SELECT YOUR SMART PHONE

A Course Project Report

in partial fulfillment of the subject

Object-Oriented Programming through Java

By

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CERTIFICATE

This is to certify that the Course Project Report entitled "SELECT YOUR SMART PHONE" is a record of bonafide work carried out by the student(s) M. Shashank and N. Bhavith bearing Roll No(s) 19K41A0416, 19K41A0450 during the academic year 2021-22 in partial fulfillment of the award of the degree of **Bachelor of Technology** in **ELECTRONICS & COMMUNICATION ENGINEERING** by the Jawaharlal Nehru Technological University, Hyderabad.

Supervisor **Head of the Department**

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I also thank the other staff members and friends assisted us. Finally, I thank my parents who inspired us always to do the best.

ABSTRACT

Mobile phones are becoming a primary platform for information access and the widespread use of them in the various information access means that it provided to its users, and the vast presence and significant impact of mobile phone on users daily life make mobile phones important devices to study. There are several mobile phones accessible on the market, with different models released year after year. The factors that should be considered while buying a smart phone are brand, price, RAM, ROM, screen, battery, camera and processor. The problem statement for this research is deciding on the right mobile phone to purchase and determining the best value for money when selecting a mobile phone. This problem can be solved by the application we developed here we can give input of smart phone brand and price range required, which recommends a smart phone with its specifications.

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1. INTRODUCTION

In today's world, the use of a mobile phone has become an integral part of one's life, it is almost impossible to live without one. Back in the day, a mobile phone was just another electronic device on the market but today almost every household owns one. According to The Statistics Portal (2019), "the number of mobile phone users is forecast to reach 4.68 billion in 2019". This suggests that, approximately 60% of the word population will have a mobile phone by the end of 2019.However, this information is not really surprising because mobile phone ownership rate is increasing year after year. Technological advancements and the introduction of innovative features including video calling, mobile payment applications and social media applications are the major reasons why the new generation seem to be so obsessed with the use mobile phones. Also, the constant change in the taste and preferences of mobile phone consumers are the reasons why mobile phone manufacturers introduce new versions of their products year after year. Since there are several mobile phone users worldwide and new brands on the market year after year, research on the factors influencing mobile phone selection would be a value addition to this sphere of research.

PROBLEM STATEMENT

There are several mobile phones on the market, each with completely different specifications including size, weight, colour, memory capacity and camera quality. Deciding on a mobile phone to purchase can be mind-boggling and stressful, especially when a user has limited amount of money. It is also difficult for a mobile phone user to determine the best value for money when selecting a mobile phone.

2. LITERATURE SURVEY

- Rommy Odaymat in his research proposes that most of the time, mobile phone users believe that, the more expensive a phone is, the better the quality and features, disregarding that the fact that the brand of the mobile phone also influences user's buying behaviour. The results of this research is expected to provide information to mobile phone users on how to make informed decisions when selecting a mobile phone as well as how to gain value for the money spent.

3. DESIGN

3.1 REQUIREMENT SPECIFICATION(S/W & H/W)

Hardware Requirements

- ✓ **System** : Pentium 4, Intel Core i3, i5, i7 and 2GHz Minimum
- ✓ **RAM** : 4GB or above
- ✓ **Hard Disk** : 10GB or above
- ✓ **Input** : Keyboard and Mouse
- ✓ **Output** : Monitor or PC

Software Requirements

- ✓ **OS** : Windows 8 or Higher Versions
- ✓ **Platform** : Eclipse or VS code
- ✓ **Program Language** : Java

Diagram:

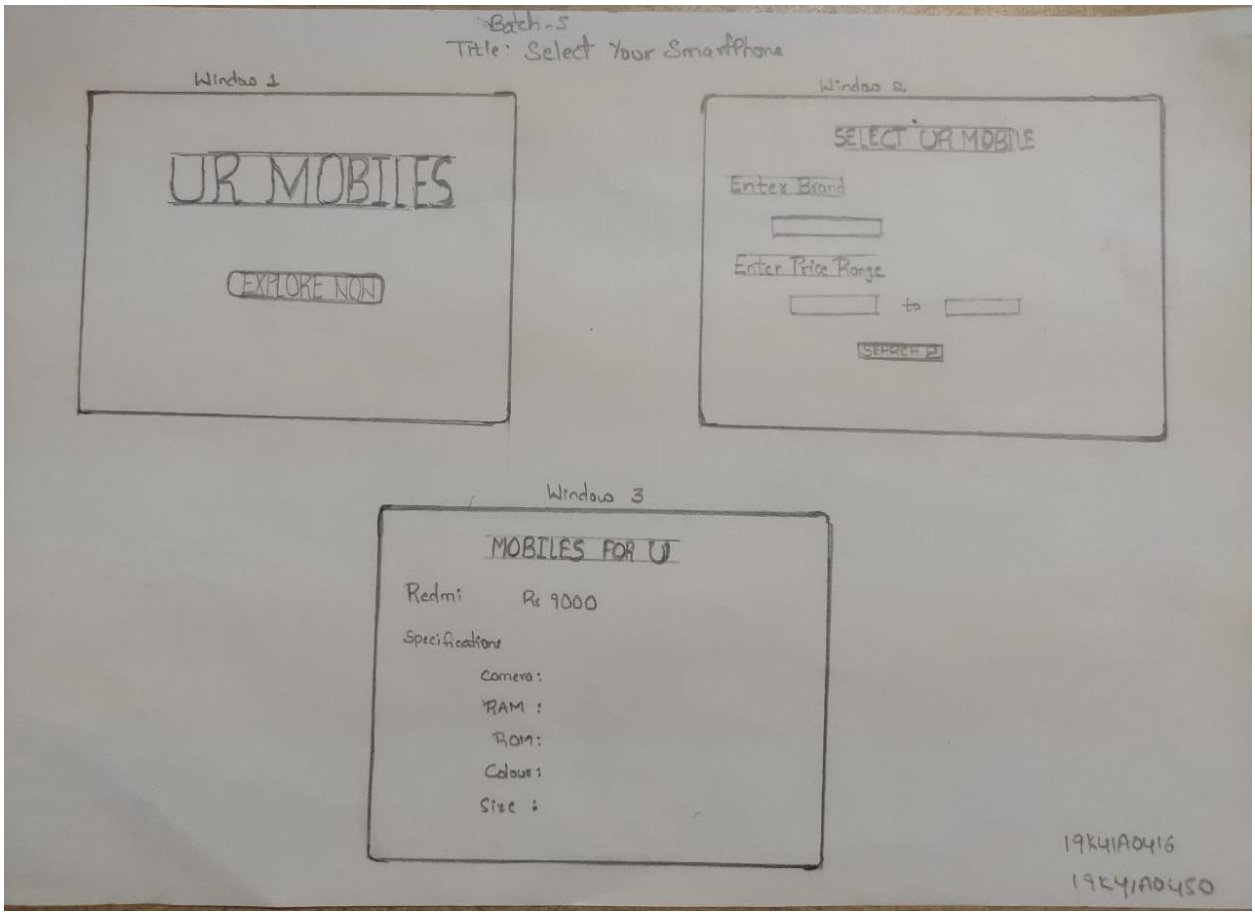

Figure 1: Design diagram of the project

4. IMPLEMENTATION

JFrame: The javax.swing.JFrame class is a type of container which inherits the java.awt.Frame class. JFrame works like the main window where components like labels, buttons, textfields are added to create a GUI.

Unlike Frame, JFrame has the option to hide or close the window with the help of setDefaultCloseOperation() method.

JLabel: The object of JLabel class is a component for placing text in a container. It is used to display a single line of read only text. The text can be changed by an application but a user cannot edit it directly. It inherits JComponent class.

JButton: The JButton class is used to create a labeled button that has platform independent implementation. The application result in some action when the button is pushed. It inherits AbstractButton class.

JComboBox: JComboBox is a part of Java Swing package. JComboBox inherits JComponent class. JComboBox shows a popup menu that shows a list and the user can select an option from that specified list. JComboBox can be editable or read- only depending on the choice of the programmer.

setBounds( ): Moves and resizes this component. The new location of the top-left corner is specified by x and y, and the new size is specified by width and height.

setDefaultCloseOperation( ): Sets the operation that will happen by default when the user initiates a "close" on this frame. You must specify one of the following choices:

- **DO_NOTHING_ON_CLOSE (defined in WindowConstants):** Don't do anything; require the program to handle the operation in the windowClosing method of a registered WindowListener object.
- **HIDE_ON_CLOSE (defined in WindowConstants):** Automatically hide the frame after invoking any registered WindowListener objects.
- DISPOSE_ON_CLOSE (defined in WindowConstants): Automatically hide and dispose the frame after invoking any registered WindowListener objects.
- **EXIT_ON_CLOSE (defined in WindowConstants):** Exit the application using the System exit method. Use this only in applications.

setLayout( ): Sets the LayoutManager. Overridden to conditionally forward the call to the contentPane.

setVisible( ): Shows or hides this Window depending on the value of parameter boolean b.

addActionListener( ): Adds an ActionListener to the button.

ActionListener( ): The listener interface for receiving action events. The class that is interested in processing an action event implements this interface, and the object created with that class is registered with a component, using the component's addActionListener method. When the action event occurs, that object's actionPerformed method is invoked.

actionPerformed( ): Invoked when an action occurs.

ActionEvent: A semantic event which indicates that a component-defined action occurred. This high-level event is generated by a component (such as a Button) when the component-specific action occurs (such as being pressed). The event is passed to every ActionListener object that registered to receive such events using the component's addActionListener method.

add( ): This method changes layout-related information, and therefore, invalidates the component hierarchy. If the container has already been displayed, the hierarchy must be validated thereafter in order to display the added component.

getContentPane( ): Returns the contentPane object for this frame.

removeAll( ): Removes all the components from this container. This method also notifies the layout manager to remove the components from this container's layout via the removeLayoutComponent method.

repaint( ): Repaints this component. If this component is a lightweight component, this method causes a call to this component's paint method as soon as possible. Otherwise, this method causes a call to this component's update method as soon as possible.

addItem( ): Adds an item to the item list. This method works only if the JComboBox uses a mutable data model.

setText( ): Defines the single line of text this component will display. If the value of text is null or empty string, nothing is displayed.

File( ): Creates a new File instance by converting the given pathname string into an abstract pathname. If the given string is the empty string, then the result is the empty abstract pathname.

FileWriter( ): Constructs a FileWriter given the File to write and a boolean indicating whether to append the data written, using the platform's default charset.

BufferedWriter( ): Creates a buffered character-output stream that uses a default-sized output buffer.

Overview of technology:

A two dimensional String array is created which stores the details of the smartphones like brand, price, model, rear camera, front camera, RAM, ROM, processor, display, battery and charging speed.

Window1: In this window it consists of two elements they are JLabel and JButton.

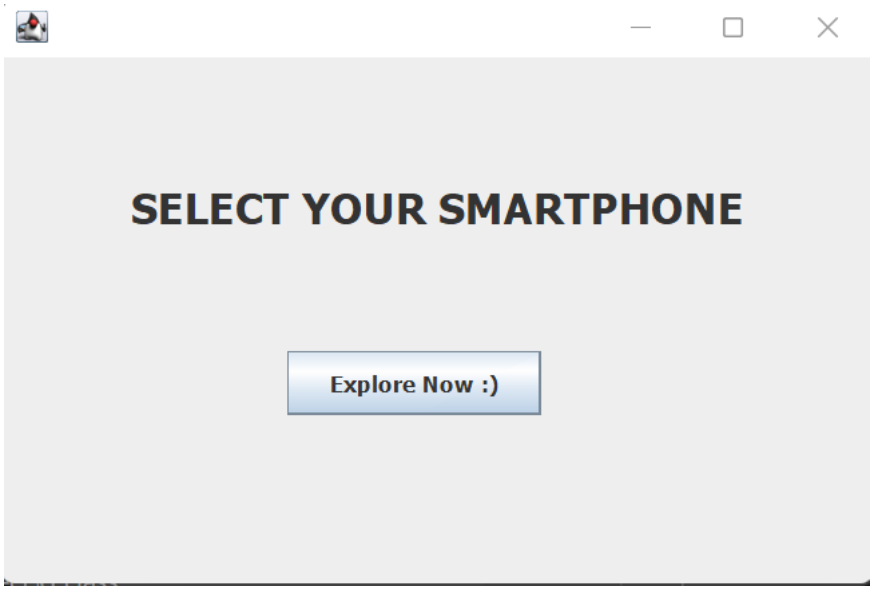

Figure 2: Window 1

By clicking on Explore Now button it is directed to 2nd window.

Window 2: It consists of three JLabel, three JComboBox and a JButton.

- 1st JComboBox allows to select the smartphone brand.
- 2nd JComboBox allows to select initial price.
- 3rd JComboBox allows to select final price.

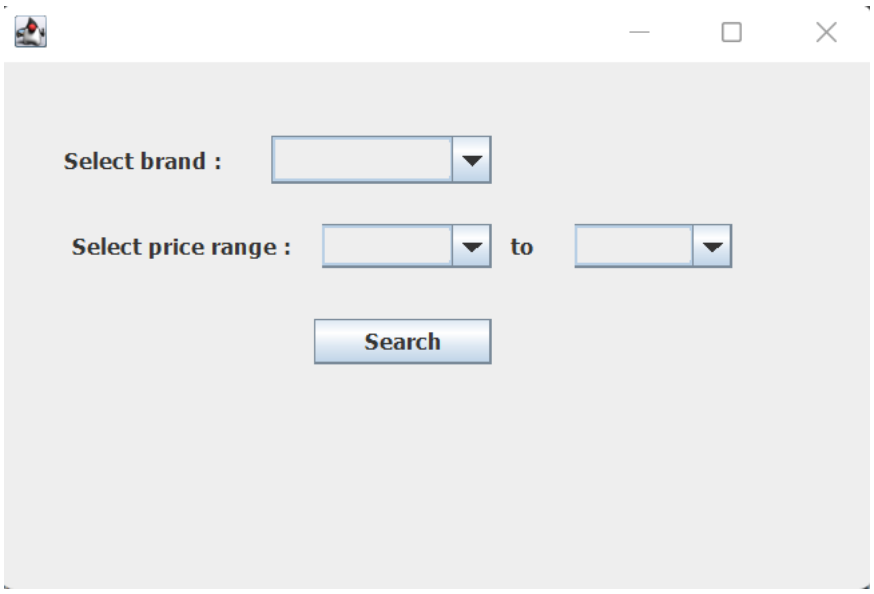

Figure 3: Window 2

By clicking on Search button it directs to 3rd window.

Window 3: It consists of eight JLabel and one JButton.

Each JLabel display the specifications of the recommended smartphone.

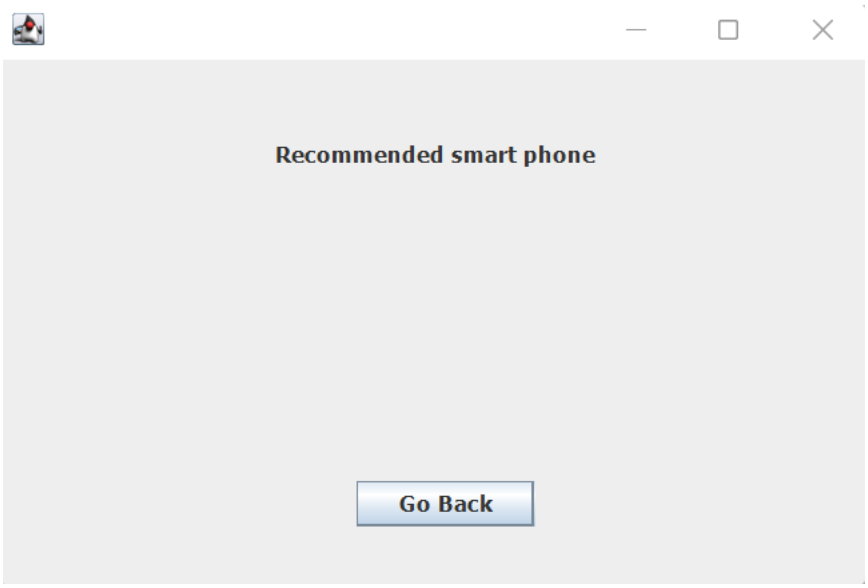

Figure 4: Window 3

By clicking on the Go Back button it directs to window 2.

The output i.e final recommended smartphone with its specifications are stored in a text file so that it can be used for future.

Source code of the project:

```
import java.awt.*;
import javax.swing.*;
import java.awt.event.*;
import java.io.*;
public class Project {
   public static JFrame frame;
   static String[][] mobile = {
      {"Samsung", "9999", "Galaxy M12", "13+2MP","8MP","4GB", "64GB","Exynos 9866","FHD+
LCD 60Hz", "5000 mAh", "15W" },
      {"Samsung", "17999", "Galaxy M32", "64+8+5MP","16MP","6GB", "64GB / 128GB","SD
695","FHD+ Amoled 90Hz", "6000 mAh", "25W" },
                  {"Samsung", "25999", "Galaxy M53", "108+8+2+2MP","20MP","6GB / 8GB",
"128GB / 256GB","Dimensity 900", "FHD+ Amoled 120Hz", "5000 mAh", "45W"},
                  {"Realme", "8999", "C15", "13+2MP","8MP","3GB", "64GB","Helio G80","FHD+
LCD 60Hz", "6000 mAh", "15W" },
                  {"Realme", "19999", "9 pro", "64+8+2MP","16MP","6GB", "128GB","SD
695","HD+ LCD 120Hz", "5000 mAh", "30W" },
                  {"Realme", "24999", "9 pro+", "50MP+8+2","16MP","6GB / 8GB",
"128GB","Dimensity 920","FHD+ Amoled 90Hz", "5000 mAh", "65W" },
                  {"Vivo", "9449", "Y12s", "13+2MP","8MP","3GB", "64GB","SD 439","HD+ LCD
60Hz", "5000 mAh", "10W" },
                  {"Vivo", "14999", "T1", "48+2+2MP","16MP","6GB", "64GB / 128GB","SD
695","FHD+ LCD 120Hz", "5000 mAh", "18W" },
                  {"Vivo", "24449", "T1pro", "64+8+2MP","16MP","6GB / 8GB", "128GB","SD
778","FHD+ Amoled 120Hz", "4500 mAh", "65W" },
                  {"Oppo", "8449", "Y53", "13+2MP","8MP","3GB", "32GB / 64GB","SD 439","HD+
LCD 60Hz", "5000 mAh", "10W" },
                  {"Oppo", "18999", "F23", "48+2+2MP","16MP","6GB", "64GB / 128GB","SD
720","FHD+ LCD 120Hz", "5000 mAh", "18W" },
                  {"Oppo", "26999", "Reno7", "108+8+2MP","16MP","6GB / 8GB",
"128GB","Dimensity 900","FHD+ Amoled 60Hz", "4500 mAh", "33W" },
                  {"Mi", "7999", "note 10 lite", "13+2+2MP","8MP","3GB", "64GB","Helio P35","HD+
LCD 60Hz", "5000 mAh", "10W" },
                  {"Mi", "17999", "note 9 pro", "48+8+2MP","16MP","6GB", "64GB / 128GB","SD
695","FHD+ Amoled 120Hz", "5000 mAh", "33W" },
                  {"Mi", "24999", "11 lite", "64+8+2MP","16MP","6GB / 8GB", "128GB","SD
778","FHD+ Amoled 120Hz", "4500 mAh", "65W" }
   };
   public static void main(String[] args) {
      frame = new JFrame();
                  frame.setBounds(100, 100, 450, 300);
                  frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
                  frame.setLayout(null);
      frame.setVisible(true);

                  JLabel lblNewLabel = new JLabel("SELECT YOUR SMATRPHONE");
                  lblNewLabel.setHorizontalAlignment(SwingConstants.CENTER);
                  lblNewLabel.setFont(new Font("Tahoma", Font.BOLD, 21));
                  lblNewLabel.setBounds(50, 23, 337, 104);
                  frame.add(lblNewLabel);

                  JButton btnNewButton = new JButton("Explore Now :)");
                  btnNewButton.addActionListener(new ActionListener() {
                        public void actionPerformed(ActionEvent e) {
```

```
                        Window2();
                    }
                });
                btnNewButton.setFont(new Font("Tahoma", Font.BOLD, 11));
                btnNewButton.setBounds(143, 147, 127, 32);
                frame.add(btnNewButton);
        }
        public static void Window2() {
                frame.getContentPane().removeAll();
frame.repaint();
                JLabel lblNewLabel = new JLabel("Select brand :");
                lblNewLabel.setHorizontalAlignment(SwingConstants.CENTER);
                lblNewLabel.setFont(new Font("Tahoma", Font.BOLD, 11));
                lblNewLabel.setBounds(29, 37, 85, 24);
                frame.add(lblNewLabel);

                JComboBox comboBox = new JComboBox();
                comboBox.addItem("");
                comboBox.addItem("Samsung");
                comboBox.addItem("Realme");
                comboBox.addItem("Vivo");
                comboBox.addItem("Oppo");
                comboBox.addItem("Mi");
                comboBox.setBounds(136, 37, 110, 24);
                frame.add(comboBox);

                JLabel lblNewLabel_1 = new JLabel("Select price range :");
                lblNewLabel_1.setHorizontalAlignment(SwingConstants.CENTER);
                lblNewLabel_1.setFont(new Font("Tahoma", Font.BOLD, 11));
                lblNewLabel_1.setBounds(29, 85, 122, 14);
                frame.add(lblNewLabel_1);

                JComboBox comboBox_1 = new JComboBox();
                comboBox_1.addItem("");
                comboBox_1.addItem("0");
                comboBox_1.addItem("10000");
                comboBox_1.addItem("20000");
                comboBox_1.addItem("30000");
                comboBox_1.addItem("40000");
                comboBox_1.addItem("50000");
                comboBox_1.setBounds(161, 81, 85, 22);
                frame.add(comboBox_1);

                JLabel lblNewLabel_2 = new JLabel("to");
                lblNewLabel_2.setHorizontalAlignment(SwingConstants.CENTER);
                lblNewLabel_2.setFont(new Font("Tahoma", Font.BOLD, 11));
                lblNewLabel_2.setBounds(245, 85, 32, 14);
                frame.add(lblNewLabel_2);

                JComboBox comboBox_2 = new JComboBox();
                comboBox_2.addItem("");
                comboBox_2.addItem("10000");
                comboBox_2.addItem("20000");
                comboBox_2.addItem("30000");
                comboBox_2.addItem("40000");
```

```
		comboBox_2.addItem("50000");
		comboBox_2.setBounds(287, 81, 79, 22);
		frame.add(comboBox_2);

		JLabel lblNewLabel_3 = new JLabel("");
		lblNewLabel_3.setHorizontalAlignment(SwingConstants.CENTER);
		lblNewLabel_3.setBounds(48, 174, 306, 34);
		frame.add(lblNewLabel_3);

		JButton btnNewButton = new JButton("Search");
		btnNewButton.addActionListener(new ActionListener() {
			public void actionPerformed(ActionEvent e) {
				String str = (String)comboBox.getSelectedItem();
				String str1 = (String)comboBox_1.getSelectedItem();
				String str2 = (String)comboBox_2.getSelectedItem();
				if(str==""||str1==""||str2=="") {
					lblNewLabel_3.setText("Please fill all the following fields");
				}
				else {
					Window3(str, str1, str2);
				}
			}
		});
		btnNewButton.setFont(new Font("Tahoma", Font.BOLD, 11));
		btnNewButton.setBounds(157, 128, 89, 23);
		frame.add(btnNewButton);
	}
	public static void Window3(String str, String str1, String str2){
		frame.getContentPane().removeAll();
frame.repaint();
		JLabel lblNewLabel = new JLabel("Recommended smartphone ");
		lblNewLabel.setFont(new Font("Tahoma", Font.BOLD, 11));
		lblNewLabel.setHorizontalAlignment(SwingConstants.CENTER);
		lblNewLabel.setBounds(29, 11, 371, 28);
		frame.add(lblNewLabel);

		JLabel lblNewLabel_1 = new JLabel("");
		lblNewLabel_1.setBounds(29, 50, 361, 14);
		//lblNewLabel_1.setHorizontalAlignment(SwingConstants.CENTER);
		frame.add(lblNewLabel_1);

		JLabel lblNewLabel_2 = new JLabel("");
		lblNewLabel_2.setBounds(29, 77, 371, 14);
		//lblNewLabel_2.setHorizontalAlignment(SwingConstants.CENTER);
		frame.add(lblNewLabel_2);

		JLabel lblNewLabel_3 = new JLabel("");
		lblNewLabel_3.setBounds(29, 102, 371, 14);
		//lblNewLabel_3.setHorizontalAlignment(SwingConstants.CENTER);
		frame.add(lblNewLabel_3);

		JLabel lblNewLabel_4 = new JLabel("");
		lblNewLabel_4.setBounds(29, 127, 371, 14);
		//lblNewLabel_4.setHorizontalAlignment(SwingConstants.CENTER);
		frame.add(lblNewLabel_4);
```

```
                JLabel lblNewLabel_5 = new JLabel("");
                lblNewLabel_5.setBounds(29, 152, 371, 14);
                //lblNewLabel_5.setHorizontalAlignment(SwingConstants.CENTER);
                frame.add(lblNewLabel_5);

                JLabel lblNewLabel_6 = new JLabel("");
                lblNewLabel_6.setBounds(29, 177, 371, 14);
                //lblNewLabel_6.setHorizontalAlignment(SwingConstants.CENTER);
                frame.add(lblNewLabel_6);

                JLabel lblNewLabel_7 = new JLabel("");
                lblNewLabel_7.setBounds(29, 202, 371, 14);
                //lblNewLabel_7.setHorizontalAlignment(SwingConstants.CENTER);
                frame.add(lblNewLabel_7);

                int pri1 = Integer.parseInt(str1);
        int pri2 = Integer.parseInt(str2);
        boolean selected = false;
                for(int i = 0; i < mobile.length; i++){
          if(mobile[i][0].equals(str)){
            if(Integer.parseInt(mobile[i][1]) > pri1 && Integer.parseInt(mobile[i][1]) <= pri2) {
              lblNewLabel_1.setText("Name : "+mobile[i][0]+" "+mobile[i][2]);
              lblNewLabel_2.setText("Price : "+mobile[i][1]);
              lblNewLabel_3.setText("Main & selfie camera : "+mobile[i][3]+", "+mobile[i][4]);
              lblNewLabel_4.setText("RAM & ROM : "+mobile[i][5]+", "+mobile[i][6]);
              lblNewLabel_5.setText("Processor : "+mobile[i][7]);
                                  lblNewLabel_6.setText("Screen : "+mobile[i][8]);
                                  lblNewLabel_7.setText("Battery & Charger :
"+mobile[i][9]+", "+mobile[i][10]);

                                  try{
                                      File file = new
File("C:/Users/nakka/Documents/Java/Java_Programs/Project.txt");
                                      FileWriter fw = new FileWriter(file, true);
                                      BufferedWriter bw = new BufferedWriter(fw);
                                      bw.write("Name : ");
                                      bw.write(mobile[i][0]);
                                      bw.write(" ");
                                      bw.write(mobile[i][2]);
                                      bw.write("\n");
                                      bw.write("Price : ");
                                      bw.write(mobile[i][1]);
                                      bw.write("\n");
                                      bw.write("Main & selfie Camera : ");
                                      bw.write(mobile[i][3]);
                                      bw.write(", ");
                                      bw.write(mobile[i][4]);
                                      bw.write("\n");
                                      bw.write("RAM & ROM : ");
                                      bw.write(mobile[i][5]);
                                      bw.write(", ");
                                      bw.write(mobile[i][6]);
                                      bw.write("\n");
                                      bw.write("Processor : ");
```

```
                                        bw.write(mobile[i][7]);
                                        bw.write("\n");
                                        bw.write("Screen : ");
                                        bw.write(mobile[i][8]);
                                        bw.write("\n");
                                        bw.write("Battery & Charger : ");
                                        bw.write(mobile[i][9]);
                                        bw.write(", ");
                                        bw.write(mobile[i][10]);
                                        bw.write("\n");
                                        bw.write("-----------------------------------------------
----------");
                                        bw.write("\n");
                                        bw.close();
                                        fw.close();
                                    }
                                    catch(Exception e){}

                selected = true;
                break;
            }
        }
    }
            if(!selected){
        lblNewLabel_2.setText("No smart phone found");
    }
            JButton btnNewButton = new JButton("Go Back");
            btnNewButton.addActionListener(new ActionListener() {
                public void actionPerformed(ActionEvent e) {
                    Window2();
                }
            });
            btnNewButton.setBounds(169, 229, 89, 23);
            frame.add(btnNewButton);
        }
}
```

5. RESULTS:

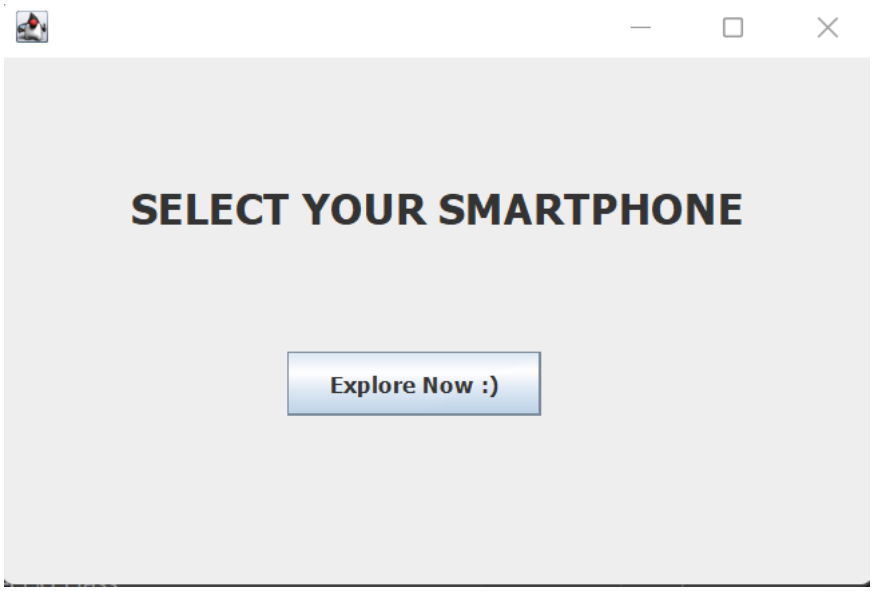

Figure 5: Window 1 output

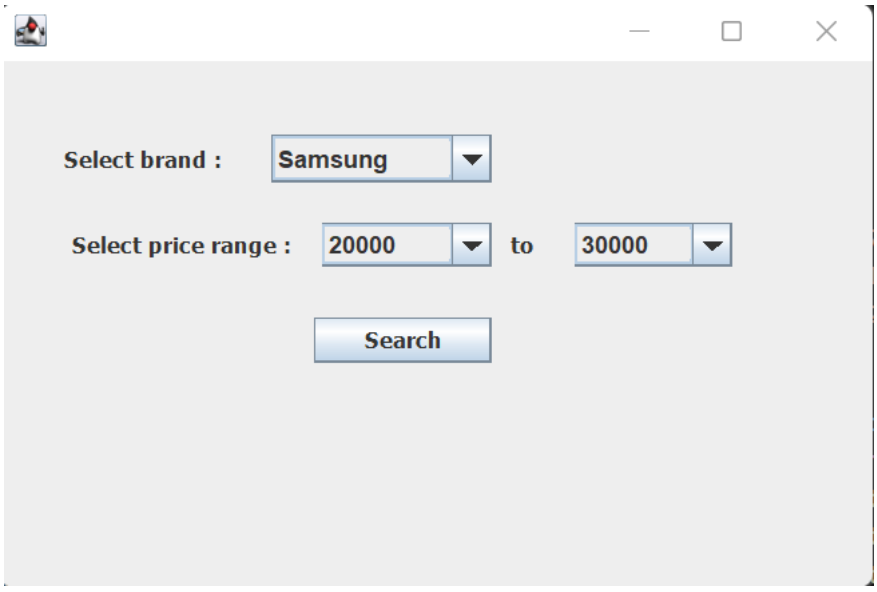

Figure 6: Window 2 output

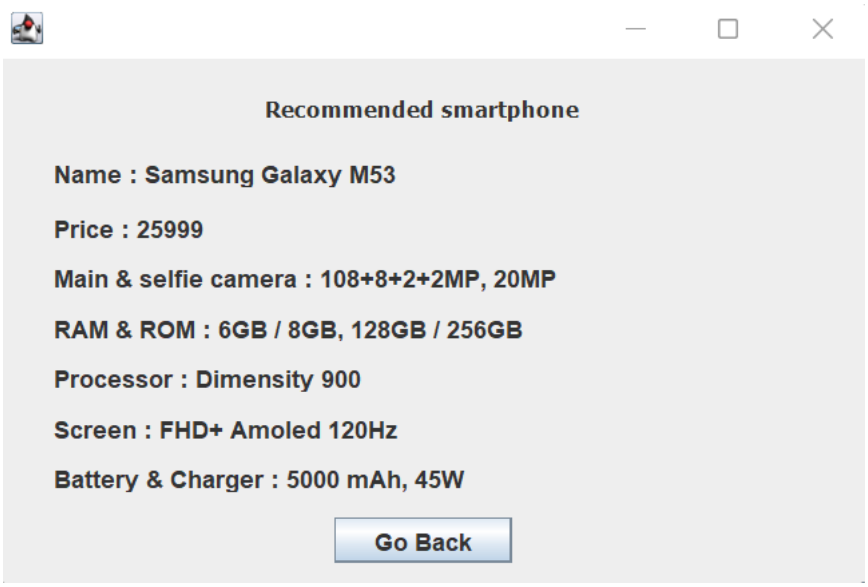

Figure 7: Window 3 output

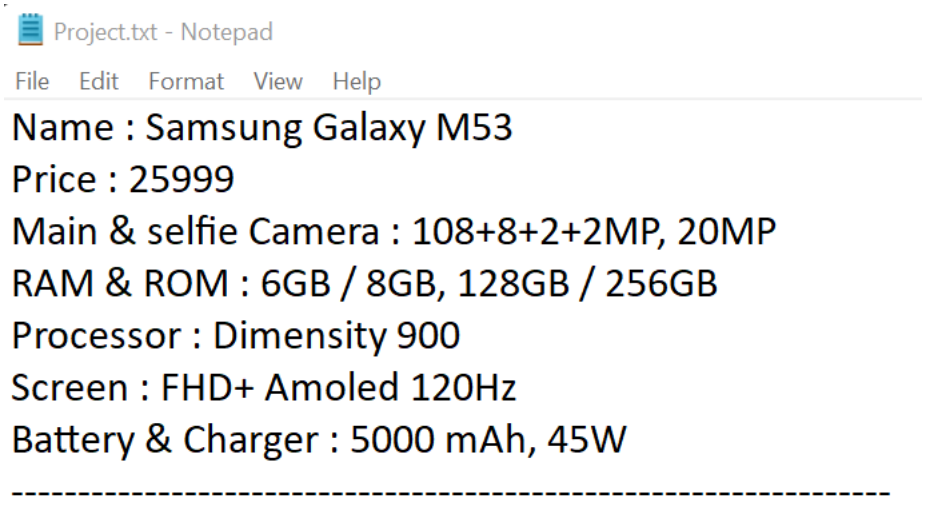

Figure 8: Output saved in text file

6. CONCLUSION

There are several mobile phones accessible on the market, with different models released year after year. The factors that should be considered while buying a smart phone are brand, price, RAM, ROM, screen, battery, camera and processor. The problem is deciding on the right mobile phone to purchase and determining the best value for money when selecting a mobile phone. To overcome this problem the java application we build is useful which recommends the smartphone in selected price range and the details of it is saved in a text file for further usage.

7. FUTURE SCOPE

This application can be further improved by adding more details about the smartphone, comparison between the smartphones, recommending according to the user needs, adding pictures of the recommended smart phone and over all making it more user friendly.

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