SESSION - IV

Part - II

Lab No. 11 and 12: JavaFX and Event Handling

Lab Exercises

1. Write a JavaFX application program to do the following:

a. Display the message "Welcome to JavaFX programming" using Label in the Scene.

b. Set the text color of the Label to Magenta.

c. Set the title of the Stage to "This is the first JavaFX Application".

d. Set the width and height of the Scene to 500 and 200 respectively.

e. Use FlowPane layout and set the hgap and vgap of the FlowPane to desired values.

f. The program will accept an integer from the user in a text field and display the multiplication table (up to number *10) for that number.

Code:

import javafx.application.Application;

import javafx.scene.Scene;

import javafx.scene.control.*;

import javafx.scene.layout.*;

import javafx.event.ActionEvent;

import javafx.event.EventHandler;

import javafx.scene.control.Label;

import javafx.stage.Stage;

import javafx.scene.image.*;

import javafx.scene.paint.Color;

```java
import java.io.*;

public class lab10_1 extends Application {

int b1Data;

public void start(Stage s) throws Exception

{

s.setTitle("This is my first JavaFX Application");

s.setWidth(500);

s.setHeight(200);

Label b = new Label("Welcome to JavaFX programming");

b.setTextFill(Color.web("#ff00ff", 0.8));

TextField b1 = new
TextField("InputNumber");

b1.setOnAction(new
EventHandler<ActionEvent>()

{@Override

public void handle(ActionEvent event)

{b1Data = Integer.parseInt(b1.getText());

for(int i = 1; i < 11; i++)

{System.out.println(String.format("%d x %d = %d", b1Data, i, b1Data*i));

}

}

});

Label b3 = new Label("Enter a number");

b3.setLabelFor(b1);

FlowPane r = new FlowPane();

r.setVgap(8);

r.setHgap(4);
```

r.getChildren().add(b);

r.getChildren().add(b3);

r.getChildren().add(b1);

Scene sc = new Scene(r, 200, 200);

s.setScene(sc);

s.show();

}

public static void main(String args[])

{launch(args);

}

}

Test Case:

```
student@lplab-Lenovo-Product:~/190905513$ javac lab10_1.java
student@lplab-Lenovo-Product:~/190905513$ java lab10_1
10 x 1 = 10
10 x 2 = 20
10 x 3 = 30
10 x 4 = 40
10 x 5 = 50
10 x 6 = 60
10 x 7 = 70
10 x 8 = 80
10 x 9 = 90
10 x 10 = 100
```

This is my first JavaFX Application

Welcome to JavaFX programming Enter a number 10

2. Write a JavaFX program to display a window as shown below. Use TextField for UserName and PasswordField for Password input. On click of "Sign in" Button the message "Welcome UserName" should be displayed in a Text Control. Use GridPane layout for the application.
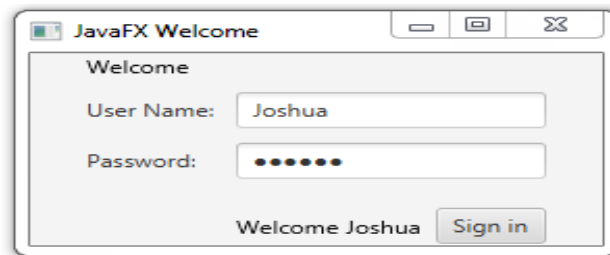

Fig 1: Welcome Window

Code:

import javafx.application.Application;

import javafx.scene.Scene;

import javafx.scene.control.*;

import javafx.scene.layout.*;

import javafx.event.ActionEvent;

import javafx.event.EventHandler;

import javafx.scene.control.Label;

import javafx.stage.Stage;

import javafx.scene.image.*;

import javafx.scene.paint.Color;

import javafx.geometry.Insets;

import javafx.geometry.Pos;

import java.io.*;

public class lab10_2 extends Application {

String username;

String password;

public void start(Stage s) throws Exception

    { s.setTitle("JavaFX Welcome");

        s.setWidth(500);

```java
s.setHeight(200);

Label b = new Label("Welcome");

TextField tfUsername = new TextField("");

Label lbUsername = new Label("User Name: ");

lbUsername.setLabelFor(tfUsername);

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

@Override

public void handle(ActionEvent event) {

username = tfUsername.getText();

} });

PasswordField tfPassword = new PasswordField();

Label lbPassword = new Label("Password: ");

lbPassword.setLabelFor(tfPassword);

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

@Override

 public void handle(ActionEvent event) {

 password = tfPassword.getText();

} });

Label welcome = new Label("Welcome");

welcome.setVisible(false);

Button btn = new Button("Sign in");

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

@Override

    public void handle(ActionEvent arg0) {

    username = tfUsername.getText();

    password = tfPassword.getText();

    welcome.setText("Welcome " + username);

    welcome.setVisible(true);

} } );

GridPane r = new GridPane();
```

```
            r.setMinSize(500, 200);

            r.setPadding(new Insets(10, 10, 10, 10));

            r.setVgap(5);

            r.setHgap(5);

            r.setAlignment(Pos.BASELINE_LEFT);

            r.add(b, 0, 0);

            r.add(lbUsername, 0, 1);

            r.add(tfUsername, 1, 1);

            r.add(lbPassword, 0, 2);

            r.add(tfPassword, 1, 2);

            r.add(welcome, 1, 3);

            r.add(btn, 2, 3);

            Scene sc = new Scene(r, 200, 200);

            s.setScene(sc);

            s.show();

    }
public static void main(String args[])

        {launch(args); } }
```
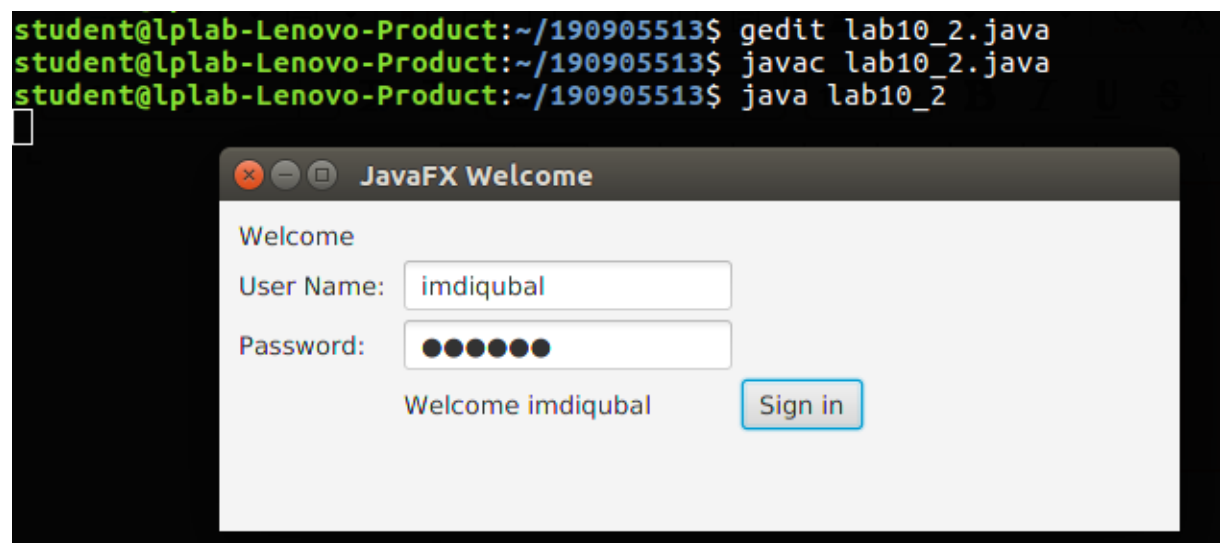
Test Case:

3. Write a JavaFX application program that obtains two floating point numbers in two text fields from the user and displays the sum, product, difference and quotient of these numbers using Canvas on clicking compute button with a calculator image placed on it.

Code:

```java
import javafx.application.Application;

import javafx.scene.Scene;

import javafx.scene.control.*;

import javafx.scene.layout.*;

import javafx.event.ActionEvent;

import javafx.event.EventHandler;

import javafx.scene.control.Label;

import javafx.stage.Stage;

import javafx.scene.image.*;

import javafx.scene.paint.Color;

import javafx.geometry.Insets;

import javafx.geometry.Pos;

import javafx.scene.canvas.*;

import javafx.scene.image.ImageView;

import javafx.scene.image.Image;

import java.io.FileInputStream;

import java.io.*;

public class lab10_3 extends Application {

float num1, num2;

    public void start(Stage s) throws Exception

    {  s.setTitle("Calculator");

        s.setWidth(500);

        s.setHeight(500);

        FileInputStream input=new FileInputStream("./190905513.png");

        Image image = new Image(input);
```

```java
        ImageView img=new ImageView(image);
img.setPreserveRatio(true);
    img.setFitHeight(30);
Label b = new Label("Welcome");
TextField tfnum1 = new TextField("");
Label lbnum1 = new Label("Number 1: ");
    lbnum1.setLabelFor(tfnum1);
TextField tfnum2 = new TextField("");
Label lbnum2 = new Label("Number 2: ");
    lbnum2.setLabelFor(tfnum2);
Label sum = new Label();
Label product = new Label();
Label difference = new Label();
Label quotient = new Label();
sum.setVisible(false);
    product.setVisible(false);
    difference.setVisible(false);
    quotient.setVisible(false);
Button btn = new Button("Compute");
btn.setGraphic(img);
btn.setOnAction(new EventHandler<ActionEvent>() {
    @Override
    public void handle(ActionEvent arg0) {
        try{
            num1 = Float.parseFloat(tfnum1.getText());
                num2 = Float.parseFloat(tfnum2.getText());
            sum.setText(String.format("  Sum = %f", num1+num2));
                product.setText(String.format("  Product = %f", num1*num2));
                difference.setText(String.format("  Difference = %f", num1-num2));
              quotient.setText(String.format("  Quotient = %f", num1/num2));
```

```java
                sum.setVisible(true);

                    product.setVisible(true);

                    difference.setVisible(true);

                quotient.setVisible(true);

            }catch(java.lang.NumberFormatException ex)

            {

                System.out.println("NumberFormatException");

            } }     } );

Canvas can = new Canvas(300.0f, 300.0f);

    GraphicsContext gc = can.getGraphicsContext2D();

gc.setFill(Color.AQUAMARINE);

    gc.fillRect(0, 0, 300, 300);

GridPane l = new GridPane();

l.setPadding(new Insets(10, 10, 10, 10));

l.setVgap(5);

l.setHgap(5);

l.setAlignment(Pos.BASELINE_LEFT);

l.add(sum, 0, 0);

l.add(product, 0, 1);

l.add(difference, 0, 2);

l.add(quotient, 0, 3);

StackPane n = new StackPane();

    n.getChildren().addAll(can, l);

    GridPane r = new GridPane();

    r.setMinSize(500, 200);

r.setPadding(new Insets(10, 10, 10, 10));

r.setVgap(5);

r.setHgap(5);

r.setAlignment(Pos.BASELINE_LEFT);

r.add(b, 0, 0);
```

```java
        r.add(lbnum1, 0, 1);

        r.add(tfnum1, 1, 1);

        r.add(lbnum2, 0, 2);

        r.add(tfnum2, 1, 2);

        r.add(btn, 2, 3);

        r.add(n, 0, 5, 2, 5);

        Scene sc = new Scene(r, 200, 200);

        s.setScene(sc);

        s.show();
    }       public static void main(String args[])
            {  launch(args); }}
```

Test Case: