JAVA PROGRAMMING EXERCISE - MAY 13th

Question 1:

Code:

```
import java.util.*;

public class qs1 {
   public static void main(String[] args) {

       Scanner sc = new Scanner(System.in);
       Scanner sc1 = new Scanner(System.in);
       try {
           System.out.print("Enter name: ");
           String name = sc.nextLine();
           System.out.print("Enter first number: ");
           int num1 = sc1.nextInt();
           System.out.print("Enter second number: ");
           int num2 = sc1.nextInt();
           calculator c = new calculator(name, num1, num2);
           c.add();
           c.divide();
           c.display_namelength();
       } catch (InputMismatchException e) {
           System.out.println("Please enter correct type for Name and
Number");
       } catch (ArithmeticException e) {
           System.out.println("Cannot divide number by zero");
       } catch (Exception e) {
           System.out.println(e.getMessage());
       } finally {
           sc.close();
           sc1.close();
       }

   }
}
```

```java
class calculator {
   String name;
   int num1;
   int num2;

   public calculator(String name, int num1, int num2) {
       this.name = name;
       this.num1 = num1;
       this.num2 = num2;
   }

   public void add() {
       System.out.println(num1 + num2);
   }

   public void divide() {
       System.out.println(num1 / num2);
   }

   public void display_namelength() {
       System.out.println(name.length());
   }
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/session 9 - may 13  cd "/home/subham/Documents/W
eDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp "/home/subham/.config/Code/User/work
Enter name: Subham
Enter first number: 14
Enter second number: 7
21
2
6

~/Documents/WINSEM20-21/JAVA LAB/DA5/session 9 - may 13  cd "/home/subham/Documents/W
eDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp "/home/subham/.config/Code/User/work
Enter name: Subham
Enter first number: 14
Enter second number: hello
Please enter correct type for Name and Number

~/Documents/WINSEM20-21/JAVA LAB/DA5/session 9 - may 13  cd "/home/subham/Documents/W
eDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp "/home/subham/.config/Code/User/work
Enter name: Subham
Enter first number: 14
Enter second number: 0
14
Cannot divide number by zero
```

Question 2 - a:

Code:

```
import java.io.*;

public class qs2a {
   public static void main(String[] args) throws IOException {
       int sum1 = operationFile1();
       int sum2 = operationFile2();
       int sum3 = operationFile3();
       int sum4 = operationFile4();
       System.out.println("The sum of all numbers from all files is
"+(sum1+sum2+sum3+sum4));
   }

   public static int operationFile1() throws IOException {
       FileInputStream fstream = new FileInputStream("file1.txt");
       DataInputStream in = new DataInputStream(fstream);
       BufferedReader br = new BufferedReader(new InputStreamReader(in));
       String data;
       int sumMain = 0, sumFile = 0;
       while ((data = br.readLine()) != null) {
           String[] tmp = data.split(" ");

           for (String s : tmp) {
               sumMain += Integer.parseInt(s);
               if (s.contains("9") || s.contains("7")) {
                   sumFile += Integer.parseInt(s);
               }
           }
       }
       System.out.println("From file 1: Sum of numbers that contain 7 or 9
is " + sumFile);
       br.close();
       return sumMain;
   }

   public static int operationFile2() throws IOException {
       FileInputStream fstream = new FileInputStream("file2.txt");
```

```
        DataInputStream in = new DataInputStream(fstream);
        BufferedReader br = new BufferedReader(new InputStreamReader(in));
        String data;
        int sumMain = 0, sumFile = 0;
        while ((data = br.readLine()) != null) {
            String[] tmp = data.split(" ");

            for (String s : tmp) {
                sumMain += Integer.parseInt(s);
                if (Integer.parseInt(s) % 9 == 0 || Integer.parseInt(s) %
11 == 0) {
                    sumFile += Integer.parseInt(s);
                }
            }
        }
        System.out.println("From file 2: Sum of numbers that is divisible
by 9 or 11 is " + sumFile);
        br.close();
        return sumMain;
    }

    public static int operationFile3() throws IOException {
        FileInputStream fstream = new FileInputStream("file3.txt");
        DataInputStream in = new DataInputStream(fstream);
        BufferedReader br = new BufferedReader(new InputStreamReader(in));
        String data;
        int sumMain = 0, sumFile = 0;
        while ((data = br.readLine()) != null) {
            String[] tmp = data.split(" ");

            for (String s : tmp) {
                sumMain += Integer.parseInt(s);
                if (s.length() == 4 || s.endsWith("8")) {
                    sumFile += Integer.parseInt(s);
                }
            }
        }
        System.out.println("From file 3: Sum of numbers that are 4 digits
long and end with 8 is " + sumFile);
```

```
        br.close();
        return sumMain;
    }

    public static int operationFile4() throws IOException {
        FileInputStream fstream = new FileInputStream("file4.txt");
        DataInputStream in = new DataInputStream(fstream);
        BufferedReader br = new BufferedReader(new InputStreamReader(in));
        String data;
        int sumMain = 0;
        while ((data = br.readLine()) != null) {
            String[] tmp = data.split(" ");

            for (String s : tmp) {
                sumMain += Integer.parseInt(s);
            }
        }
        br.close();
        return sumMain;
    }

}
```

file1.txt:

file1.txt

```
1   101 102 114 521 547 451 8596
```

file2.txt:

file2.txt

```
1   596 25 4856 632 55 2 44
```

file3.txt:

file3.txt

```
1   7895 245 14 589 63 22 2 5 475
```

file4.txt:

file4.txt

```
1   859 66 325 452 22 4 51 236 85 2 5 4 7 251
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/session 9 - may 13  cd "/home/sub
eDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp "/home/subham/.config
From file 1: Sum of numbers that contain 7 or 9 is 9143
From file 2: Sum of numbers that is divisible by 9 or 11 is 99
From file 3: Sum of numbers that are 4 digits long and end with 8 is 7895
The sum of all numbers from all files is 28321
```

Question 2-b:

Code:

```
import java.util.*;

public class qs2b {
   public static void main(String[] args) {
       LinkedList<car> cll = new LinkedList<>();
       Scanner sc = new Scanner(System.in);
       for (int i = 1; i <= 4; i++) {
           System.out.println("----ENTER DETAILS FOR CAR " + i + " ----");
           System.out.print("Enter ID:  ");
           String car_id = sc.nextLine();
           System.out.print("Enter Name: ");
           String car_name = sc.nextLine();
           System.out.print("Enter Brand: ");
           String car_brand = sc.nextLine();
           cll.add(new car(car_id, car_name, car_brand));
           System.out.println();
       }
       System.out.println();
       ListIterator<car> itr = cll.listIterator();
       while (itr.hasNext()) {
           car c = itr.next();
           if (c.car_brand.compareToIgnoreCase("ford")==0) {
               c.displayInfo();
           }
       }
       sc.close();
   }
}

class car {
   String car_id;
   String car_name;
   String car_brand;

   car(String car_id, String car_name, String car_brand) {
       this.car_id = car_id;
```

```
        this.car_name = car_name;
        this.car_brand = car_brand;
    }

    public void displayInfo() {
        System.out.println("Car ID: " + car_id + ", Car Name: " + car_name
+ ", Car Brand: " + car_brand);
    }
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/session 9 - may 13  cd "/home/su
eDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp "/home/subham/.confi
----ENTER DETAILS FOR CAR 1 ----
Enter ID:  X7101
Enter Name: X7
Enter Brand: BMW

----ENTER DETAILS FOR CAR 2 ----
Enter ID:  EN101
Enter Name: Endeavour
Enter Brand: Ford

----ENTER DETAILS FOR CAR 3 ----
Enter ID:  A8102
Enter Name: A8 L
Enter Brand: Audi

----ENTER DETAILS FOR CAR 4 ----
Enter ID:  X3105
Enter Name: X3
Enter Brand: BMW


Car ID: EN101, Car Name: Endeavour, Car Brand: Ford
```

Question 3:

Code:

```
import java.io.*;
import java.util.*;

public class qs3 {
   public static void main(String[] args) throws InterruptedException {
       FileOperation foper = new FileOperation();
       Thread thr1 = new Thread((Runnable) () -> {
           foper.writeObjects();
       });
       Thread thr2 = new Thread((Runnable) () -> {
           try {
               foper.readObjects();
           } catch (InterruptedException e) {
               e.printStackTrace();
           } catch (FileNotFoundException e) {
               e.printStackTrace();
           }
       });
       thr1.start();
       thr2.start();
       thr1.join();
       thr2.join();
   }
}

class faculty implements Serializable {
   String id;
   String designation;
   String name;
   String gender;

   faculty(String id, String designation, String name, String gender) {
       this.id = id;
       this.designation = designation;
       this.name = name;
```

```
        this.gender = gender;
    }

    faculty() {
        this.id = "";
        this.name = "";
        this.designation = "";
        this.gender = "";
    }

    public void displayInfo() {
        System.out.println(
                "Faculty id: " + id + ", Name: " + name + ", Designation: "
+ designation + ", Gender: " + gender);
    }

    public static void sortAndDisplayFacultyByNames(faculty[] farr) {
        for (int i = 0; i < farr.length - 1; i++) {
            for (int j = 0; j < farr.length - i - 1; j++) {
                if (farr[j].name.compareTo(farr[j + 1].name) > 0) {
                    faculty temp = new faculty();
                    temp = farr[j];
                    farr[j] = farr[j + 1];
                    farr[j + 1] = temp;
                }
            }
        }
        System.out.println("THE SORTED LIST OF NAMES IS");
        for (faculty f : farr) {
            System.out.println(f.name);
        }
    }
}

class FileOperation {
    private boolean fileBusy = false;

    public synchronized void writeObjects() {
        try {
```

```
            this.fileBusy = true;
            Scanner sc = new Scanner(System.in);
            faculty farr[] = new faculty[5];
            File obj = new File("faculty.txt");
            FileOutputStream fout = new FileOutputStream(obj);
            ObjectOutputStream objout = new ObjectOutputStream(fout);
            for (int i = 0; i < 5; i++) {
                System.out.println("-----ENTER DEATILS FOR FACULTY " + (i +
1) + " -----");
                System.out.print("Enter id: ");
                String id = sc.nextLine();
                System.out.print("Enter name: ");
                String name = sc.nextLine();
                System.out.print("Enter designation: ");
                String designation = sc.nextLine();
                System.out.print("Enter gender(Male/Female): ");
                String gender = sc.nextLine();
                farr[i] = new faculty(id, designation, name, gender);
                objout.writeObject(farr[i]);
            }
            this.fileBusy = false;
            notifyAll();
            objout.close();
            sc.close();
        } catch (InputMismatchException e) {
            System.out.println("Please enter the objin of correct type");
        } catch (Exception e) {
            System.out.println(e.getStackTrace());
        }
    }

    public synchronized void readObjects() throws InterruptedException,
FileNotFoundException {
        faculty farr[] = new faculty[5];
        System.out.println("WAITING TO READ FILE faculty.txt");
        while (fileBusy)
            wait();
        try {
```

```
            System.out.println("FINISHED WAITING TO READ FILE
faculty.txt");
            FileInputStream fis = new FileInputStream("faculty.txt");
            try (ObjectInputStream input = new ObjectInputStream(fis)) {
                for (int i = 0; i < 5; i++) {
                    faculty f = (faculty) input.readObject();
                    farr[i] = f;
                    if (f.designation.compareTo("Assistant Professor") ==
0) {
                        f.displayInfo();
                    }
                }
            } catch (Exception e) {
                e.printStackTrace();
            }
            faculty.sortAndDisplayFacultyByNames(farr);
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/session 9 - may 13  cd "/home/subham/Documents
eDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp "/home/subham/.config/Code/User/wo
-----ENTER DEATILS FOR FACULTY 1 -----
Enter id: 100
Enter name: Subham
Enter designation: Professor
Enter gender(Male/Female): Male
-----ENTER DEATILS FOR FACULTY 2 -----
Enter id: 101
Enter name: Rohin
Enter designation: Assistant Professor
Enter gender(Male/Female): Male
-----ENTER DEATILS FOR FACULTY 3 -----
Enter id: 102
Enter name: Supirya
Enter designation: Assistant Professor
Enter gender(Male/Female): Female
-----ENTER DEATILS FOR FACULTY 4 -----
Enter id: 103
Enter name: Aditya
Enter designation: Professor
Enter gender(Male/Female): Male
-----ENTER DEATILS FOR FACULTY 5 -----
Enter id: 104
Enter name: Shresth
Enter designation: Research Intern
Enter gender(Male/Female): MAle
WAITING TO READ FILE faculty.txt
FINISHED WAITING TO READ FILE faculty.txt
Faculty id: 101, Name: Rohin, Designation: Assistant Professor, Gender: Male
Faculty id: 102, Name: Supirya, Designation: Assistant Professor, Gender: Female
THE SORTED LIST OF NAMES IS
Aditya
Rohin
Shresth
Subham
Supirya
```

Question 4:

Code:

```
import java.io.*;
import java.util.Scanner;

public class qs4 {
   public static void main(String[] args) throws InterruptedException {
       fileOperation fo = new fileOperation();
       Thread thr_read1 = new Thread((Runnable)() -> {
           try {
               fo.readAndAdd();
           } catch (Throwable e) {
               e.printStackTrace();
           }
       });
       Thread thr_read2 = new Thread((Runnable)() -> {
           try {
               fo.readAndMultiply();
           } catch (Throwable e) {
               e.printStackTrace();
           }
       });
       Thread thr_write = new Thread((Runnable)() -> {
           try {
               fo.writeToFile();
           } catch (Throwable e) {
               e.printStackTrace();
           }
       });
       thr_read1.start();
       thr_read2.start();
       thr_write.start();
       thr_read1.join();
       thr_read2.join();
       thr_write.join();
   }
}
```

```
class fileOperation {
   private boolean fileBusy = false;

   public synchronized void writeToFile() throws Throwable {
       fileBusy = true;
       Scanner sc = new Scanner(System.in);
       FileOutputStream fout = new FileOutputStream("input.txt");
       DataOutputStream dout = new DataOutputStream(fout);
       System.out.println("Enter first number: ");
       int num1 = sc.nextInt();
       System.out.println("Enter second number: ");
       int num2 = sc.nextInt();
       dout.writeInt(num1);
       dout.writeInt(num2);
       System.out.println("THE TWO NUMBERS HAVE BEEN WRITTEN TO FILE
input.txt");
       dout.close();
       sc.close();
       fileBusy = false;
       notifyAll();
   }

   public synchronized void readAndAdd() throws Throwable {
       FileInputStream fin = new FileInputStream("input.txt");
       DataInputStream din = new DataInputStream(fin);
       while (fileBusy || din.available()==0) {
           System.out.println("THREAD READ 1 IS WAITING");
           wait();
       }
       int num1 = din.readInt();
       int num2 = din.readInt();
       System.out.println("Sum: " + (num1 + num2));
       din.close();
   }

   public synchronized void readAndMultiply() throws Throwable {
       FileInputStream fin = new FileInputStream("input.txt");
       DataInputStream din = new DataInputStream(fin);
       while (fileBusy || din.available()==0) {
```

```
            System.out.println("THREAD READ 2 IS WAITING");
            wait();
        }
        int num1 = din.readInt();
        int num2 = din.readInt();
        System.out.println("Sum: " + (num1 * num2));
        din.close();
    }
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/session 9 - may 13  cd "/home/
eDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp "/home/subham/.con
THREAD READ 1 IS WAITING
Enter first number:
5
Enter second number:
3
THE TWO NUMBERS HAVE BEEN WRITTEN TO FILE input.txt
Sum: 15
Sum: 8
```

tQuestion 5:

Code:

```
import java.util.*;

public class qs5 {
   public static void main(String[] args) {
       LinkedList<Customer> cl = new LinkedList<Customer>();
       Scanner sc = new Scanner(System.in);
       for (int i = 0; i < 5; i++) {
           System.out.println("-----CUSTOMER " + (i + 1) + " -----");
           System.out.print("Enter name: ");
           String name = sc.next();
           System.out.print("Enter purchase amount: ");
           double p = sc.nextDouble();
           cl.add(new Customer(name, p));
       }
       Iterator<Customer> iterator = cl.descendingIterator();
       int count = 0;
       while (iterator.hasNext()) {
           Customer itr = iterator.next();
           System.out.println("Nmae of Customer "+(count++)+":
"+itr.name+", Amount of purchase: "+itr.purchase);
       }
       sc.close();
   }
}

class Customer {
   String name;
   double purchase;

   public Customer(String name, double amount) {
       this.name = name;
       this.purchase = amount;
   }
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/session 9 - may 13  cd "/home/subham/Docum
eDetailsInExceptionMessages -Dfile.encoding=UTF-8 -cp "/home/subham/.config/Code/Use
-----CUSTOMER 1 -----
Enter name: Subham
Enter purchase amount: 1000
-----CUSTOMER 2 -----
Enter name: Aditya
Enter purchase amount: 500
-----CUSTOMER 3 -----
Enter name: Arnab
Enter purchase amount: 2000
-----CUSTOMER 4 -----
Enter name: Dev
Enter purchase amount: 6000
-----CUSTOMER 5 -----
Enter name: Aritam
Enter purchase amount: 5800
Nmae of Customer 0: Aritam, Amount of purchase: 5800.0
Nmae of Customer 1: Dev, Amount of purchase: 6000.0
Nmae of Customer 2: Arnab, Amount of purchase: 2000.0
Nmae of Customer 3: Aditya, Amount of purchase: 500.0
Nmae of Customer 4: Subham, Amount of purchase: 1000.0
```

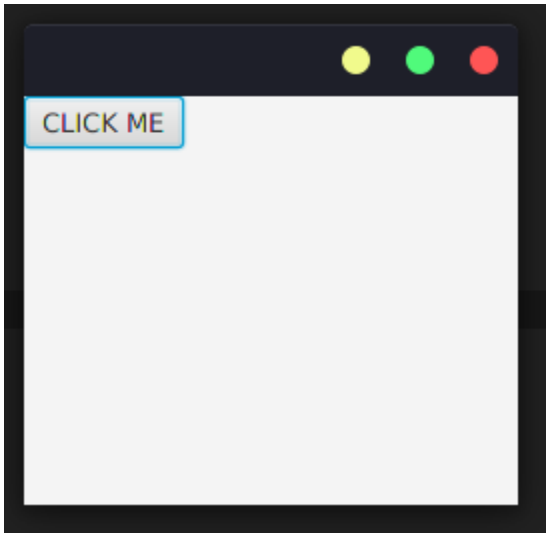
JAVAFX EXERCISES

1. Control, Layout, Scene, Stage and how they work

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p1fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       //adding a button - i.e a control
       Button btn = new Button("CLICK ME");

       //defining layout
       HBox root = new HBox();

       //adding control to layout
       root.getChildren().add(btn);

       //adding layout to a scene
       Scene scn = new Scene(root);

       //adding scene to the stage
       primaryStage.setScene(scn);

       //displaying the stage
       primaryStage.show();
   }
}
```

Output:



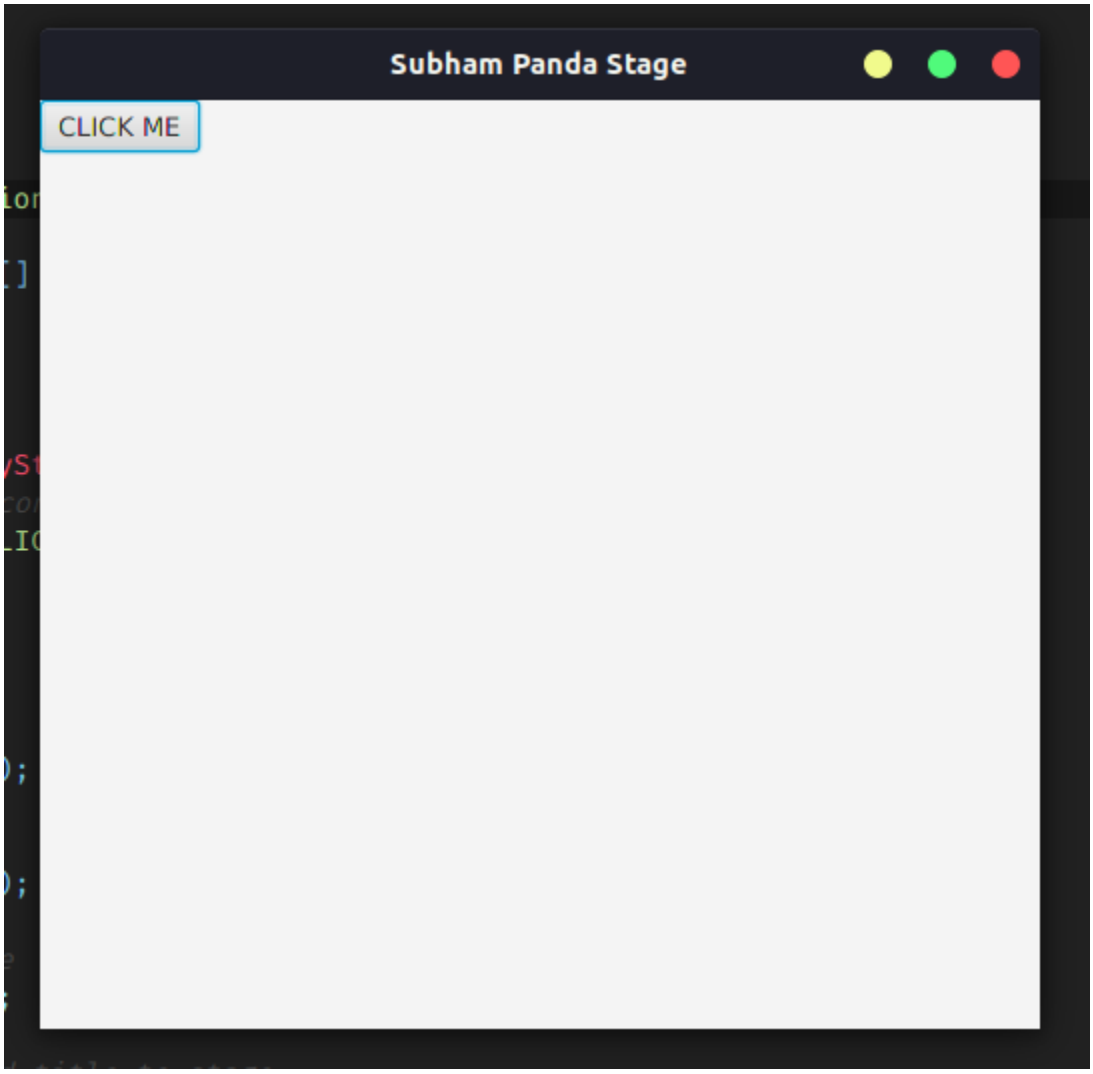
2. Setting Height, Width and title of Stage - setHeight(), setWidth(), setTitle()

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p2fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       //adding a button - i.e a control
       Button btn = new Button("CLICK ME");

       //defining layout
       HBox root = new HBox();

       //adding control to layout
       root.getChildren().add(btn);

       //adding layout to a scene
       Scene scn = new Scene(root);

       //adding scene to the stage
       primaryStage.setScene(scn);

       //setting height, width and title to stage
       primaryStage.setHeight(500);
       primaryStage.setWidth(500);
       primaryStage.setTitle("Subham Panda Stage");

       //displaying the stage
       primaryStage.show();
```

```
    }
}
```

Output:



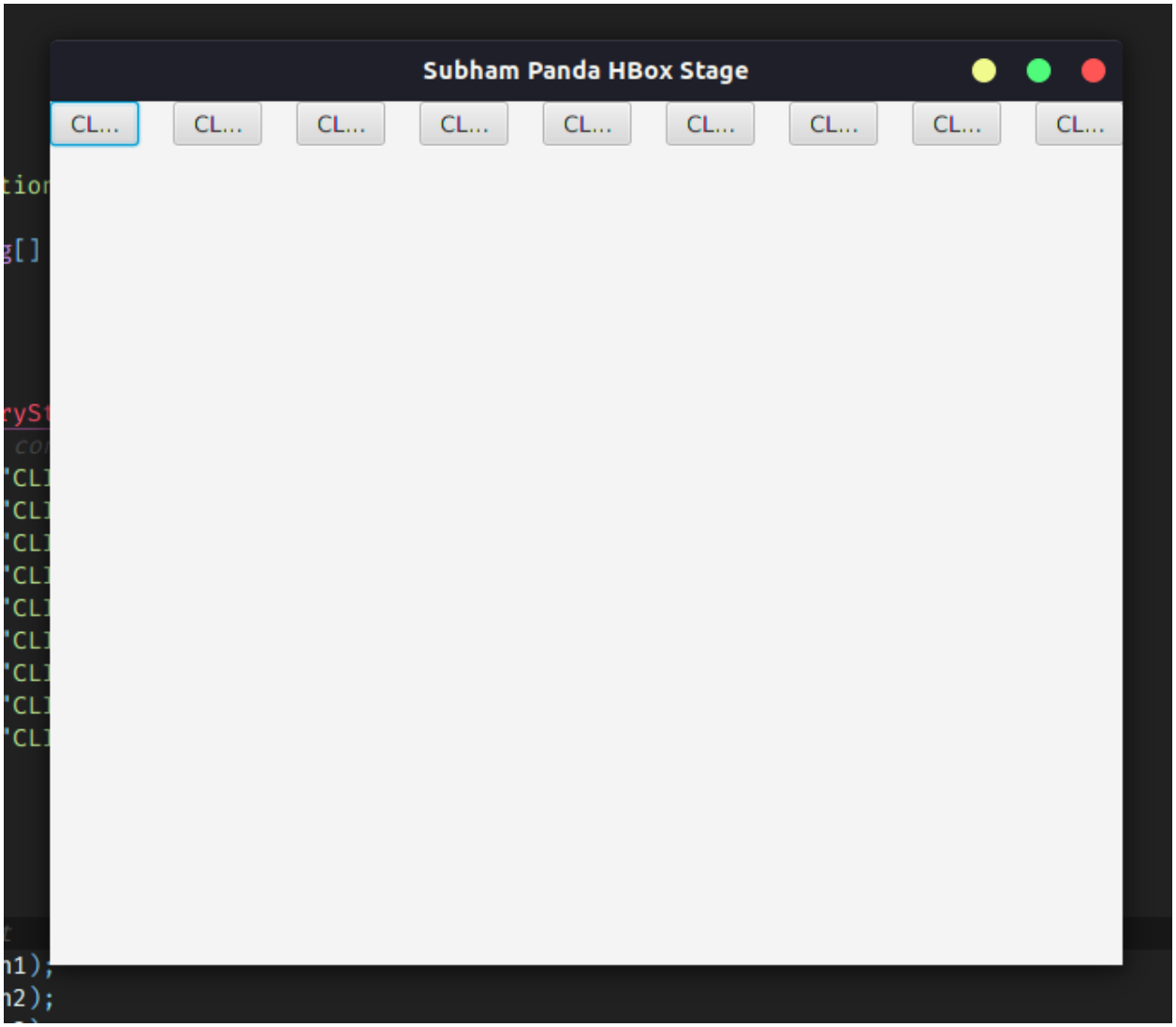
3. HBox Layout

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p3fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       //adding a button - i.e a control
       Button btn1 = new Button("CLICK 1");
       Button btn2 = new Button("CLICK 2");
       Button btn3 = new Button("CLICK 3");
       Button btn4 = new Button("CLICK 4");
       Button btn5 = new Button("CLICK 5");
       Button btn6 = new Button("CLICK 6");
       Button btn7 = new Button("CLICK 7");
       Button btn8 = new Button("CLICK 8");
       Button btn9 = new Button("CLICK 9");


       //defining layout
       HBox root = new HBox();
       root.setSpacing(20);
       //adding control to layout
       root.getChildren().add(btn1);
       root.getChildren().add(btn2);
       root.getChildren().add(btn3);
       root.getChildren().add(btn4);
       root.getChildren().add(btn5);
       root.getChildren().add(btn6);
```

```
        root.getChildren().add(btn7);
        root.getChildren().add(btn8);
        root.getChildren().add(btn9);


        //adding layout to a scene
        Scene scn = new Scene(root);

        //adding scene to the stage
        primaryStage.setScene(scn);

        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda HBox Stage");

        //displaying the stage
        primaryStage.show();
    }
}
```

Output:



4. VBox Layout:

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p4fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       //adding a button - i.e a control
       Button btn1 = new Button("CLICK 1");
       Button btn2 = new Button("CLICK 2");
       Button btn3 = new Button("CLICK 3");
       Button btn4 = new Button("CLICK 4");
       Button btn5 = new Button("CLICK 5");
       Button btn6 = new Button("CLICK 6");
       Button btn7 = new Button("CLICK 7");
       Button btn8 = new Button("CLICK 8");
       Button btn9 = new Button("CLICK 9");


       //defining layout
       VBox root = new VBox();
       root.setSpacing(20);
       //adding control to layout
       root.getChildren().add(btn1);
       root.getChildren().add(btn2);
       root.getChildren().add(btn3);
       root.getChildren().add(btn4);
       root.getChildren().add(btn5);
       root.getChildren().add(btn6);
```

```
        root.getChildren().add(btn7);
        root.getChildren().add(btn8);
        root.getChildren().add(btn9);


        //adding layout to a scene
        Scene scn = new Scene(root);

        //adding scene to the stage
        primaryStage.setScene(scn);

        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda VBox Stage");

        //displaying the stage
        primaryStage.show();
    }
}
```

Output:


Subham Panda VBox Stage
CLICK 1
CLICK 2
CLICK 3
CLICK 4
CLICK 5
CLICK 6
CLICK 7
CLICK 8
CLICK 9

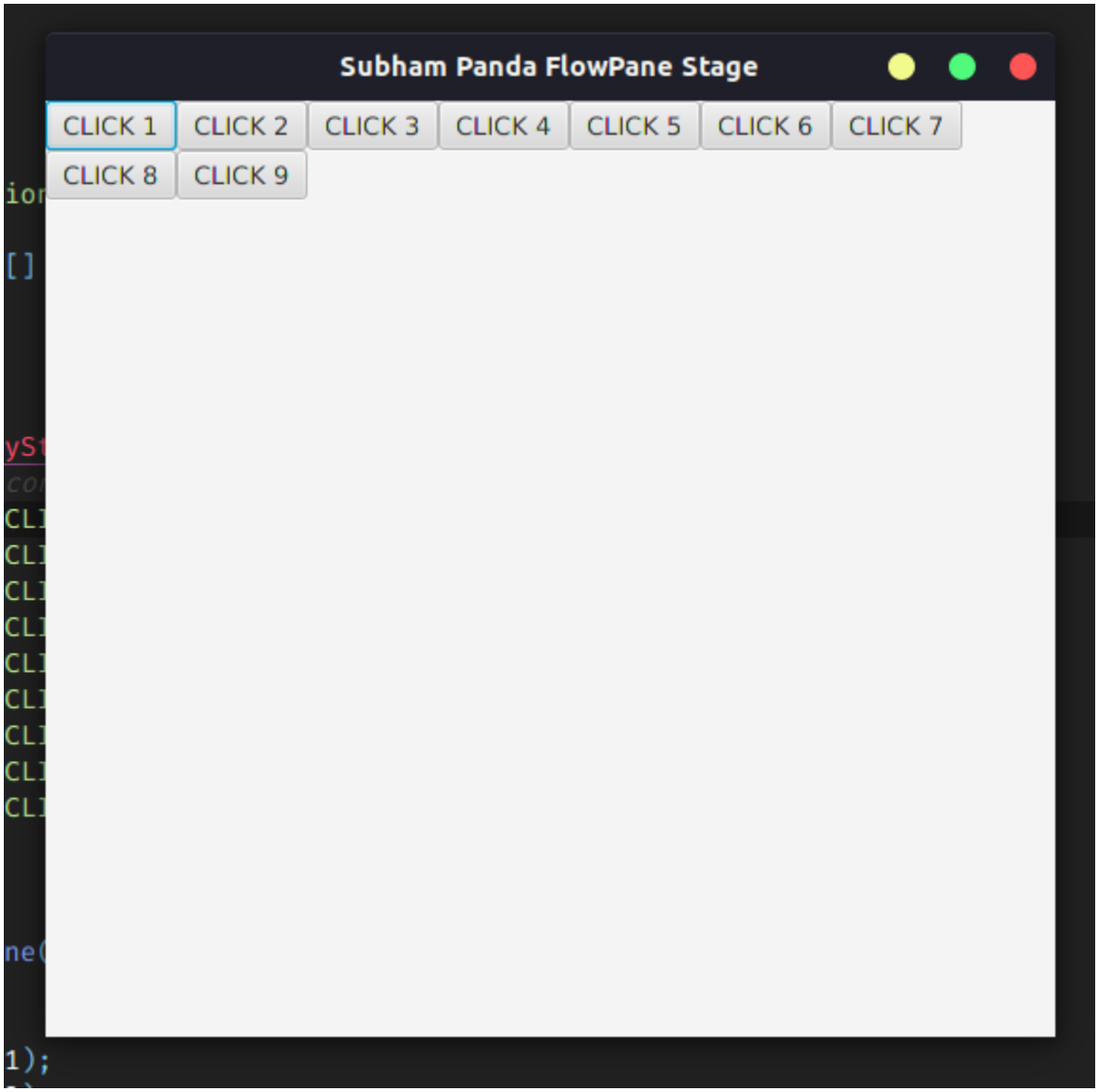
5. FlowPane Layout:

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p5fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       //adding a button - i.e a control
       Button btn1 = new Button("CLICK 1");
       Button btn2 = new Button("CLICK 2");
       Button btn3 = new Button("CLICK 3");
       Button btn4 = new Button("CLICK 4");
       Button btn5 = new Button("CLICK 5");
       Button btn6 = new Button("CLICK 6");
       Button btn7 = new Button("CLICK 7");
       Button btn8 = new Button("CLICK 8");
       Button btn9 = new Button("CLICK 9");


       //defining layout
       FlowPane root = new FlowPane();

       //adding control to layout
       root.getChildren().add(btn1);
       root.getChildren().add(btn2);
       root.getChildren().add(btn3);
       root.getChildren().add(btn4);
       root.getChildren().add(btn5);
       root.getChildren().add(btn6);
```

```
        root.getChildren().add(btn7);
        root.getChildren().add(btn8);
        root.getChildren().add(btn9);


        //adding layout to a scene
        Scene scn = new Scene(root);

        //adding scene to the stage
        primaryStage.setScene(scn);

        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda FlowPane Stage");

        //displaying the stage
        primaryStage.show();
    }
}
```

Output:


Subham Panda FlowPane Stage
CLICK 1
CLICK 2
CLICK 3
CLICK 4
CLICK 5
CLICK 6
CLICK 7
CLICK 8
CLICK 9

6. GridPane Layout

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p6fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       // adding a button - i.e a control
       Button btn1 = new Button("CLICK 1");
       Button btn2 = new Button("CLICK 2");
       Button btn3 = new Button("CLICK 3");

       // defining layout
       GridPane root = new GridPane();

       // adding control to layout
       root.add(btn1, 0, 0);
       root.add(btn2, 1, 1);
       root.add(btn3, 2, 2);
       root.setGridLinesVisible(true);
       root.setHgap(20);
       root.setVgap(20);

       // adding layout to a scene
       Scene scn = new Scene(root);

       // adding scene to the stage
       primaryStage.setScene(scn);
```

```
        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda GridPane Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

Output:

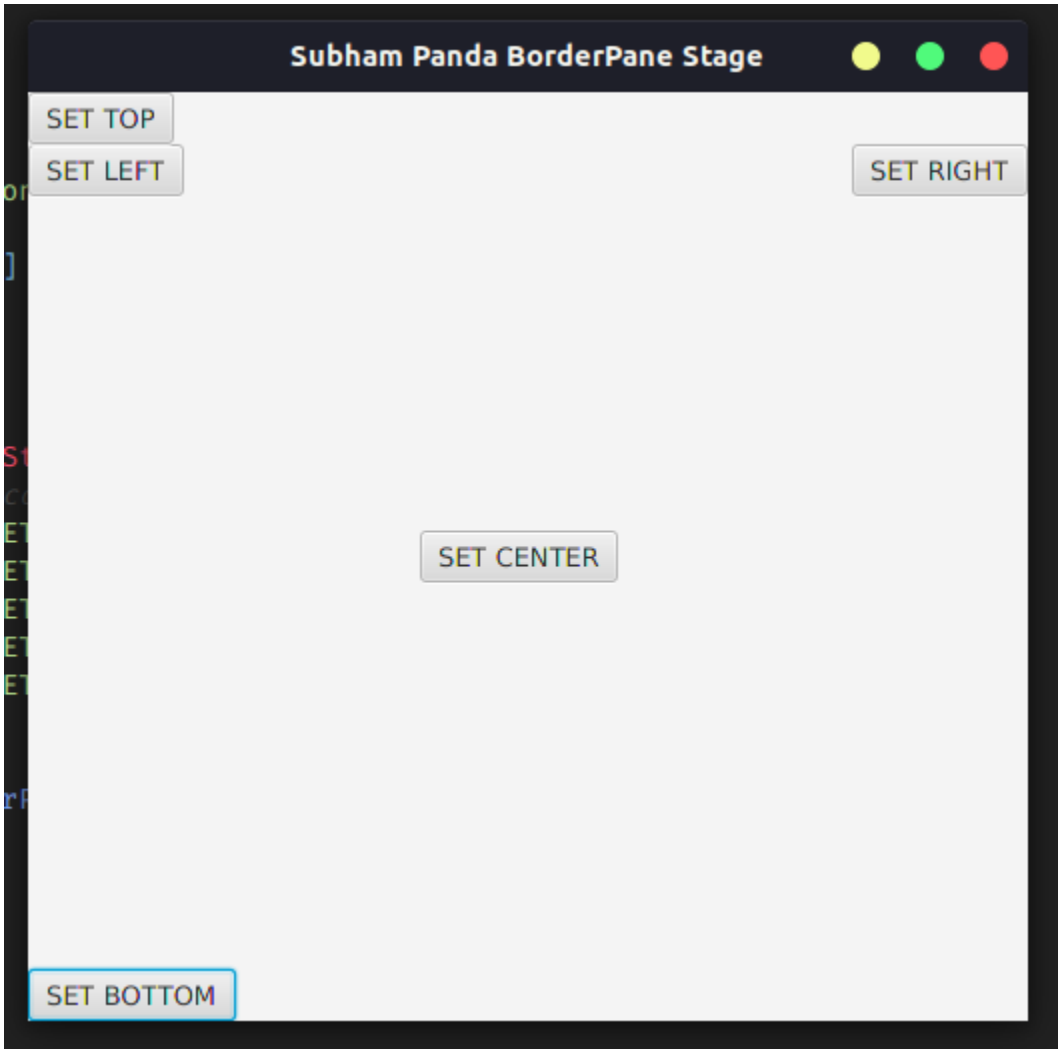
7. BorderPane Layout

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p7fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       // adding a button - i.e a control
       Button btn1 = new Button("SET BOTTOM");
       Button btn2 = new Button("SET CENTER");
       Button btn3 = new Button("SET LEFT");
       Button btn4 = new Button("SET TOP");
       Button btn5 = new Button("SET RIGHT");

       // defining layout
       BorderPane root = new BorderPane();

       // adding control to layout
       root.setBottom(btn1);
       root.setCenter(btn2);
       root.setLeft(btn3);
       root.setTop(btn4);
       root.setRight(btn5);


       // adding layout to a scene
       Scene scn = new Scene(root);

       // adding scene to the stage
```

```
        primaryStage.setScene(scn);

        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda BorderPane Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

Output:



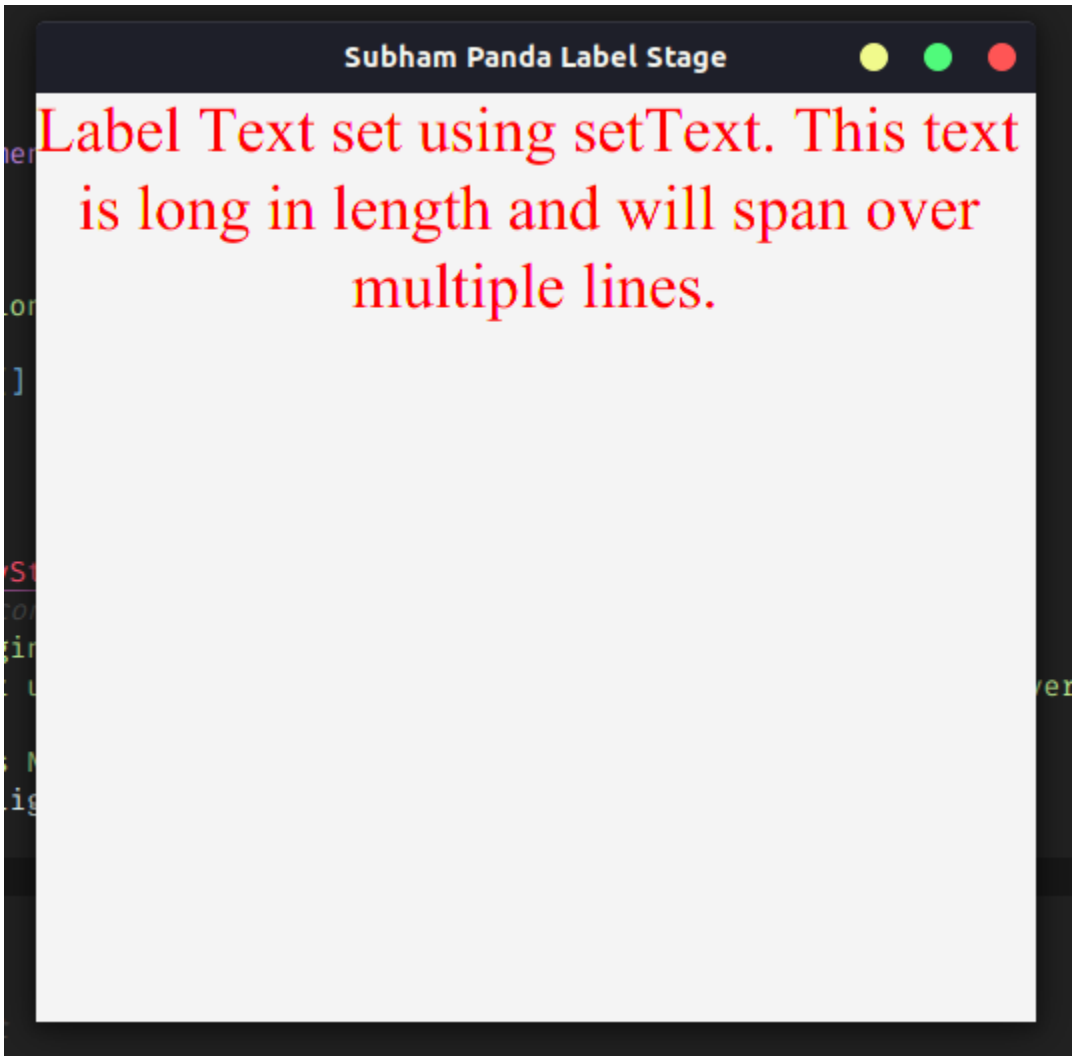
8. Label

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.scene.paint.Color;
import javafx.scene.text.Font;
import javafx.scene.text.TextAlignment;
import javafx.stage.Stage;
// import java.io.*;

public class p8fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       // adding a label - i.e a control
       Label lbl = new Label("Original Label Text");
       lbl.setText("Label Text set using setText. This text is long in
length and will span over multiple lines.");
       lbl.setTextFill(Color.RED);
       lbl.setFont(new Font("Times New Roman", 32));
       lbl.setTextAlignment(TextAlignment.CENTER);
       lbl.setWrapText(true);

       // defining layout
       HBox root = new HBox();

       // adding control to layout
       root.getChildren().add(lbl);


       // adding layout to a scene
       Scene scn = new Scene(root);
```

```
        // adding scene to the stage
        primaryStage.setScene(scn);

        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda Label Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

Output:



9. Label - Setting Image inside Label

Code:

```
import java.io.FileInputStream;

import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.image.Image;
import javafx.scene.image.ImageView;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p9fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       // adding a label - i.e a control
       FileInputStream input = new
FileInputStream("/home/subham/Documents/WINSEM20-21/JAVA
LAB/DA5/JAVAFX/src/java.png");
       Image img = new Image(input);
       ImageView imgview = new ImageView(img);
       Label lbl = new Label("Label With Image", imgview);

       // defining layout
       HBox root = new HBox();

       // adding control to layout
       root.getChildren().add(lbl);


       // adding layout to a scene
       Scene scn = new Scene(root);
```

```
        // adding scene to the stage
        primaryStage.setScene(scn);

        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda Label with Image Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

Output:

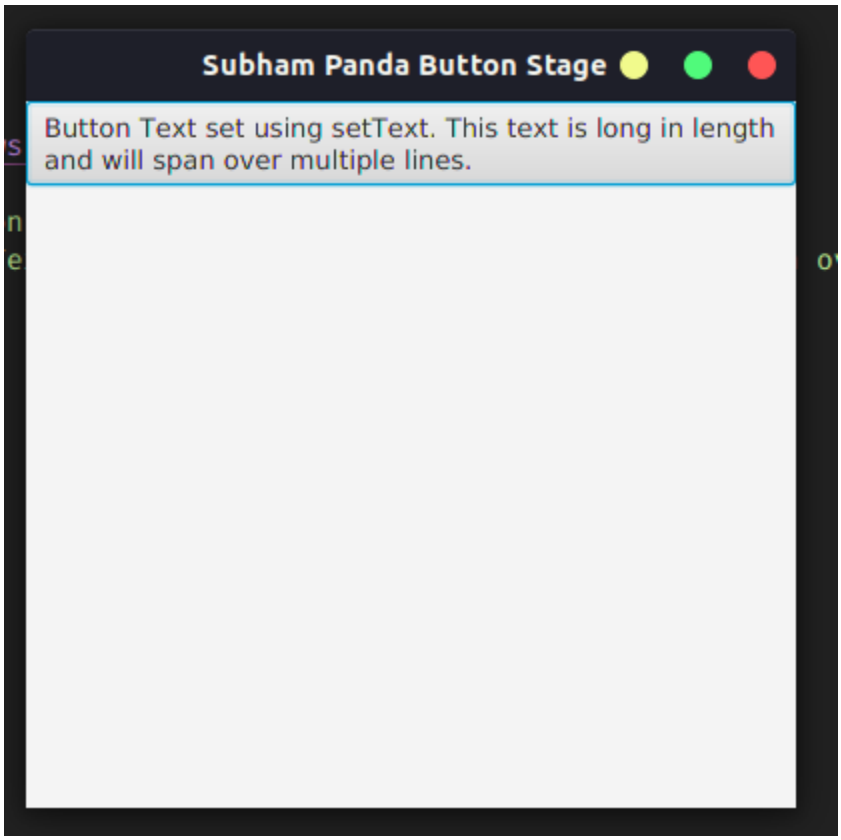
10. Button

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p10fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       // adding a button - i.e a control
       Button btn = new Button("Original Button Text");
       btn.setText("Button Text set using setText. This text is long in
length and will span over multiple lines.");
       btn.setWrapText(true);

       // defining layout
       HBox root = new HBox();

       // adding control to layout
       root.getChildren().add(btn);


       // adding layout to a scene
       Scene scn = new Scene(root);

       // adding scene to the stage
       primaryStage.setScene(scn);

       primaryStage.setHeight(300);
       primaryStage.setWidth(300);
       primaryStage.setTitle("Subham Panda Button Stage");
```

```
        // displaying the stage
        primaryStage.show();
    }
}
```

Output:



11. Disabled Button

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p11fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       // adding a button - i.e a control
       Button btn = new Button("Original Button Text");
       btn.setText("Button Text set using setText. This text is long in
length and will span over multiple lines.");
       btn.setWrapText(true);
       btn.setDisable(true);

       // defining layout
       HBox root = new HBox();

       // adding control to layout
       root.getChildren().add(btn);


       // adding layout to a scene
       Scene scn = new Scene(root);

       // adding scene to the stage
       primaryStage.setScene(scn);

       primaryStage.setHeight(300);
       primaryStage.setWidth(300);
```

```
        primaryStage.setTitle("Subham Panda Button Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

Output:

12. Button with Image:

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.image.Image;
import javafx.scene.image.ImageView;
import javafx.scene.layout.*;
import javafx.stage.Stage;
import java.io.*;

public class p12fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       // adding a button - i.e a control
       FileInputStream input = new
FileInputStream("/home/subham/Documents/WINSEM20-21/JAVA
LAB/DA5/JAVAFX/src/java.png");
       Image img = new Image(input);
       ImageView imgview = new ImageView(img);
       Button btn = new Button("CLICK ME", imgview);
       btn.setWrapText(true);

       // defining layout
       HBox root = new HBox();

       // adding control to layout
       root.getChildren().add(btn);

       // adding layout to a scene
       Scene scn = new Scene(root);

       // adding scene to the stage
       primaryStage.setScene(scn);
```

```
        primaryStage.setHeight(300);
        primaryStage.setWidth(300);
        primaryStage.setTitle("Subham Panda Button Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

Output:

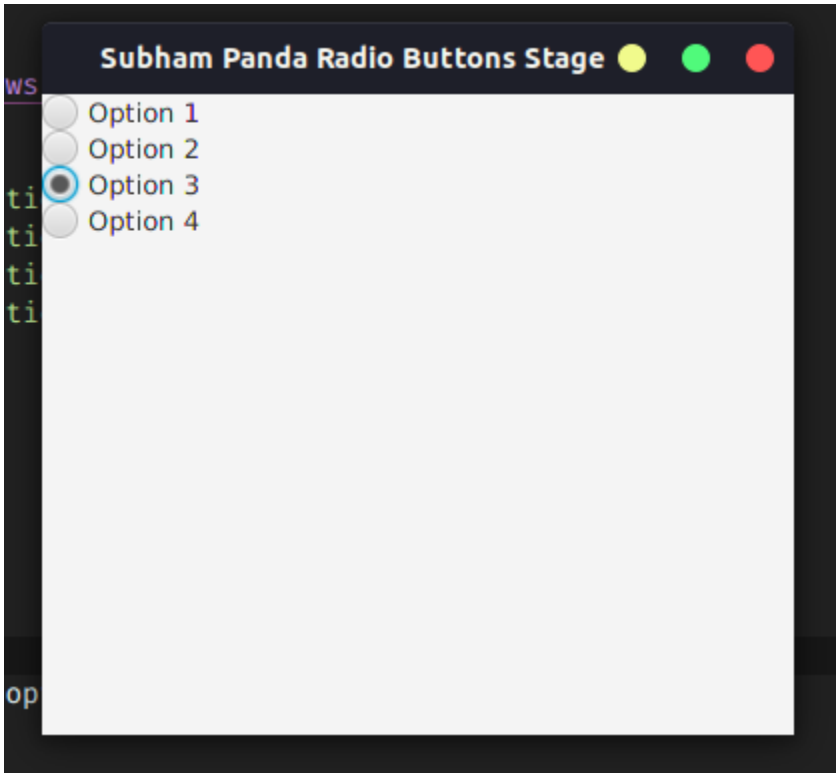
13. Radio Buttons

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p13fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       //creating toggle group
       ToggleGroup group = new ToggleGroup();
       RadioButton opt1 = new RadioButton("Option 1");
       RadioButton opt2 = new RadioButton("Option 2");
       RadioButton opt3 = new RadioButton("Option 3");
       RadioButton opt4 = new RadioButton("Option 4");
       opt1.setToggleGroup(group);
       opt2.setToggleGroup(group);
       opt3.setToggleGroup(group);
       opt4.setToggleGroup(group);

       // defining layout
       VBox root = new VBox();

       // adding control to layout
       root.getChildren().addAll(opt1, opt2, opt3, opt4);

       // adding layout to a scene
       Scene scn = new Scene(root);

       // adding scene to the stage
       primaryStage.setScene(scn);
```

```
        primaryStage.setHeight(300);
        primaryStage.setWidth(300);
        primaryStage.setTitle("Subham Panda Radio Buttons Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

Output:



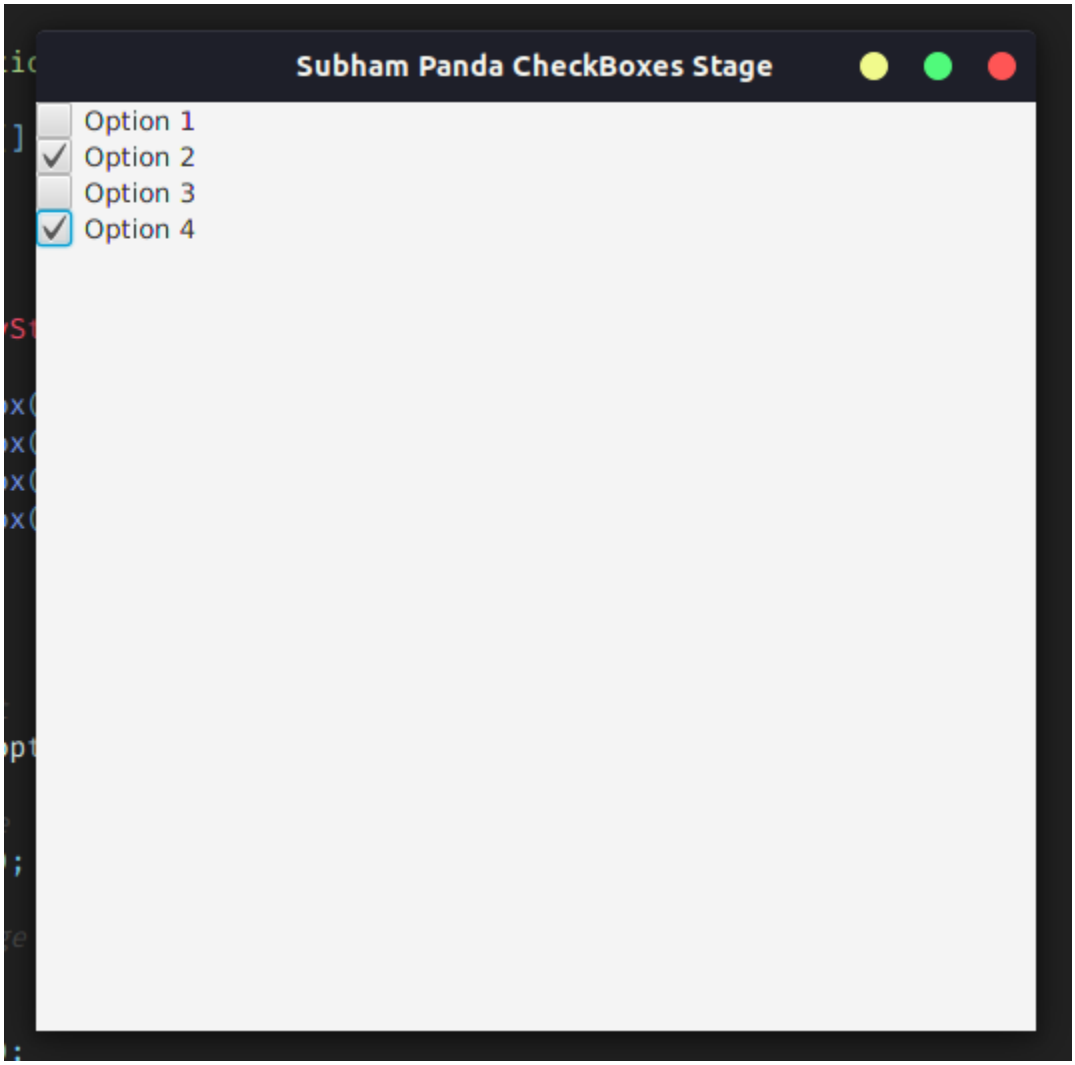
14. Checkboxes

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p14fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       //creating check boxes
       CheckBox opt1 = new CheckBox("Option 1");
       CheckBox opt2 = new CheckBox("Option 2");
       CheckBox opt3 = new CheckBox("Option 3");
       CheckBox opt4 = new CheckBox("Option 4");

       // defining layout
       VBox root = new VBox();

       // adding control to layout
       root.getChildren().addAll(opt1, opt2, opt3, opt4);

       // adding layout to a scene
       Scene scn = new Scene(root);

       // adding scene to the stage
       primaryStage.setScene(scn);

       primaryStage.setHeight(500);
       primaryStage.setWidth(500);
       primaryStage.setTitle("Subham Panda Radio Buttons Stage");

       // displaying the stage
```

```
        primaryStage.show();
    }
}
```

Output:

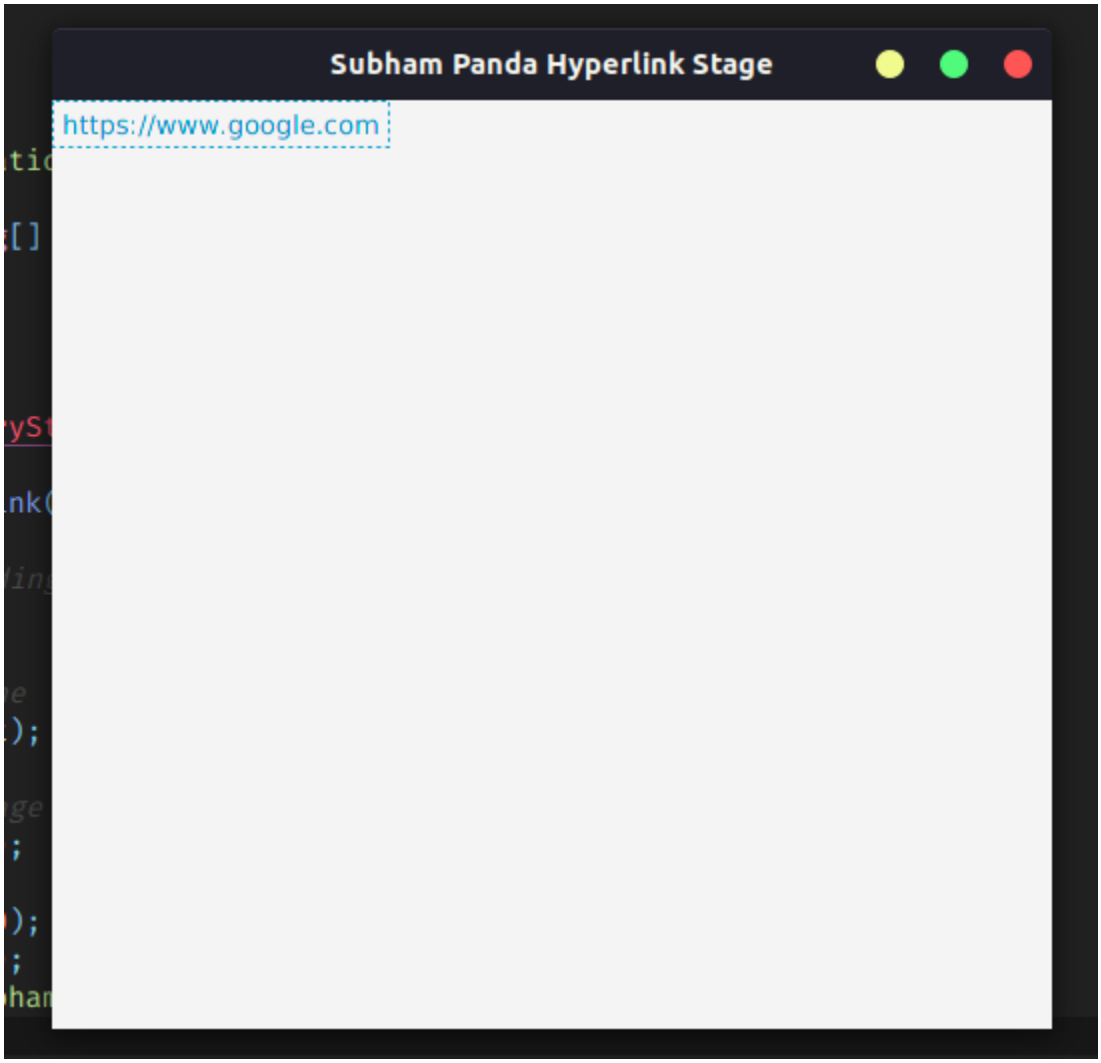


15. Hyperlink

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p15fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       //creating hyperlink
       Hyperlink hl = new Hyperlink("https://www.google.com");

       // defining layout and adding hyperlink to it
       VBox root = new VBox(hl);

       // adding layout to a scene
       Scene scn = new Scene(root);

       // adding scene to the stage
       primaryStage.setScene(scn);

       primaryStage.setHeight(500);
       primaryStage.setWidth(500);
       primaryStage.setTitle("Subham Panda Hyperlink Stage");

       // displaying the stage
       primaryStage.show();
   }
}
```

Output:

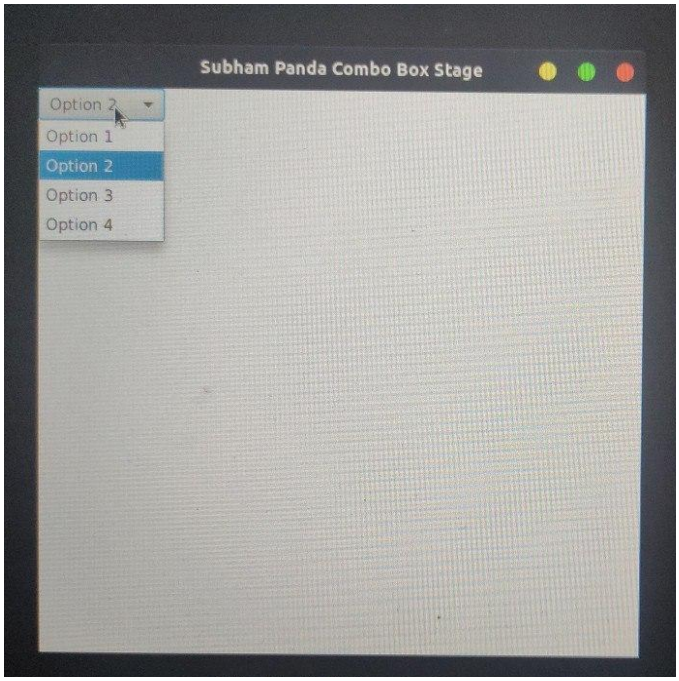


16. Combo Box

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p16fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       //creating combo box
       ComboBox<String> options = new ComboBox<String>();
       options.getItems().add("Option 1");
       options.getItems().add("Option 2");
       options.getItems().add("Option 3");
       options.getItems().add("Option 4");

       // defining layout and adding control
       VBox root = new VBox(options);

       // adding layout to a scene
       Scene scn = new Scene(root);

       // adding scene to the stage
       primaryStage.setScene(scn);
       primaryStage.setHeight(500);
       primaryStage.setWidth(500);
       primaryStage.setTitle("Subham Panda Combo Box Stage");

       // displaying the stage
       primaryStage.show();
   }
}
```

Output:


Subham Panda Combo Box Stage
Option 2
Option 1
Option 2
Option 3
Option 4

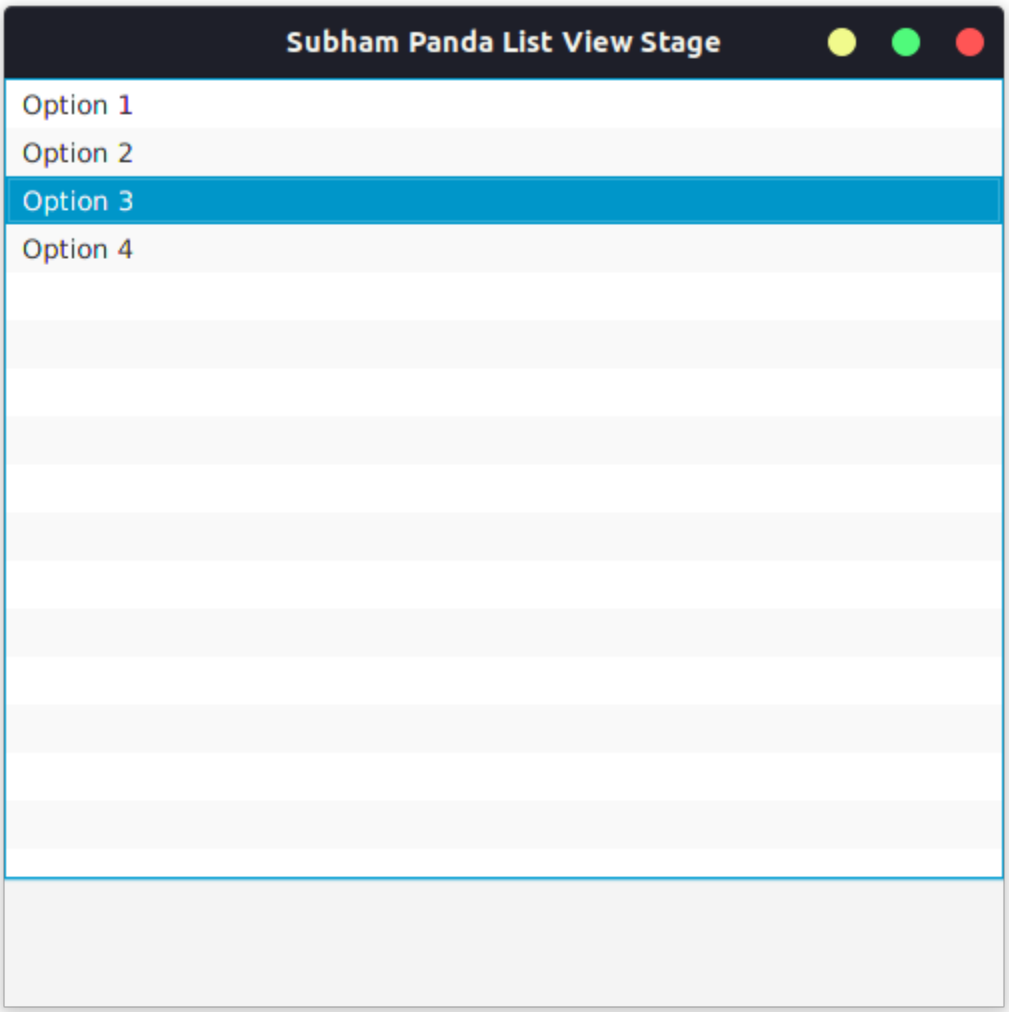
17. ListView

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p17fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       //creating list view
       ListView<String> options = new ListView<String>();

options.getSelectionModel().setSelectionMode(SelectionMode.MULTIPLE);
       options.getItems().add("Option 1");
       options.getItems().add("Option 2");
       options.getItems().add("Option 3");
       options.getItems().add("Option 4");

       // defining layout and adding control
       VBox root = new VBox(options);

       // adding layout to a scene
       Scene scn = new Scene(root);

       // adding scene to the stage
       primaryStage.setScene(scn);
       primaryStage.setHeight(500);
       primaryStage.setWidth(500);
       primaryStage.setTitle("Subham Panda List View Stage");

       // displaying the stage
       primaryStage.show();
```

```
    }
}
```

Output:


Subham Panda List View Stage
Option 1
Option 2
Option 3
Option 4

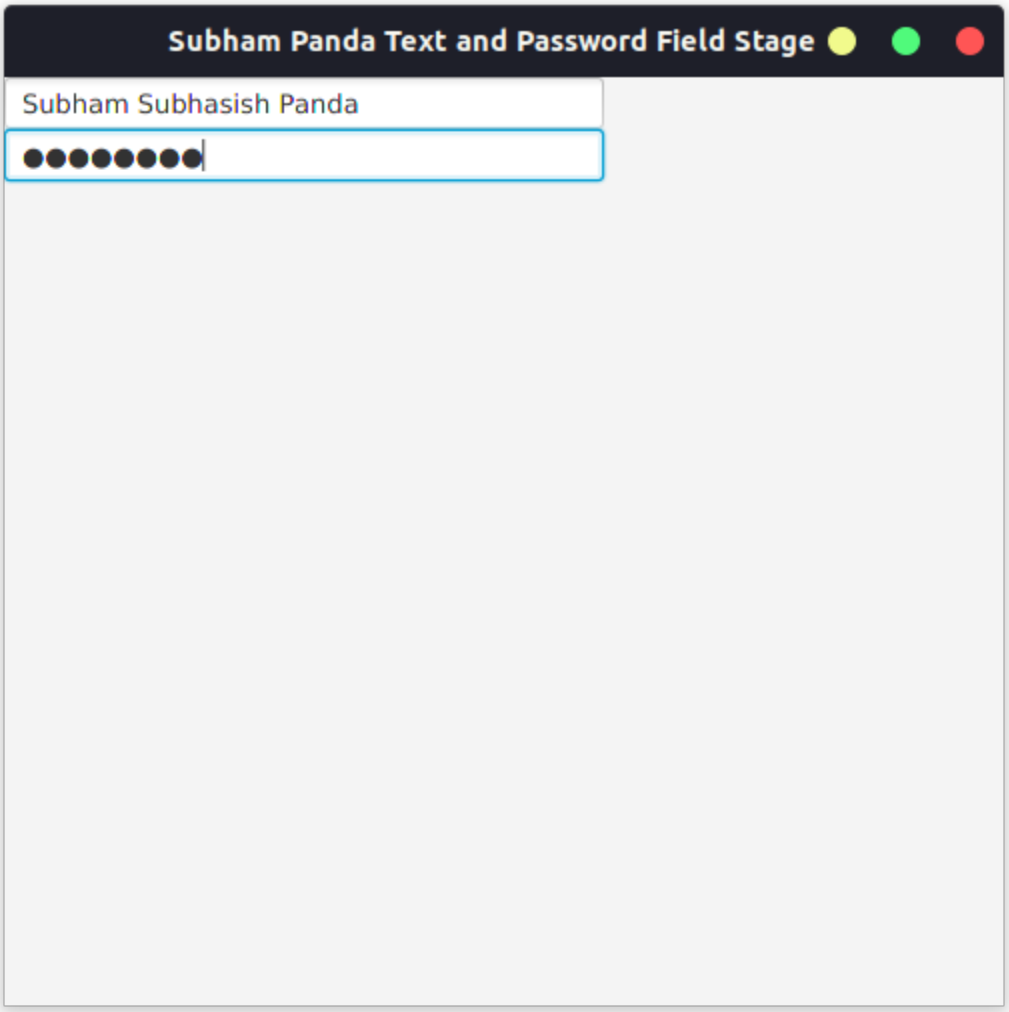
18. TextField and PasswordField

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p18fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       //creating text field and password field
       TextField name = new TextField();
       name.setMaxWidth(300);
       PasswordField pass = new PasswordField();
       pass.setMaxWidth(300);

       // defining layout and adding control
       VBox root = new VBox();
       root.getChildren().addAll(name, pass);

       // adding layout to a scene
       Scene scn = new Scene(root);

       // adding scene to the stage
       primaryStage.setScene(scn);
       primaryStage.setHeight(500);
       primaryStage.setWidth(500);
       primaryStage.setTitle("Subham Panda Text and Password Field
Stage");

       // displaying the stage
       primaryStage.show();
   }
```

```
}
```

Output:


Subham Panda Text and Password Field Stage
Subham Subhasish Panda

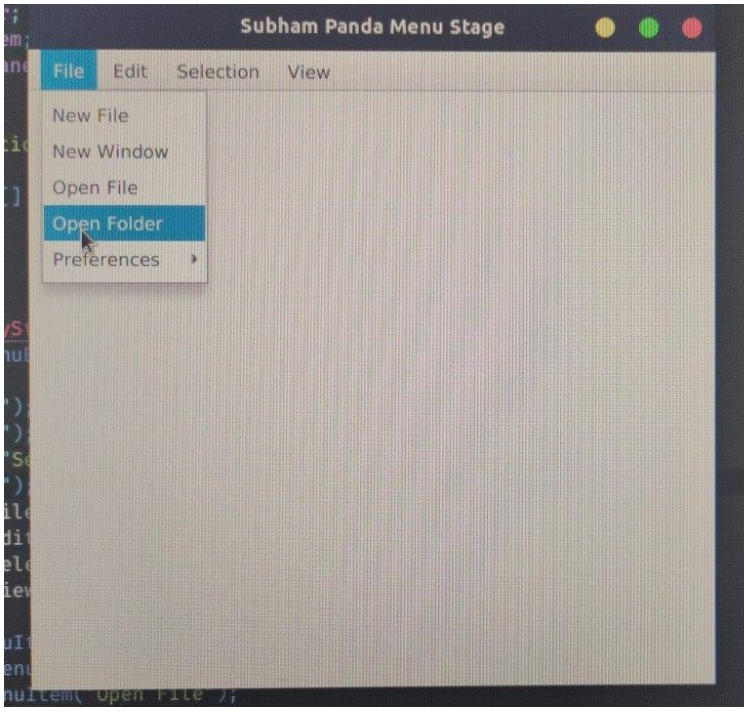
19. Menu, MenuBar, MenuItem, Submenu

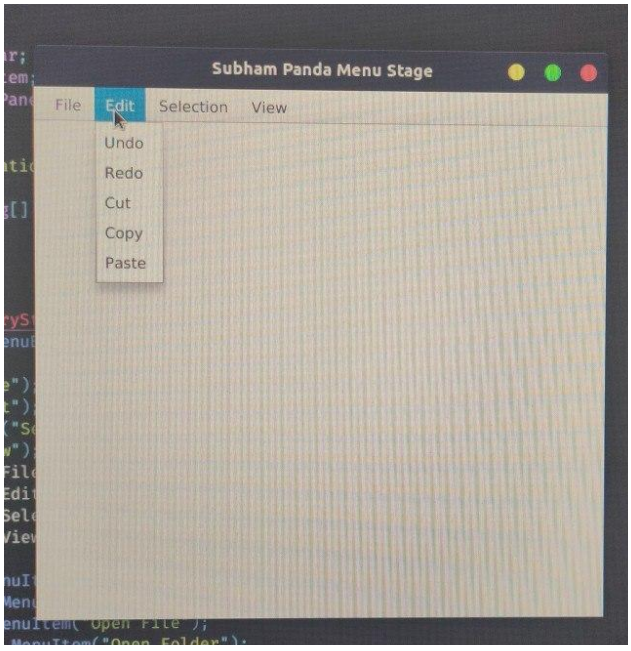
Code:

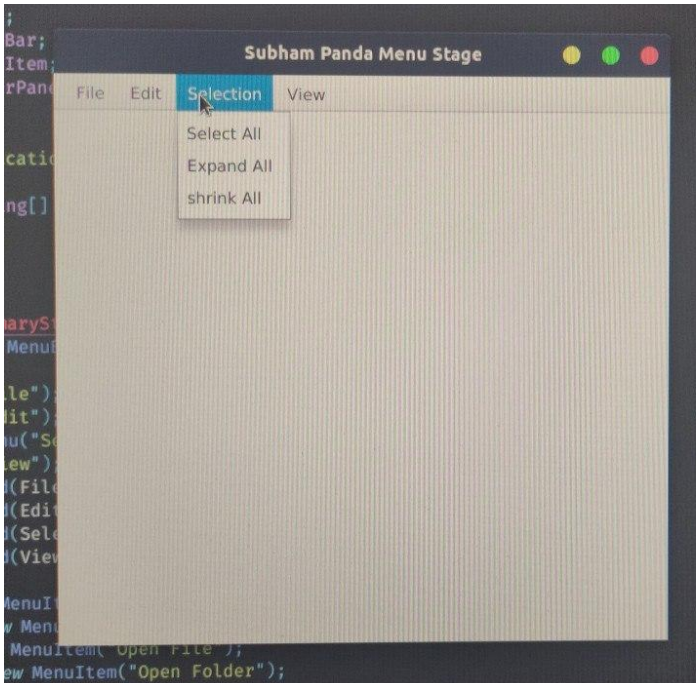
```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.Menu;
import javafx.scene.control.MenuBar;
import javafx.scene.control.MenuItem;
import javafx.scene.layout.BorderPane;
import javafx.stage.Stage;

public class p19fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       MenuBar main_menu = new MenuBar();

       Menu File = new Menu("File");
       Menu Edit = new Menu("Edit");
       Menu Selection = new Menu("Selection");
       Menu View = new Menu("View");
       main_menu.getMenus().add(File);
       main_menu.getMenus().add(Edit);
       main_menu.getMenus().add(Selection);
       main_menu.getMenus().add(View);

       MenuItem newFile = new MenuItem("New File");
       MenuItem newWindow = new MenuItem("New Window");
       MenuItem openFile = new MenuItem("Open File");
       MenuItem openFolder = new MenuItem("Open Folder");
       Menu preferences = new Menu("Preferences");
       MenuItem settings = new MenuItem("Settings");
       MenuItem extensions = new MenuItem("Extensions");
       MenuItem snippets = new MenuItem("Snippets");
       MenuItem colortheme = new MenuItem("Color Theme");
```

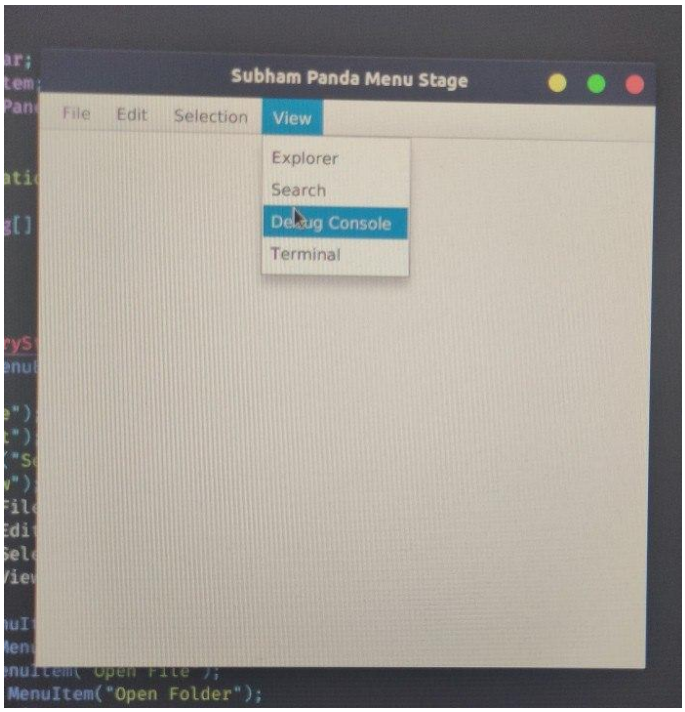
```
        preferences.getItems().addAll(settings, extensions, snippets,
colortheme);
        File.getItems().addAll(newFile, newWindow, openFile, openFolder,
preferences);

        MenuItem undo = new MenuItem("Undo");
        MenuItem redo = new MenuItem("Redo");
        MenuItem cut = new MenuItem("Cut");
        MenuItem copy = new MenuItem("Copy");
        MenuItem paste = new MenuItem("Paste");
        Edit.getItems().addAll(undo, redo, cut, copy, paste);

        MenuItem selectAll = new MenuItem("Select All");
        MenuItem expandAll = new MenuItem("Expand All");
        MenuItem shrinkAll = new MenuItem("shrink All");
        Selection.getItems().addAll(selectAll, expandAll, shrinkAll);

        MenuItem explorer = new MenuItem("Explorer");
        MenuItem search = new MenuItem("Search");
        MenuItem debugConsole = new MenuItem("Debug Console");
        MenuItem terminal = new MenuItem("Terminal");
        View.getItems().addAll(explorer, search, debugConsole, terminal);

        BorderPane root = new BorderPane();
        root.setTop(main_menu);
        Scene scn = new Scene(root);
        primaryStage.setScene(scn);
        primaryStage.setWidth(500);
        primaryStage.setHeight(500);
        primaryStage.setTitle("Subham Panda Menu Stage");
        primaryStage.show();
    }
}
```

Output:


Subham Panda Menu Stage
File
Edit
Selection
View
New File
New Window
Open File
Open Folder
Preferences


Subham Panda Menu Stage
File
Edit
Selection
View
Undo
Redo
Cut
Copy
Paste


Subham Panda Menu Stage
File
Edit
Selection
View
Select All
Expand All
shrink All
MenuItem("Open Folder");


Subham Panda Menu Stage
File
Edit
Selection
View
Explorer
Search
Terminal
MenuItem("Open Folder");

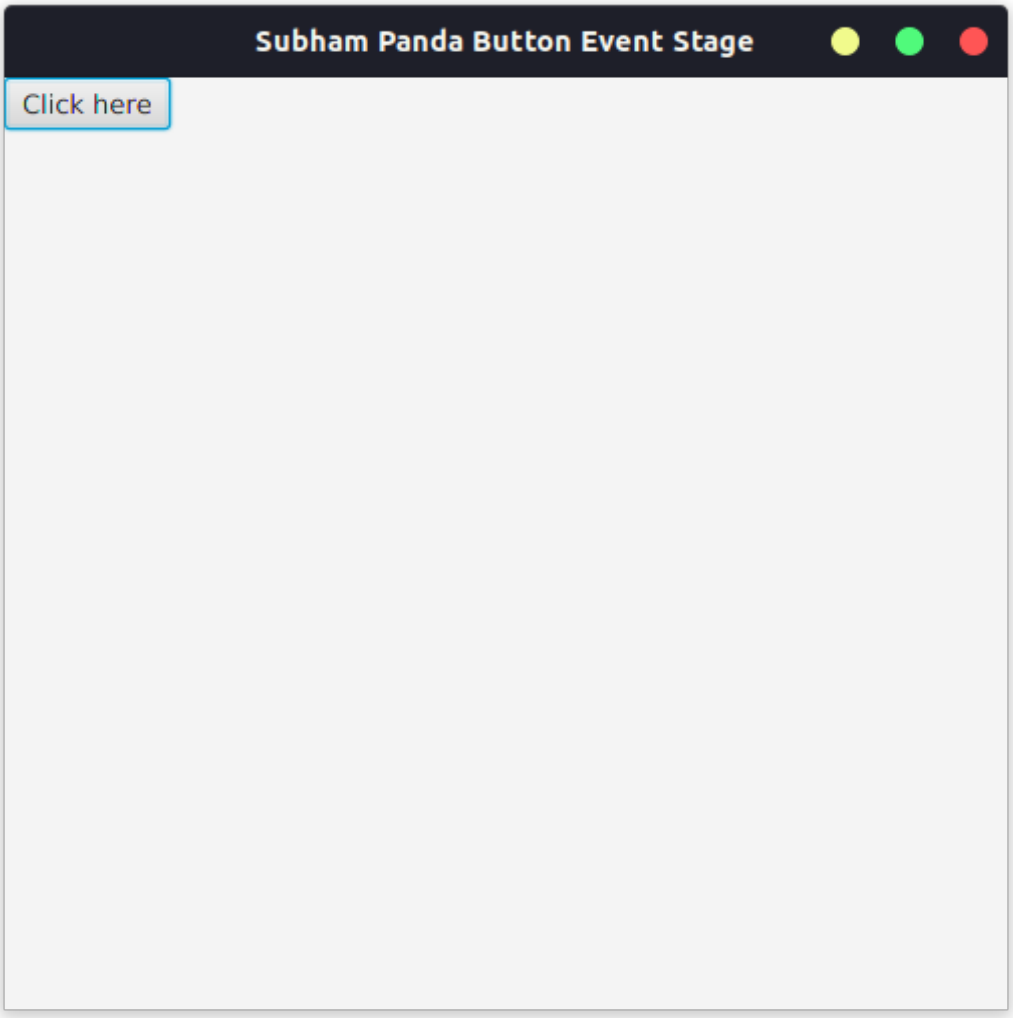
20. Button setOnAction Event

Code:

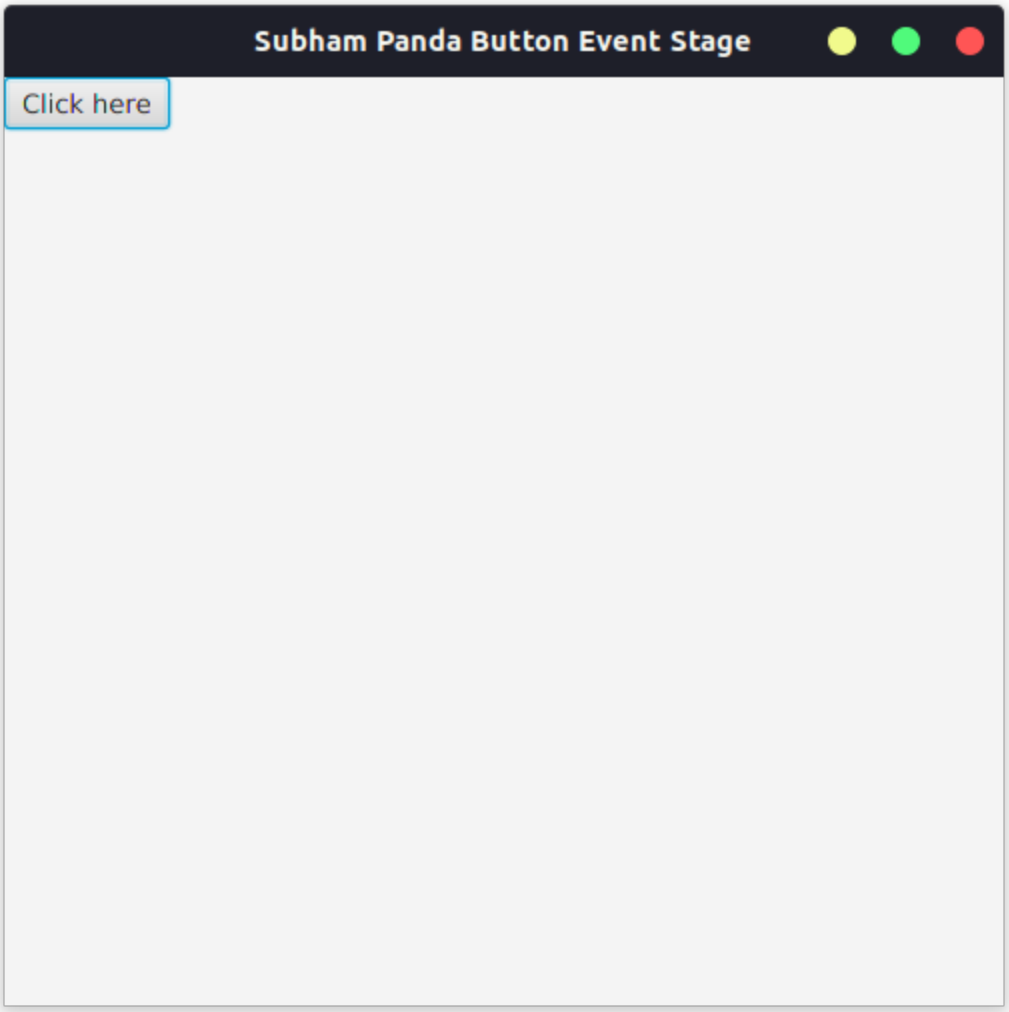
```
import javafx.application.Application;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.Button;
import javafx.scene.control.Label;
import javafx.scene.layout.VBox;
import javafx.stage.Stage;

public class p20fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       Button btn = new Button("Click here");
       Label lbl = new Label();

       btn.setOnAction(new EventHandler<ActionEvent>(){

           @Override
           public void handle(ActionEvent event) {
               lbl.setText("You have clicked the button");
           }
       });

       VBox root = new VBox();
       root.getChildren().addAll(btn, lbl);
       Scene scn = new Scene(root);
       primaryStage.setScene(scn);
       primaryStage.setWidth(500);
       primaryStage.setHeight(500);
       primaryStage.setTitle("Subham Panda Button Event Stage");
       primaryStage.show();
   }
```

```
}
```

Output (Before click):



Output (After click):



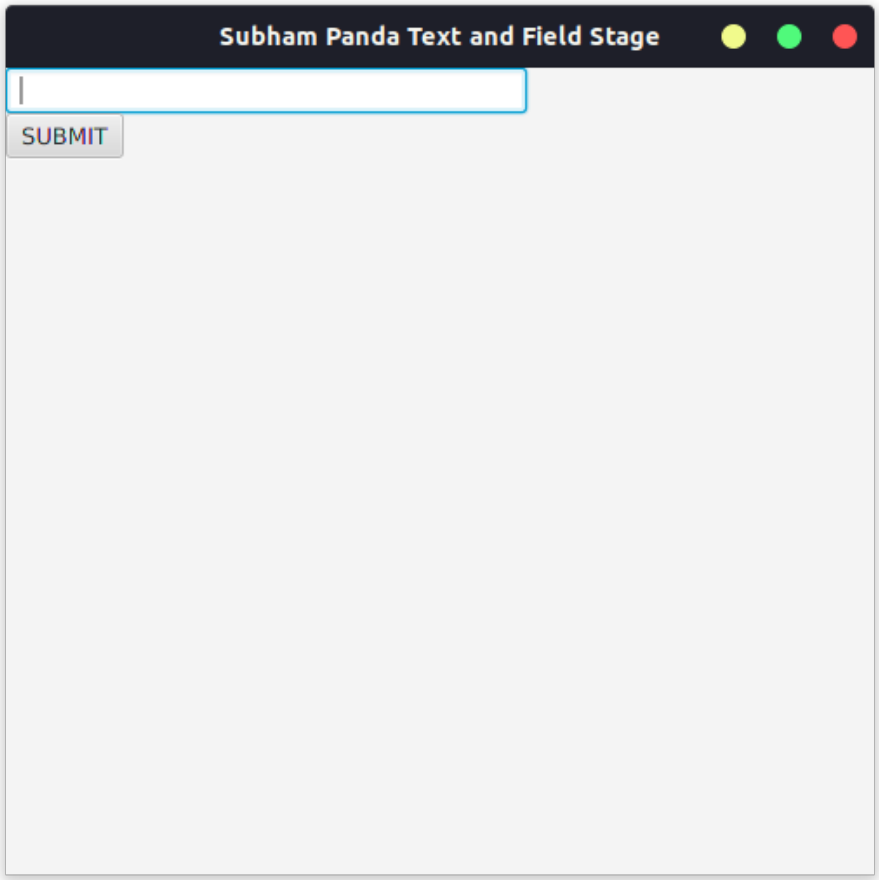
21. Getting Input from TextField

Code:

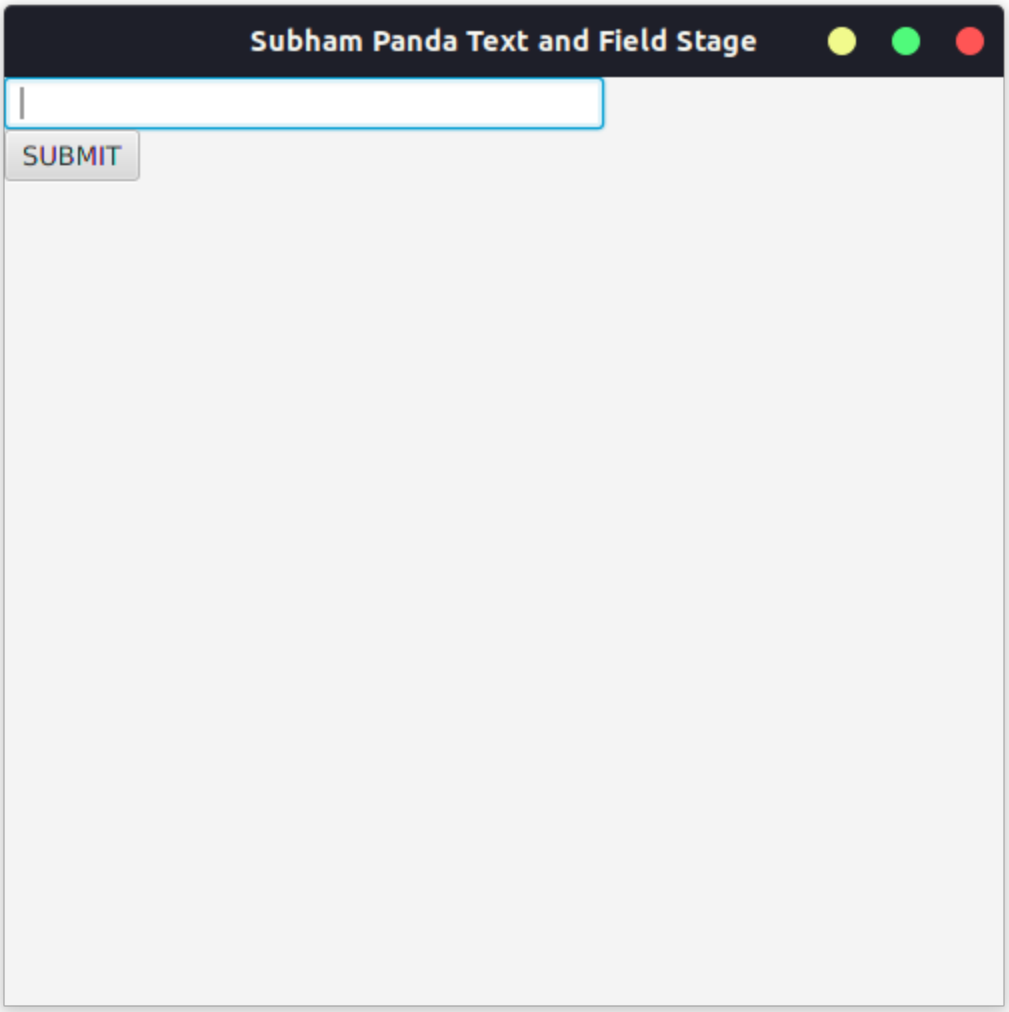
```
import javafx.application.Application;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p21fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       TextField name = new TextField();
       name.setMaxWidth(300);
       Button btn = new Button("SUBMIT");
       Label lbl = new Label();

       btn.setOnAction(new EventHandler<ActionEvent>(){

           @Override
           public void handle(ActionEvent event) {
               if (name.getText().isEmpty()) {
                   lbl.setText("Please enter some name");
               } else {
                   lbl.setText("Welcome Mr."+name.getText());
               }
           }

       });

       // defining layout and adding control
       VBox root = new VBox();
       root.getChildren().addAll(name,btn,lbl);
```

```
        // adding layout to a scene
        Scene scn = new Scene(root);

        // adding scene to the stage
        primaryStage.setScene(scn);
        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda Text Field Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

Output (Before Click):



Output (After Click):



22. Getting Input From Radio Button

Code:

```
import javafx.application.Application;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p22fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       ToggleGroup group = new ToggleGroup();
       RadioButton opt1 = new RadioButton("Option 1 - Correct answer");
       RadioButton opt2 = new RadioButton("Option 2 - Wrong answer");
       RadioButton opt3 = new RadioButton("Option 3 - Wrong Answer");
       RadioButton opt4 = new RadioButton("Option 4 - Wrong Answer");
       Button btn = new Button("SUBMIT");
       Label lbl = new Label();
       opt1.setToggleGroup(group);
       opt2.setToggleGroup(group);
       opt3.setToggleGroup(group);
       opt4.setToggleGroup(group);

       btn.setOnAction(new EventHandler<ActionEvent>(){

           @Override
           public void handle(ActionEvent event) {
               if (opt1.isSelected()) {
                   lbl.setText("You have selected the correct answer: " +
opt1.getText());
               } else if (!opt1.isSelected() && !opt2.isSelected() &&
!opt3.isSelected() && !opt4.isSelected()) {
```

```
                    lbl.setText("Select some answer");
                } else {
                    lbl.setText("You have selected the wrong answer");
                }
            }
        });

        // defining layout
        VBox root = new VBox();

        // adding control to layout
        root.getChildren().addAll(opt1, opt2, opt3, opt4, btn, lbl);

        // adding layout to a scene
        Scene scn = new Scene(root);

        // adding scene to the stage
        primaryStage.setScene(scn);

        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda Radio Buttons Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

Output (Before Click):

Output (After Click):

23. Getting Input From Check Box

Code:

```
import javafx.application.Application;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p23fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       CheckBox opt1 = new CheckBox("Option 1");
       CheckBox opt2 = new CheckBox("Option 2");
       CheckBox opt3 = new CheckBox("Option 3");
       CheckBox opt4 = new CheckBox("Option 4");
       Button btn = new Button("SUBMIT");
       Label lbl = new Label();
       btn.setOnAction(new EventHandler<ActionEvent>(){

           @Override
           public void handle(ActionEvent event) {
               String selectedText = "";
               if (opt1.isSelected()) {
                   selectedText += opt1.getText() + " ";
               }
               if (opt2.isSelected()) {
                   selectedText += opt2.getText() + " ";
               }
               if (opt3.isSelected()) {
                   selectedText += opt3.getText() + " ";
               }
               if (opt4.isSelected()) {
```

```
                selectedText += opt4.getText() + " ";
            }
            if (selectedText.isEmpty()) {
                lbl.setText("Please select some option");
            } else {
                lbl.setText("You have selected: "+selectedText);
            }
        }
    });

    // defining layout
    VBox root = new VBox();

    // adding control to layout
    root.getChildren().addAll(opt1, opt2, opt3, opt4,btn,lbl);

    // adding layout to a scene
    Scene scn = new Scene(root);

    // adding scene to the stage
    primaryStage.setScene(scn);

    primaryStage.setHeight(500);
    primaryStage.setWidth(500);
    primaryStage.setTitle("Subham Panda CheckBoxes Stage");

    // displaying the stage
    primaryStage.show();
  }
}
```

Output (Before Click):

Output (After Click):

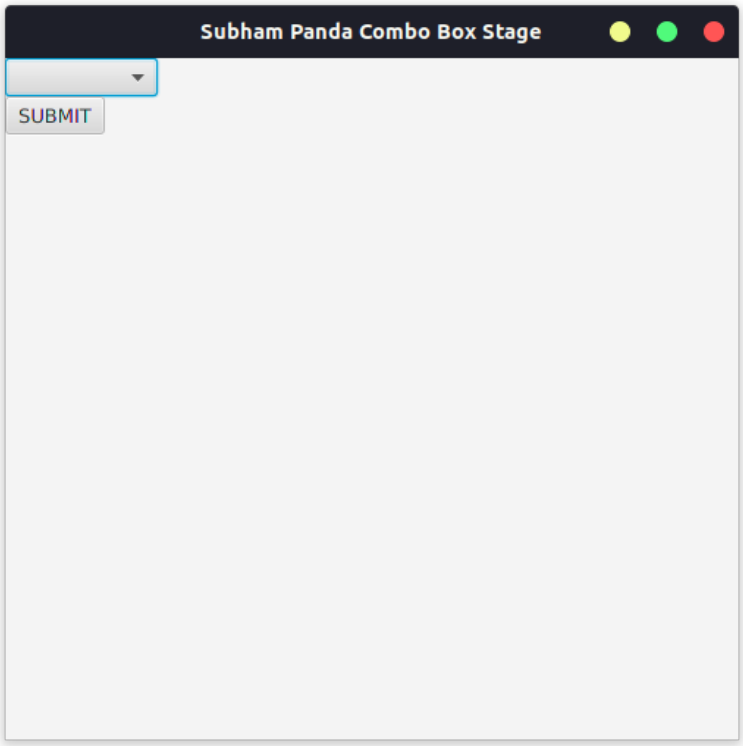
24. Getting Input From Combo Box

Code:

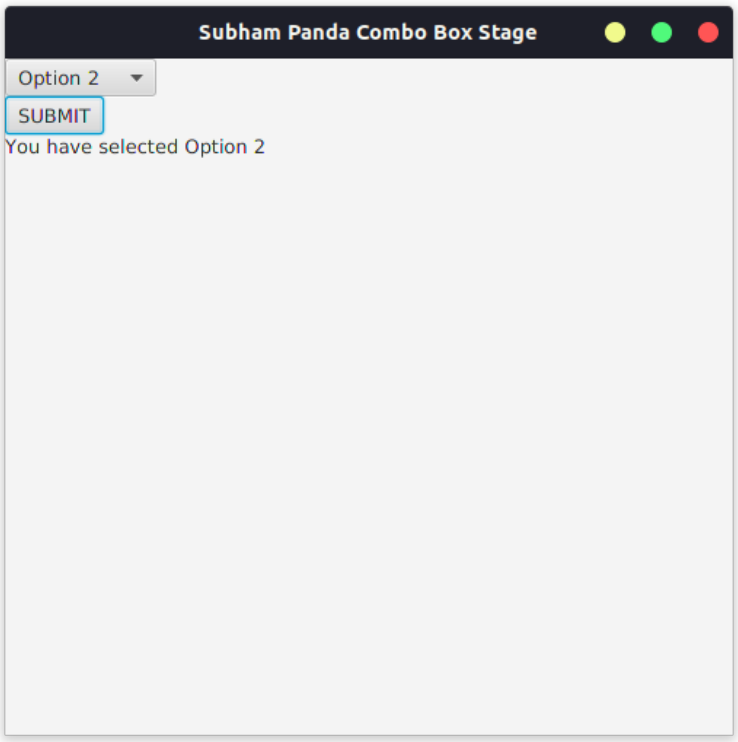
```
import javafx.application.Application;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p24fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       //creating combo box
       ComboBox<String> options = new ComboBox<String>();
       options.getItems().add("Option 1");
       options.getItems().add("Option 2");
       options.getItems().add("Option 3");
       options.getItems().add("Option 4");
       Button btn = new Button("SUBMIT");
       Label lbl = new Label();
       btn.setOnAction(new EventHandler<ActionEvent>(){

           @Override
           public void handle(ActionEvent event) {
               if (options.getValue() == null) {
                   lbl.setText("Please select an option");
               } else {
                   lbl.setText("You have selected "+options.getValue());
               }
           }
       });
       // defining layout and adding control
       VBox root = new VBox(options,btn,lbl);
```

```
        // adding layout to a scene
        Scene scn = new Scene(root);

        // adding scene to the stage
        primaryStage.setScene(scn);
        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda Combo Box Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

Output (Before Click):



Output (After Click):



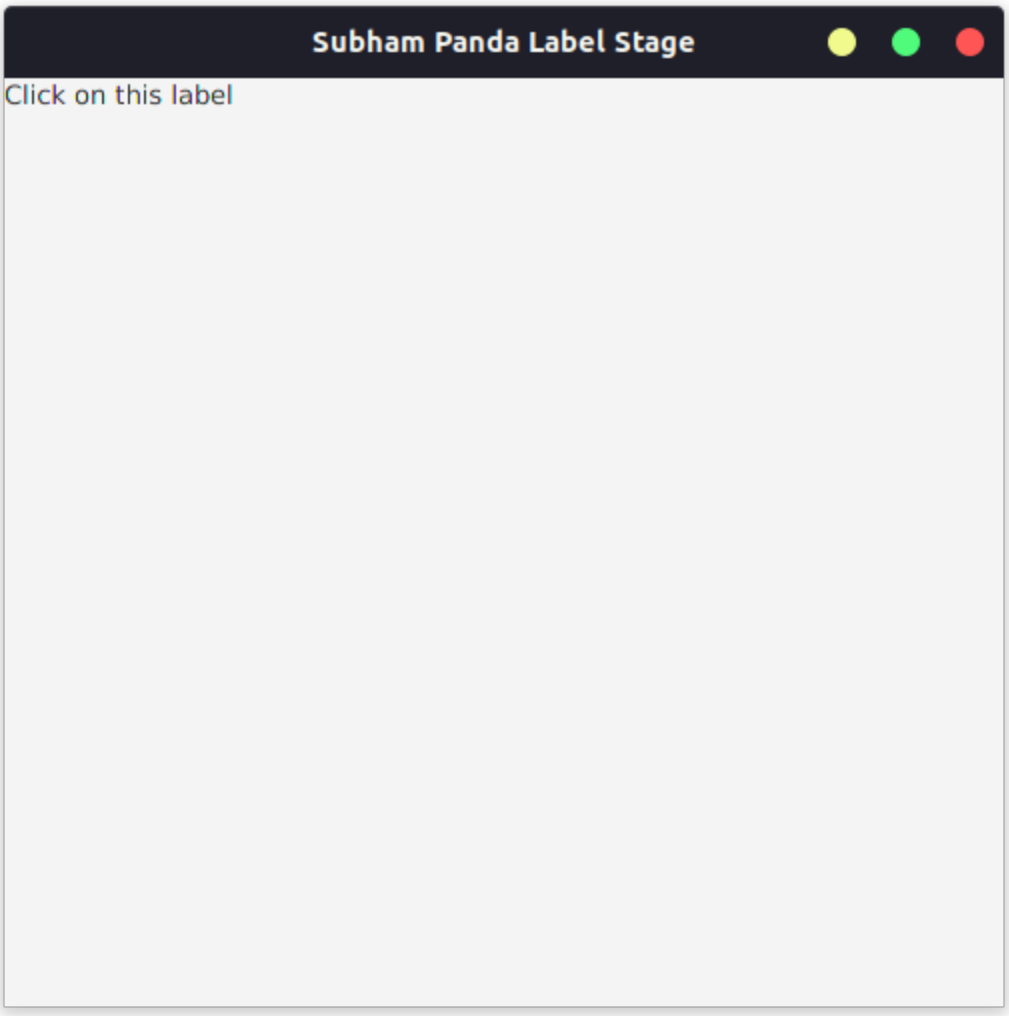
25. Event on Click over Label

Code:

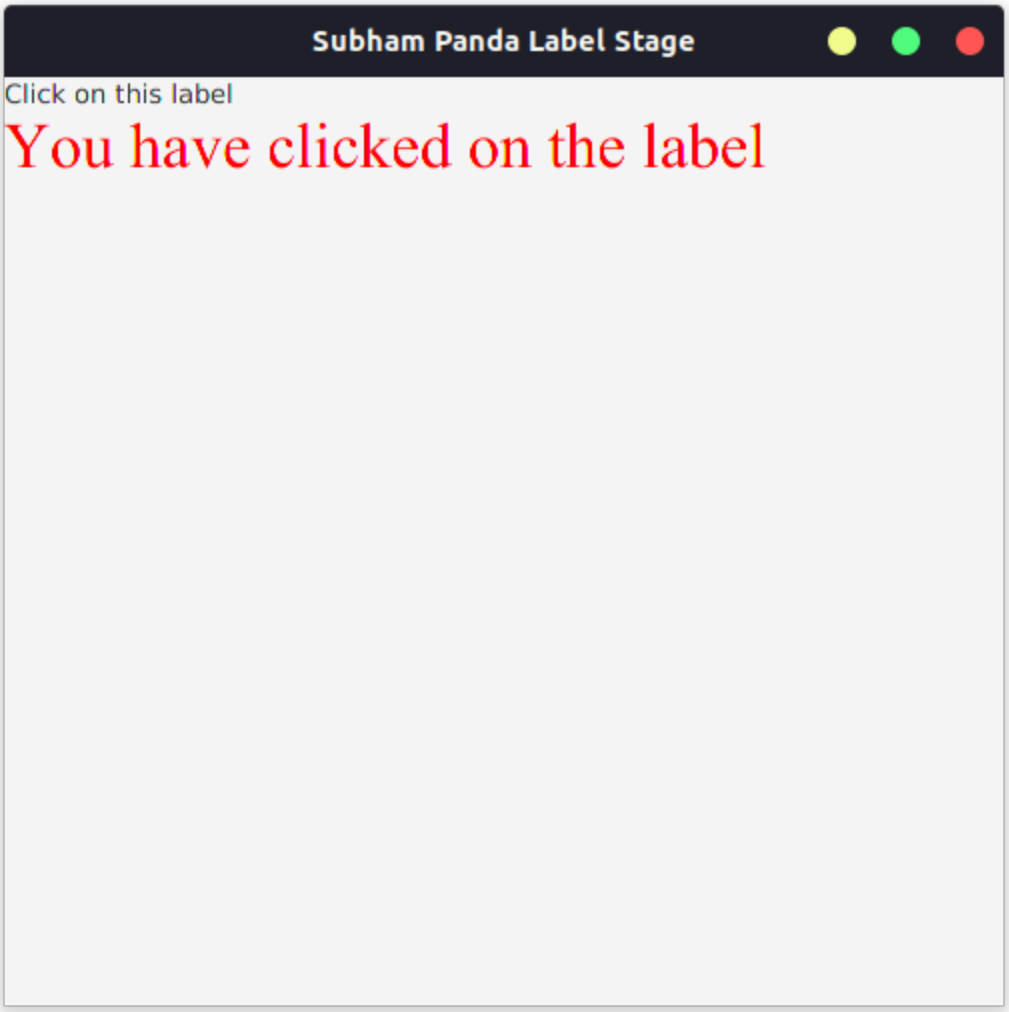
```
import javafx.application.Application;
import javafx.event.Event;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.scene.paint.Color;
import javafx.scene.text.Font;
import javafx.stage.Stage;

public class p25fx extends Application {
   public static void main(String[] args) throws Exception {
       launch();
   }

   @Override
   public void start(Stage primaryStage) throws Exception {
       Label lblMain = new Label ("Click on this label");
       Label lbl = new Label();
       lbl.setFont(new Font("Times New Roman", 32));
       lbl.setTextFill(Color.RED);
       lblMain.setOnMouseClicked(new EventHandler<Event>(){

           @Override
           public void handle(Event event) {
               lbl.setText("You have clicked on the label");
           }
       });
       // defining layout and adding control
       VBox root = new VBox(lblMain,lbl);

       // adding layout to a scene
       Scene scn = new Scene(root);

       // adding scene to the stage
       primaryStage.setScene(scn);
```

```
        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda Label Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

Output (Before Click):



Output (After Click):



JDBC EXERCISES

1. Basic SQL Commands

Starting MySQL and logging in:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5 mycli -u guest -p -h127.0.0.1
(2003, "Can't connect to MySQL server on 'localhost' ([Errno 2] No such file or directory)")
Failed to connect by socket, retrying over TCP/IP
Password:
mysql 8.0.25
mycli 1.20.1
Chat: https://gitter.im/dbcli/mycli
Mail: https://groups.google.com/forum/#!forum/mycli-users
Home: http://mycli.net
Thanks to the contributor - Open Query Pty Ltd
```

Creating Database:

```
mysql guest@localhost:(none)> create database vitSubham;

Query OK, 1 row affected
Time: 0.012s
mysql guest@localhost:(none)> show databases;

+--------------------+
| Database           |
+--------------------+
| information_schema |
| main               |
| mysql              |
| performance_schema |
| sys                |
| vitSubham          |
+--------------------+
6 rows in set
Time: 0.029s
```

Selecting Database:

```
mysql guest@localhost:(none)> use vitSubham;

You are now connected to database "vitSubham" as user "guest"
Time: 0.001s
```

Creating Table:

```
mysql guest@localhost:vitSubham> create table students ( name VARCHAR(20),password VARCHAR(20), country VARCHAR(20
), marks INT );
Query OK, 0 rows affected
Time: 0.067s
mysql guest@localhost:vitSubham> show tables;

+---------------------+
| Tables_in_vitSubham |
+---------------------+
| students            |
+---------------------+
1 row in set
Time: 0.031s
```

Insert Command:

```
mysql guest@localhost:vitSubham> insert into students values ("Subham Panda","password","India",85);

Query OK, 1 row affected
Time: 0.026s
mysql guest@localhost:vitSubham> insert into students values ("Anmol Kumar","australiapassword","Australia",89);

Query OK, 1 row affected
Time: 0.004s
```

Select query:

```
mysql guest@localhost:vitSubham> select * from students;

+--------------+-------------------+-----------+-------+
| name         | password          | country   | marks |
+--------------+-------------------+-----------+-------+
| Subham Panda | password          | India     | 85    |
| Anmol Kumar  | australiapassword | Australia | 89    |
+--------------+-------------------+-----------+-------+
2 rows in set
Time: 0.028s
mysql guest@localhost:vitSubham> select * from students where country="India";

+--------------+----------+---------+-------+
| name         | password | country | marks |
+--------------+----------+---------+-------+
| Subham Panda | password | India   | 85    |
+--------------+----------+---------+-------+
1 row in set
Time: 0.029s
```

```
mysql guest@localhost:vitSubham> select * from students where marks > 85;

+--------------+-------------------+-----------+-------+
| name         | password          | country   | marks |
+--------------+-------------------+-----------+-------+
| Anmol Kumar | australiapassword | Australia | 89    |
+--------------+-------------------+-----------+-------+
1 row in set
Time: 0.012s
```

Update query:

```
mysql guest@localhost:vitSubham> update students set password="testpass" where name="Anmol Kumar";

Query OK, 1 row affected
Time: 0.007s
```

```
mysql guest@localhost:vitSubham> select password from students where name="Anmol Kumar"

+----------+
| password |
+----------+
| testpass |
+----------+
1 row in set
Time: 0.012s
```

Delete query:

```
mysql guest@localhost:vitSubham> delete from students where name="Subham Panda"

You're about to run a destructive command.
Do you want to proceed? (y/n): y
Your call!
Query OK, 1 row affected
Time: 0.006s
mysql guest@localhost:vitSubham> select * from students;

+--------------+----------+-----------+-------+
| name         | password | country   | marks |
+--------------+----------+-----------+-------+
| Anmol Kumar | testpass | Australia | 89    |
+--------------+----------+-----------+-------+
1 row in set
Time: 0.027s
```

2. Connecting to Database

Code:

```
import java.sql.*;

public class p1jdbc {
   public static void main(String[] args) {
        String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
        String USER = "guest";
        String PASS = "guest123";
        try {
            Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);
            System.out.println("Connection established successfully");
            con.close();
        } catch (SQLException e) {
            System.out.println(e.getMessage());
        }
   }
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC
Connection established successfully
```

3. Inserting record

Code:

```
// Inserting record
import java.sql.*;

public class p2jdbc {
   public static void main(String[] args) {
       String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
       String USER = "guest";
       String PASS = "guest123";
       try {
           Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);
           System.out.println("Connection established successfully");
           Statement smt = con.createStatement();
           smt.executeUpdate("insert into students values
('Tommy','test','UK',95);");
           System.out.println("Record inserted successfully");
           smt.close();
           con.close();
       } catch (SQLException e) {
           System.out.println(e.getMessage());
       }
   }
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC  cd "/home/subham/
ng=UTF-8 @/tmp/cp_4dr11bhptrymayeic800forzp.argfile p2jdbc
Connection established successfully
Record inserted successfully
```

```
mysql guest@localhost:vitSubham> select * from students
+-------------+----------+-----------+-------+
| name        | password | country   | marks |
+-------------+----------+-----------+-------+
| Anmol Kumar | testpass | Australia | 89    |
| Tommy       | test     | UK        | 95    |
+-------------+----------+-----------+-------+
2 rows in set
Time: 0.011s
```

4. Update operation

Code:

```
// updating record
import java.sql.*;

public class p3jdbc {
   public static void main(String[] args) {
       String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
       String USER = "guest";
       String PASS = "guest123";
       try {
           Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);
           System.out.println("Connection established successfully");
           Statement smt = con.createStatement();
           smt.executeUpdate("update students set password='testpass1'
where name='Tommy';");
           System.out.println("Record updated successfully");
           smt.close();
           con.close();
       } catch (SQLException e) {
           System.out.println(e.getMessage());
       }
   }
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC  cd "/home/subham/D
ng=UTF-8 @/tmp/cp_4dr11bhptrymayeic800forzp.argfile p3jdbc
Connection established successfully
Record updated successfully
```

```
mysql guest@localhost:vitSubham> select * from students
+-------------+----------+-----------+-------+
| name        | password | country   | marks |
+-------------+----------+-----------+-------+
| Anmol Kumar | testpass | Australia | 89    |
| Tommy       | testpass1 | UK       | 95    |
+-------------+----------+-----------+-------+
2 rows in set
Time: 0.018s
```

5. Delete operation

Code:

```
// deleting record
import java.sql.*;

public class p4jdbc {
   public static void main(String[] args) {
        String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
        String USER = "guest";
        String PASS = "guest123";
        try {
            Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);
            System.out.println("Connection established successfully");
            Statement smt = con.createStatement();
            smt.executeUpdate("delete from students where name='Tommy';");
            System.out.println("Record deleted successfully");
            smt.close();
            con.close();
        } catch (SQLException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC  cd "/home/subham/Do
ng=UTF-8 @/tmp/cp_4dr11bhptrymayeic800forzp.argfile p4jdbc
Connection established successfully
Record deleted successfully
```

```
mysql guest@localhost:vitSubham> select * from students
+-------------+----------+-----------+-------+
| name        | password | country   | marks |
+-------------+----------+-----------+-------+
| Anmol Kumar | testpass | Australia | 89    |
+-------------+----------+-----------+-------+
1 row in set
Time: 0.027s
```

6. Fetching records

Code:

```
// fetching records - selct * from students;
import java.sql.*;

public class p5jdbc {
   public static void main(String[] args) {
       String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
       String USER = "guest";
       String PASS = "guest123";
       try {
           Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);
           System.out.println("Connection established successfully");
           Statement smt =
con.createStatement(ResultSet.TYPE_SCROLL_INSENSITIVE,ResultSet.CONCUR_UPD
ATABLE);
           ResultSet rs = smt.executeQuery("select * from students;");
           if (rs.next() == false) {
               System.out.println("The table is empty");
           } else {
               rs.previous();
               while (rs.next()) {
                   System.out.println("Name: "+rs.getString(1)+",
Password: "+rs.getString(2)+", Country: "+rs.getString(3)+", Marks:
"+rs.getInt(4));
               }
           }
           smt.close();
           con.close();
       } catch (SQLException e) {
           System.out.println(e.getMessage());
       }
   }
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC  cd "/home/subham/Documents
ng=UTF-8 @/tmp/cp_4dr11bhptrymayeic800forzp.argfile p5jdbc
Connection established successfully
Name: Anmol Kumar, Password: testpass, Country: Australia, Marks: 89
Name: Subham Panda, Password: password, Country: India, Marks: 85
Name: Tommy, Password: test, Country: UK, Marks: 95
```

```
mysql guest@localhost:vitSubham> select * from students
+--------------+----------+-----------+-------+
| name         | password | country   | marks |
+--------------+----------+-----------+-------+
| Anmol Kumar  | testpass | Australia | 89    |
| Subham Panda | password | India     | 85    |
| Tommy        | test     | UK        | 95    |
+--------------+----------+-----------+-------+
3 rows in set
Time: 0.025s
```

6. Fetching records - using where clause

Code:

```
// fetching records - selct * from students where name='Subham Panda';
import java.sql.*;

public class p6jdbc {
   public static void main(String[] args) {
       String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
       String USER = "guest";
       String PASS = "guest123";
       try {
           Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);
           System.out.println("Connection established successfully");
           Statement smt =
con.createStatement(ResultSet.TYPE_SCROLL_INSENSITIVE,ResultSet.CONCUR_UPD
ATABLE);
           ResultSet rs = smt.executeQuery("select * from students where
name = 'Subham Panda';");
           if (rs.next() == false) {
               System.out.println("No such record found in database");
           } else {
               rs.previous();
               while (rs.next()) {
                   System.out.println("Name: "+rs.getString(1)+",
Password: "+rs.getString(2)+", Country: "+rs.getString(3)+", Marks:
"+rs.getInt(4));
               }
           }
           smt.close();
           con.close();
       } catch (SQLException e) {
           System.out.println(e.getMessage());
       }
   }
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC  cd "/home/subham/Documer
ng=UTF-8 @/tmp/cp_4dr11bhptrymayeic800forzp.argfile p6jdbc
Connection established successfully
Name: Subham Panda, Password: password, Country: India, Marks: 85
```

```
mysql guest@localhost:vitSubham> select * from students where name = 'Subham Panda'
+--------------+----------+---------+-------+
| name         | password | country | marks |
+--------------+----------+---------+-------+
| Subham Panda | password | India   | 85    |
+--------------+----------+---------+-------+
1 row in set
Time: 0.028s
```

7. Get details of student from user and insert record

Code:

```
// Getting details of student from user and Inserting record
import java.sql.*;
import java.util.Scanner;

public class p7jdbc {
   public static void main(String[] args) {
       String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
       String USER = "guest";
       String PASS = "guest123";
       try {
           Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);
           System.out.println("Connection established successfully");
           Scanner sc = new Scanner(System.in);
           System.out.print("Enter name of student: ");
           String name = sc.nextLine();
           System.out.print("Enter password: ");
           String password = sc.nextLine();
           System.out.print("Enter country name: ");
           String country = sc.nextLine();
           System.out.print("Enter marks: ");
           int marks = sc.nextInt();
           String sql = "insert into students values (?,?,?,?);";
           PreparedStatement smt = con.prepareStatement(sql);
           smt.setString(1, name);
           smt.setString(2, password);
           smt.setString(3, country);
           smt.setInt(4, marks);
           smt.execute();
           System.out.println("Record inserted successfully");
           smt.close();
           con.close();
       } catch (SQLException e) {
           System.out.println(e.getMessage());
       }
   }
```

```
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC  cd "/home/subham/Document
ng=UTF-8 @/tmp/cp_4dr11bhptrymayeic800forzp.argfile p7jdbc
Connection established successfully
Enter name of student: Saurav
Enter password: sauravpass
Enter country name: Canada
Enter marks: 95
Record inserted successfully
```

```
mysql guest@localhost:vitSubham> select * from students
+--------------+------------+-----------+-------+
| name         | password   | country   | marks |
+--------------+------------+-----------+-------+
| Anmol Kumar  | testpass   | Australia | 89    |
| Subham Panda | password   | India     | 85    |
| Tommy        | test       | UK        | 95    |
| Saurav       | sauravpass | Canada    | 95    |
+--------------+------------+-----------+-------+
4 rows in set
Time: 0.031s
```