private javax.swing.JLabel accessoryID_jlabel;
    private javax.swing.JTextField accessoryID_textfield;
    private javax.swing.JLabel accessoryName_jlabel;
    private javax.swing.JTextField accessoryName_textfield;
    private javax.swing.JButton add_button;
    private javax.swing.JComboBox<String> brand_jcombobox;
    private javax.swing.JLabel brand_jlabel;
    private javax.swing.ButtonGroup buttonGroup1;
    private javax.swing.JRadioButton cash_radiobutton;
    private javax.swing.JComboBox<String> category_jcombobox;
    private javax.swing.JLabel category_jlabel;
    private javax.swing.JRadioButton cheque_radiobutton;
    private javax.swing.JButton clear_button;
```

```
    private javax.swing.JButton delete_button;
    private javax.swing.JMenuItem exit_MenuItem;
    private javax.swing.JMenuItem help_MenuItem;
    private javax.swing.JMenu jMenu1;
    private javax.swing.JMenu jMenu2;
    private javax.swing.JMenu jMenu5;
    private javax.swing.JMenuBar jMenuBar1;
    private javax.swing.JMenuBar jMenuBar2;
    private javax.swing.JPanel jPanel1;
    private javax.swing.JPanel jPanel2;
    private javax.swing.JScrollPane jScrollPane1;
    private javax.swing.JScrollPane jScrollPane3;
    private javax.swing.JScrollPane jScrollPane4;
    private javax.swing.JTable jTable1;
    private javax.swing.JTable jTable3;
    private javax.swing.JTextField jTextField0;
    private javax.swing.JMenuItem open_jMenuItem;
    private javax.swing.JLabel paidVia_jlabel;
    private javax.swing.JLabel price_jlabel;
    private javax.swing.JTextField price_textfield;
    private javax.swing.JButton searchCategory_button;
    private javax.swing.JComboBox<String> searchCategory_jcombobox;
    private javax.swing.JButton searchPrice_button;
    private javax.swing.JTextField searchPrice_textfield;
    private javax.swing.JButton secondupdate_button;
    private javax.swing.JButton update_button;
    // End of variables declaration
```

```
}
```

10.2. MergeSorter Class

```
package AppliancesInfo;

import java.util.Arrays;

/*
 * 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.
 */
/**
 *
 * @author ASUS
 */
public class MergeSorter {

    public static void sort(int[] a) {
        if (a.length <= 1) {
            return;
        }

        int[] first = new int[a.length / 2];
        int[] second = new int[a.length - first.length];

        for (int i = 0; i < first.length; i++) {
            first[i] = a[i];
```

```
        }
        for (int i = 0; i < second.length; i++) {
            second[i] = a[first.length + i];
        }

        sort(first);
        sort(second);

        merge(first, second, a);
    }

    public static void merge(int[] first, int[] second, int[] a) {
        int iFirst = 0;
        int iSecond = 0;
        int j = 0;

        while (iFirst < first.length && iSecond < second.length) {
            if (first[iFirst] < second[iSecond]) {
                a[j] = first[iFirst];

                iFirst++;
            } else {
                a[j] = second[iSecond];

                iSecond++;
            }
            j++;
```

```
        }
        while (iFirst < first.length) {
            a[j] = first[iFirst];
            iFirst++;
            j++;
        }
        while (iSecond < second.length) {
            a[j] = second[iSecond];
            iSecond++;
            j++;
        }
    }

}
```

10.3. BinarySearch 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 AppliancesInfo;

/**
 *
 * @author ktm
 */
public class BinarySearch {
```

```
    public static int binarySearch(int myarray[], int x) {

        int a = 0;
        int b = myarray.length - 1;

        while (a <= b) {

            int mid = (a + b) / 2;
            if (myarray[mid] == x) {
                return myarray[mid];
            } else if (x > myarray[mid]) {
                a = mid + 1;
            } else {
                b = mid - 1;
            }
        }

        return -1;

    }
}
```

11. Appendix B

11.1. LoginFrame 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 AppliancesInfo;

import javax.swing.JFrame;
import javax.swing.JOptionPane;

/**
 *
 * @author ktm
 */
public class LoginFrame extends javax.swing.JFrame {

    /**
     * Creates new form LoginFrame
     */
    public LoginFrame() {
        initComponents();

    }

    /**
     * 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() {

        jPanel1 = new javax.swing.JPanel();
        jLabel1 = new javax.swing.JLabel();
        jLabel2 = new javax.swing.JLabel();
        jLabel3 = new javax.swing.JLabel();
        jPanel2 = new javax.swing.JPanel();
        username_jlabel = new javax.swing.JLabel();
        password_jLabel = new javax.swing.JLabel();
        username_jTextField = new javax.swing.JTextField();
        login_jButton = new javax.swing.JButton();
        password_jPasswordField = new javax.swing.JPasswordField();
        reset_jButton = new javax.swing.JButton();
        jLabel6 = new javax.swing.JLabel();
        jLabel7 = new javax.swing.JLabel();

        setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);
        setUndecorated(true);

        jPanel1.setBackground(new java.awt.Color(204, 255, 204));

        jLabel1.setFont(new java.awt.Font("Tahoma", 0, 24)); // NOI18N
        jLabel1.setText("LOGIN FORM");

        jLabel2.setFont(new java.awt.Font("Tahoma", 0, 24)); // NOI18N
```

```
        jLabel2.setText("-");
        jLabel2.addMouseListener(new java.awt.event.MouseAdapter() {
            public void mouseClicked(java.awt.event.MouseEvent evt) {
                jLabel2MouseClicked(evt);
            }
        });

        jLabel3.setFont(new java.awt.Font("Tahoma", 0, 24)); // NOI18N
        jLabel3.setText("X");
        jLabel3.addMouseListener(new java.awt.event.MouseAdapter() {
            public void mouseClicked(java.awt.event.MouseEvent evt) {
                jLabel3MouseClicked(evt);
            }
        });

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

jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel1Layout.createSequentialGroup()
                .addGap(37, 37, 37)
                .addComponent(jLabel1)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                .addComponent(jLabel2)
                .addGap(18, 18, 18)
                .addComponent(jLabel3)
```

```
            .addContainerGap())
        );
        jPanel1Layout.setVerticalGroup(
jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel1Layout.createSequentialGroup()
                .addGap(19, 19, 19)
.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BA
SELINE)
                    .addComponent(jLabel1)
                    .addComponent(jLabel2)
                    .addComponent(jLabel3))
                .addContainerGap(20, Short.MAX_VALUE))
        );

        jPanel2.setBackground(new java.awt.Color(204, 204, 255));

        username_jlabel.setText("Username :");

        password_jLabel.setText("Password :");

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

```
        login_jButton.setBackground(new java.awt.Color(204, 255, 204));
        login_jButton.setText("Login");
        login_jButton.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                login_jButtonActionPerformed(evt);
            }
        });

        reset_jButton.setBackground(new java.awt.Color(204, 255, 204));
        reset_jButton.setText("Reset");
        reset_jButton.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                reset_jButtonActionPerformed(evt);
            }
        });

        jLabel6.setFont(new java.awt.Font("Tahoma", 2, 10)); // NOI18N
        jLabel6.setText("use-admin");

        jLabel7.setFont(new java.awt.Font("Tahoma", 2, 10)); // NOI18N
        jLabel7.setText("use-admin");

        javax.swing.GroupLayout jPanel2Layout = new javax.swing.GroupLayout(jPanel2);
        jPanel2.setLayout(jPanel2Layout);
        jPanel2Layout.setHorizontalGroup(

jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel2Layout.createSequentialGroup()
```

```
.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
                .addGroup(jPanel2Layout.createSequentialGroup()
                    .addGap(78, 78, 78)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
                        .addComponent(username_jlabel)
                        .addComponent(password_jLabel))
                    .addGap(58, 58, 58))
                .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
                    .addContainerGap()
                    .addComponent(reset_jButton)
                    .addGap(15, 15, 15)))

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING, false)
                    .addComponent(username_jTextField,
javax.swing.GroupLayout.DEFAULT_SIZE, 136, Short.MAX_VALUE)
                    .addComponent(password_jPasswordField))
                .addGroup(jPanel2Layout.createSequentialGroup()
                    .addGap(16, 16, 16)
                    .addComponent(login_jButton)))
            .addContainerGap(73, Short.MAX_VALUE))
        .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
```

```
            .addGap(0, 0, Short.MAX_VALUE)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
                .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
                    .addComponent(jLabel6)
                    .addGap(122, 122, 122))
                .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
                    .addComponent(jLabel7)
                    .addGap(124, 124, 124))))
        );
        jPanel2Layout.setVerticalGroup(

jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel2Layout.createSequentialGroup()
                .addGap(22, 22, 22)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TR
AILING)
                    .addComponent(username_jlabel)
                    .addComponent(username_jTextField,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGap(5, 5, 5)
                .addComponent(jLabel6)

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

```
.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BA
SELINE)
                .addComponent(password_jLabel)
                .addComponent(password_jPasswordField,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(2, 2, 2)
            .addComponent(jLabel7)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
27, Short.MAX_VALUE)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BA
SELINE)
                .addComponent(reset_jButton)
                .addComponent(login_jButton))
            .addGap(23, 23, 23))
        );


        javax.swing.GroupLayout layout = new
javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
            .addComponent(jPanel2, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
        );
        layout.setVerticalGroup(
```

```
        layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(layout.createSequentialGroup()
            .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(0, 2, Short.MAX_VALUE)
            .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
    );

    pack();
    setLocationRelativeTo(null);
}// </editor-fold>

private void username_jTextFieldActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
}

private void login_jButtonActionPerformed(java.awt.event.ActionEvent evt) {
    String username = username_jTextField.getText();
    String password = password_jPasswordField.getText();
    if (!username.equals("admin") && !password.equals("admin")) {

    }
    try {

        if (username.equals("admin")) {
            if (password.equals("admin")) {
```

```
                AppliancesInfo a = new AppliancesInfo();
                a.setVisible(true);
                a.pack();
                a.setLocationRelativeTo(null);
                a.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
                this.dispose();

            } else {
                JOptionPane.showMessageDialog(rootPane, "Incorrect password!!!");
                password_jPasswordField.setText(null);
                password_jPasswordField.grabFocus();
            }
        } else {
            JOptionPane.showMessageDialog(rootPane, "Incorrect username !!!");
            username_jTextField.setText(null);
            username_jTextField.grabFocus();
        }
    } catch (Exception e) {
        e.getMessage();
    }

//LoginFrame lg=new LoginFrame();
//lg.dispose();
   }

   private void jLabel3MouseClicked(java.awt.event.MouseEvent evt) {
      dispose();        // TODO add your handling code here:
```

```
    }

    private void jLabel2MouseClicked(java.awt.event.MouseEvent evt) {
        this.setState(JFrame.ICONIFIED);       // TODO add your handling code here:
    }

    private void reset_jButtonActionPerformed(java.awt.event.ActionEvent evt) {
        username_jTextField.setText(null);
        password_jPasswordField.setText(null);
// TODO add your handling code here:
    }

    /**
     * @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 ("Nimbus".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
```

```
                break;
            }
        }
    } catch (ClassNotFoundException ex) {
java.util.logging.Logger.getLogger(LoginFrame.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (InstantiationException ex) {
java.util.logging.Logger.getLogger(LoginFrame.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (IllegalAccessException ex) {
java.util.logging.Logger.getLogger(LoginFrame.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (javax.swing.UnsupportedLookAndFeelException ex) {
java.util.logging.Logger.getLogger(LoginFrame.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    }
    //</editor-fold>

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

```
    // Variables declaration - do not modify
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel6;
    private javax.swing.JLabel jLabel7;
    private javax.swing.JPanel jPanel1;
    private javax.swing.JPanel jPanel2;
    private javax.swing.JButton login_jButton;
    private javax.swing.JLabel password_jLabel;
    private javax.swing.JPasswordField password_jPasswordField;
    private javax.swing.JButton reset_jButton;
    private javax.swing.JTextField username_jTextField;
    private javax.swing.JLabel username_jlabel;
    // End of variables declaration
}
```

11.2. Screen 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 AppliancesInfo;

import javax.swing.JFrame;
```

```
import javax.swing.JOptionPane;

/**
 *
 * @author ktm
 */
public class LoginFrame extends javax.swing.JFrame {

    /**
     * Creates new form LoginFrame
     */
    public LoginFrame() {
        initComponents();

    }

    /**
     * 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() {

        jPanel1 = new javax.swing.JPanel();
        jLabel1 = new javax.swing.JLabel();
```

```
jLabel2 = new javax.swing.JLabel();
jLabel3 = new javax.swing.JLabel();
jPanel2 = new javax.swing.JPanel();
username_jlabel = new javax.swing.JLabel();
password_jLabel = new javax.swing.JLabel();
username_jTextField = new javax.swing.JTextField();
login_jButton = new javax.swing.JButton();
password_jPasswordField = new javax.swing.JPasswordField();
reset_jButton = new javax.swing.JButton();
jLabel6 = new javax.swing.JLabel();
jLabel7 = new javax.swing.JLabel();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);
setUndecorated(true);

jPanel1.setBackground(new java.awt.Color(204, 255, 204));

jLabel1.setFont(new java.awt.Font("Tahoma", 0, 24)); // NOI18N
jLabel1.setText("LOGIN FORM");

jLabel2.setFont(new java.awt.Font("Tahoma", 0, 24)); // NOI18N
jLabel2.setText("-");
jLabel2.addMouseListener(new java.awt.event.MouseAdapter() {
    public void mouseClicked(java.awt.event.MouseEvent evt) {
        jLabel2MouseClicked(evt);
    }
});
```

```
        jLabel3.setFont(new java.awt.Font("Tahoma", 0, 24)); // NOI18N
        jLabel3.setText("X");
        jLabel3.addMouseListener(new java.awt.event.MouseAdapter() {
            public void mouseClicked(java.awt.event.MouseEvent evt) {
                jLabel3MouseClicked(evt);
            }
        });

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

jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel1Layout.createSequentialGroup()
                .addGap(37, 37, 37)
                .addComponent(jLabel1)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                .addComponent(jLabel2)
                .addGap(18, 18, 18)
                .addComponent(jLabel3)
                .addContainerGap())
        );
        jPanel1Layout.setVerticalGroup(

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

```
            .addGap(19, 19, 19)

.addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BA
SELINE)
                .addComponent(jLabel1)
                .addComponent(jLabel2)
                .addComponent(jLabel3))
            .addContainerGap(20, Short.MAX_VALUE))
        );

        jPanel2.setBackground(new java.awt.Color(204, 204, 255));

        username_jlabel.setText("Username :");

        password_jLabel.setText("Password :");

        username_jTextField.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                username_jTextFieldActionPerformed(evt);
            }
        });

        login_jButton.setBackground(new java.awt.Color(204, 255, 204));
        login_jButton.setText("Login");
        login_jButton.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                login_jButtonActionPerformed(evt);
            }
```

```
        });

        reset_jButton.setBackground(new java.awt.Color(204, 255, 204));
        reset_jButton.setText("Reset");
        reset_jButton.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                reset_jButtonActionPerformed(evt);
            }
        });

        jLabel6.setFont(new java.awt.Font("Tahoma", 2, 10)); // NOI18N
        jLabel6.setText("use-admin");

        jLabel7.setFont(new java.awt.Font("Tahoma", 2, 10)); // NOI18N
        jLabel7.setText("use-admin");

        javax.swing.GroupLayout jPanel2Layout = new javax.swing.GroupLayout(jPanel2);
        jPanel2.setLayout(jPanel2Layout);
        jPanel2Layout.setHorizontalGroup(

jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel2Layout.createSequentialGroup()

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
                    .addGroup(jPanel2Layout.createSequentialGroup()
                        .addGap(78, 78, 78)
```

```
.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
                    .addComponent(username_jlabel)
                    .addComponent(password_jLabel))
                .addGap(58, 58, 58))
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
                .addContainerGap()
                .addComponent(reset_jButton)
                .addGap(15, 15, 15)))

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING, false)
                .addComponent(username_jTextField,
javax.swing.GroupLayout.DEFAULT_SIZE, 136, Short.MAX_VALUE)
                .addComponent(password_jPasswordField))
            .addGroup(jPanel2Layout.createSequentialGroup()
                .addGap(16, 16, 16)
                .addComponent(login_jButton)))
        .addContainerGap(73, Short.MAX_VALUE))
    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
        .addGap(0, 0, Short.MAX_VALUE)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LE
ADING)
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
```

```
                .addComponent(jLabel6)
                .addGap(122, 122, 122))
            .addGroup(javax.swing.GroupLayout.Alignment.TRAILING,
jPanel2Layout.createSequentialGroup()
                .addComponent(jLabel7)
                .addGap(124, 124, 124))))
    );
    jPanel2Layout.setVerticalGroup(

jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(jPanel2Layout.createSequentialGroup()
            .addGap(22, 22, 22)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TR
AILING)
                .addComponent(username_jlabel)
                .addComponent(username_jTextField,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGap(5, 5, 5)
            .addComponent(jLabel6)

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

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BA
SELINE)
                .addComponent(password_jLabel)
                .addComponent(password_jPasswordField,
javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
```

```
            .addGap(2, 2, 2)
            .addComponent(jLabel7)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
27, Short.MAX_VALUE)

.addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BA
SELINE)
               .addComponent(reset_jButton)
               .addComponent(login_jButton))
            .addGap(23, 23, 23))
      );

      javax.swing.GroupLayout layout = new
javax.swing.GroupLayout(getContentPane());
      getContentPane().setLayout(layout);
      layout.setHorizontalGroup(
         layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
         .addComponent(jPanel1, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
         .addComponent(jPanel2, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
      );
      layout.setVerticalGroup(
         layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
         .addGroup(layout.createSequentialGroup()
            .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addGap(0, 2, Short.MAX_VALUE)
```

```
            .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
        );

        pack();
        setLocationRelativeTo(null);
    }// </editor-fold>

    private void username_jTextFieldActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
    }

    private void login_jButtonActionPerformed(java.awt.event.ActionEvent evt) {
        String username = username_jTextField.getText();
        String password = password_jPasswordField.getText();
        if (!username.equals("admin") && !password.equals("admin")) {

        }
        try {

            if (username.equals("admin")) {
                if (password.equals("admin")) {
                    AppliancesInfo a = new AppliancesInfo();
                    a.setVisible(true);
                    a.pack();
                    a.setLocationRelativeTo(null);
                    a.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
```

```
                this.dispose();

            } else {
                JOptionPane.showMessageDialog(rootPane, "Incorrect password!!!");
                password_jPasswordField.setText(null);
                password_jPasswordField.grabFocus();
            }
        } else {
            JOptionPane.showMessageDialog(rootPane, "Incorrect username !!!");
            username_jTextField.setText(null);
            username_jTextField.grabFocus();
        }
    } catch (Exception e) {
        e.getMessage();
    }

//LoginFrame lg=new LoginFrame();
//lg.dispose();
    }

    private void jLabel3MouseClicked(java.awt.event.MouseEvent evt) {
        dispose();        // TODO add your handling code here:
    }

    private void jLabel2MouseClicked(java.awt.event.MouseEvent evt) {
        this.setState(JFrame.ICONIFIED);       // TODO add your handling code here:
    }
```

```
    private void reset_jButtonActionPerformed(java.awt.event.ActionEvent evt) {
        username_jTextField.setText(null);
        password_jPasswordField.setText(null);
// TODO add your handling code here:
    }


    /**
     * @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 ("Nimbus".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
                    break;
                }
            }
        } catch (ClassNotFoundException ex) {
```

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

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

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

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

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

    // Variables declaration - do not modify
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
```

```
    private javax.swing.JLabel jLabel6;
    private javax.swing.JLabel jLabel7;
    private javax.swing.JPanel jPanel1;
    private javax.swing.JPanel jPanel2;
    private javax.swing.JButton login_jButton;
    private javax.swing.JLabel password_jLabel;
    private javax.swing.JPasswordField password_jPasswordField;
    private javax.swing.JButton reset_jButton;
    private javax.swing.JTextField username_jTextField;
    private javax.swing.JLabel username_jlabel;
    // End of variables declaration
}
```