

**Centennial College****COMP 228: Java Programming  
LAB #4 – Developing UI using JavaFx  
FULL MARKS: 100**

**Student:** \_\_\_\_\_

**Due Date:** **Week 10.**

**Purpose:** The purpose of this Lab assignment is to:

- Practice the use of JavaFx GUI event handling

**References:** Learning materials for weeks 7 and 8, textbook, and other references (if any)

Be sure to read the following general instructions carefully:

This lab should be completed individually by all the students.

**YOU NEED TO SUBMIT THE FOLLOWING 2 DOCUMENTS & 1 COMMENT IN THE DROPBOX TITLED LAB4:**

1. THE FIRST ONE IS A WORD DOCUMENT. USE THIS DOCUMENT AND ADD SCREEN SHOTS OF THE RUNNING STATE OF EACH EXERCISE (If there are more than 1 exercise). DO NOT DELETE THE QUESTIONS. THE SCREEN SHOTS SHOULD FOLLOW EACH QUESTION AND COVER ALL THE ASPECTS/FUNCTIONALITIES OF EACH EXERCISE. AFTER THE SCREEN SHOTS PLEASE COPY THE CODE FROM THE CODE WINDOW AND PASTE THE COMPLETE CODE. DO NOT GIVE ME SCREEN SHOTS OF THE CODE. DO NOT ZIP THIS FILE AND KEEP IT SEPARATE FROM YOUR ZIPPED PROGAM FILE.
2. SUBMIT ALSO ONE ZIPPED PROJECT FILE THAT CONTAINS ALL THE EXERISES SEPARATELY INTO THE SAME DROP BOX.
3. SUBMIT ALSO 1 COMMENT WITH YOUR GITHUB REPOSITORY LINK (MAKE SURE YOUR REPOSITORY VISIBILITY IS SET TO PUBLIC)

This material provides the necessary information you need to complete the exercises.

You must name your Eclipse project according to the following rule:

- **YourFullName\_COMP228Labnumber**
  - o Example: **JohSmith\_COMP228Lab4**
- Each exercise should be placed in a separate package named *exercise1*, *exercise2*, etc.

- Push all updates to your respective repository: **comp228406-FirstName-CurrentSemester**(i.e. comp228406-sohaib-fall2025)
    - o Ensure your repository contains your project  
**"YourFullName\_COMP228Labnumber"**
  - Submit your assignment in a **zip file** that is named according to the following rule:
    - o **YourLastName\_COMP228Labnumber.zip**
- Example: **JohSmith\_COMP228Lab4.zip**

Apply the naming conventions for variables, methods, classes, and packages:

- **variable names** start with a *lowercase* character
- **classes** start with an *uppercase* character
- **packages** use only *lowercase* characters
- **methods** start with a *lowercase* character

## **Exercise 1**

Write a Java application using JavaFx which allows the user to enter student information (see the sample design shown in the next page).

The user will enter *full name, address, city, province, postal code, phone number and email* in *text field* controls. The student's *major* (Computer Science or Business) will be selected from two *radio buttons*.

A combo box will display the list of *courses* for each program whenever the user selects the desired program.

A course will be added to a *list box* whenever the user selects a course from the corresponding combo box. Make sure that the user cannot add a course several times.

Additional information about the student will be provided from a group of *check boxes* (such as involvement in various activities, etc).

All the information about the student will be displayed in a text *area* component. Use simple JavaFX layout managers, such as FlowPane, BorderPane, and GridPane to create the JavaFX GUI of this application.

The screenshot shows a Java Swing application window titled "Java Programming". The window contains a form with fields for Name, Address, Province, City, Postal Code, Phone Number, and Email. There are also radio buttons for Computer Science and Business, and checkboxes for Student Council and Volunteer Work. A dropdown menu lists Python, C#, and Java. A "Display" button is present. Below the form, a scrollable area displays the student's details and selected courses.

Name:	John Doe	<input checked="" type="radio"/> Computer Science	<input type="radio"/> Business
Address:	100 Developer Road	<input checked="" type="checkbox"/> Student Council	
Province:	ON		
City:	Toronto		
Postal Code:	M3T 2Y7		
Phone Number:	(416) 222-3434	<input checked="" type="checkbox"/> Volunteer Work	
Email:	jdoe@java.ca		

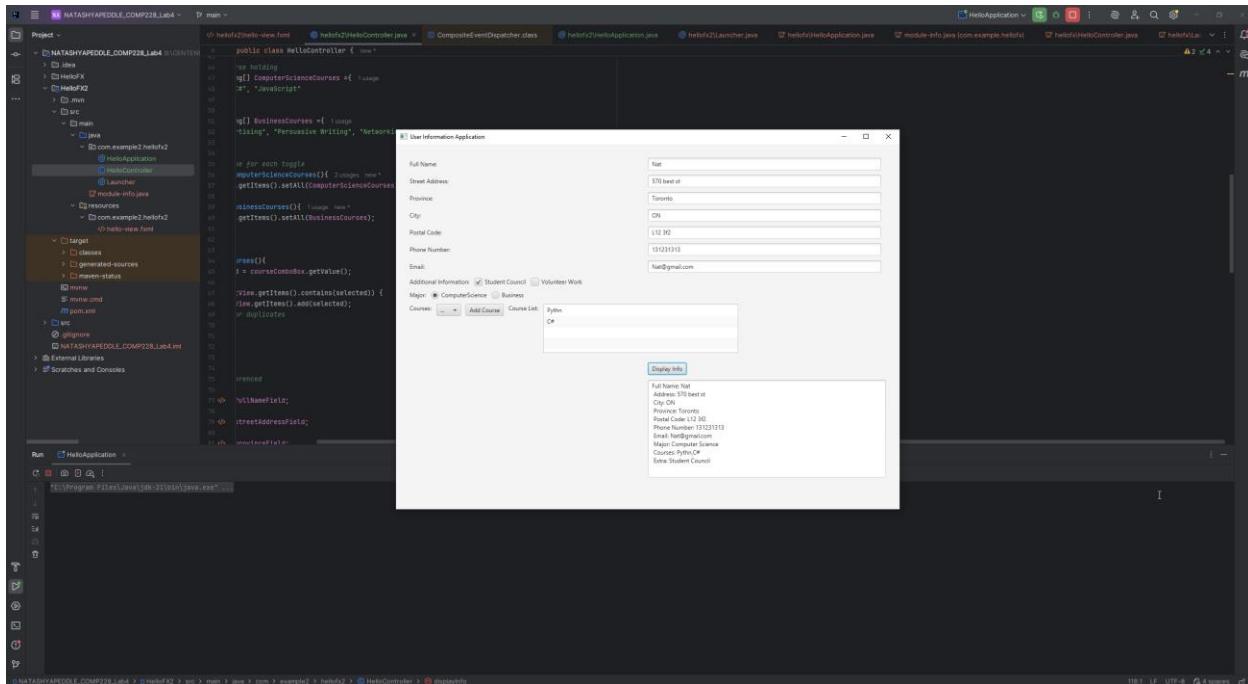
**Display**

John Doe, 100 Developer Road, Toronto, ON, M3T 2Y7, (416) 222-3434, jdoe@java.ca  
Courses:  
Python  
C#

**Evaluation:**

<b>Functionality</b>	
Correct implementation of UI	40%
Correct implementation of event handling and display of results	40%
Comments, correct naming of variables, methods, classes, etc.	5%
<b>Friendly input/output</b>	15%
<b>Total</b>	100%

**SCREENSHOT:**

**CODE:****HELLOAPP:**

```

package com.example2.hellofx2;

import javafx.application.Application;
import javafx.fxml.FXMLLoader;
import javafx.scene.Scene;
import javafx.scene.image.Image;
import javafx.scene.layout.BorderPane;
import javafx.scene.layout.GridPane;
import javafx.stage.Stage;
import org.kordamp.bootstrapfx.BootstrapFX;
import java.io.IOException;

public class HelloApplication extends Application {
    @Override
    public void start(Stage stage) throws IOException {
        FXMLLoader fxmlLoader = new FXMLLoader(HelloApplication.class.getResource("hello-view.fxml"));
        GridPane root = fxmlLoader.load();
        Scene scene = new Scene(root, 960, 600);
        stage.setTitle("HelloFX");
        stage.setScene(scene);
        stage.show();
    }
}

```

```

///stage.getIcons().add(icon);

stage.setTitle("User Information Application");
stage.setScene(scene);
stage.show();
}

public static void main(String[] args) {
}
}

```

## HELLOCONTROLLER:

```

package com.example2.hellofx2;

import javafx.fxml.FXML;
import javafx.scene.control.*;
import java.util.List;
import java.util.ArrayList;
import net.synedra.validatorfx.Check;

public class HelloController {

    /**
     * @FXML
     * private RadioButton csRadio, bRadio;
     */

    /**
     * @FXML
     * private ComboBox<String> courseComboBox;
     */

    /**
     * @FXML
     * private ListView<String> courseListView;
     */

    /**
     * @FXML
     * public void initialize() {
     *     ToggleGroup majorGroup = new ToggleGroup();
     *     csRadio.setToggleGroup(majorGroup);
     *     bRadio.setToggleGroup(majorGroup);
     *
     *     csRadio.setSelected(true);
     *     loadComputerScienceCourses();
     */

```

```

majorGroup.selectedToggleProperty().addListener((obs, oldVal, newVal) -> {
    courseListView.getItems().clear();

    if(csRadio.isSelected()){
        loadComputerScienceCourses();
    } else {
        loadBusinessCourses();
    }
});

/// arrays for course holding
private final String[] ComputerScienceCourses = {
    "Java", "Python", "C#", "JavaScript"
};

private final String[] BusinessCourses = {
    "Marketing", "Advertising", "Persuasive", "Writing", "Networking"
};

/// loads the course for each toggle
private void loadComputerScienceCourses(){
    courseComboBox.getItems().addAll(ComputerScienceCourses);
}

private void loadBusinessCourses(){
    courseComboBox.getItems().addAll(BusinessCourses);
}

@FXML
private void addCourses(){
    courseComboBox.getValue();

    if (!courseListView.getItems().contains(selected))
        courseListView.getItems().add(selected);
    } //no room for duplicates
}

/// other info referenced
@FXML
private TextField fullNameField;
@FXML
private TextField streetAddressField;
@FXML
private TextField provinceField;

```

Lab #4

```

@FXML
private TextField cityField;
@FXML
private TextField postalField;
@FXML
private TextField phoneNumField;
@FXML
private TextField emailField;
@FXML
private CheckBox studentCouncilCheckmark;
@FXML
private CheckBox VolunteerCheckmark;

// display info
@FXML
private TextArea displayInfo;

// grab major
String major = csRadio.isSelected() ? "Computer Science" : "Business";

// grab checkboxes
List<String> extrasList = new ArrayList<>();
if(studentCouncilCheckmark.isSelected())
    extrasList.add("Student Council");
if(VolunteerCheckmark.isSelected())
    extrasList.add("Volunteer Work");

String extras = extrasList.isEmpty() ? "None" : String.join(", ", extrasList);

// combine the courses
String courses = String.join(", ", courseListView.getItems());

// take all the info and put it into a string
String infoDisplayed = String.format(
    "Full Name: " + name + "\n Address: " + address + "\n City: " + city + "\n Province: " +
    province + "\n Postal Code: " + postalcode + "\n Phone Number: " + phone + "\n Email: " + email +
    "\n Major: " + major + "\n Courses: " + courses + "\n Extra: " + extras
);

```

```

);
///           display          the          above          string
displayInfo.setText(infoDisplayed);
}

```

HelloLauncher:

```

package                                     com.example2.hellofx2;
import                                         javafx.application.Application;
public             class           Launcher        {
    public         static      void           main(String[]       args)        {
        Application.launch(HelloApplication.class,
    }
}

```

FXML:

```

<?xml           version="1.0"           encoding="UTF-8"?>
<?import         javafx.scene.control.TextField?>
<?import         javafx.scene.layout.ColumnConstraints?>
<?import         javafx.scene.layout.GridPane?>
<?import         javafx.geometry.Insets?>
<?import         javafx.scene.control.Label?>
<?import         javafx.scene.layout.VBox?>
<?import         javafx.scene.control.Button?>
<?import         javafx.scene.control.ToggleGroup?>

<?import         javafx.scene.control.TableView?>
<?import         javafx.scene.control.TableColumn?>
<?import         javafx.scene.control.Tooltip?>

<?import         javafx.scene.control.RadioButton?>
<?import         javafx.scene.layout.HBox?>
<?import         javafx.scene.control.CheckBox?>
<?import         javafx.scene.control.ComboBox?>
<?import         javafx.scene.control.ListView?>
<?import         javafx.scene.control.TextArea?>
<GridPane           xmlns:fx=              "http://java.com/fxml"
fx:controller="com.example2.hellofx2.HelloController"   prefWidth="600"   prefHeight="400"
minHeight="400"  minWidth="300"  maxHeight="-Infinity"  maxWidth="-Infinity"  hgap ="10"
vgap            =           "10"           style           ="-fx-padding:28;">
<columnConstraints>
    <ColumnConstraints           percentWidth="50"           hgrow="ALWAYS"/>

```

```

<ColumnConstraints percentWidth="50" hgrow="ALWAYS"/>

</columnConstraints>

<!--Full name-->
<Label text="Full Name:" GridPane.rowIndex="0" GridPane.columnIndex="0" styleClass="" />
<TextField fx:id="fullNameField" GridPane.rowIndex="0" GridPane.columnIndex="1" promptText="e.g., John Smith" styleClass="textfield"/>
<!--StreetAddress-->
<Label text="Street Address:" GridPane.rowIndex="1" GridPane.columnIndex="0" styleClass="" />
<TextField fx:id="streetAddressField" GridPane.rowIndex="1" GridPane.columnIndex="1" promptText="e.g., 123 Happy Dr" styleClass="textfield"/>
<!--Province-->
<Label text="Province:" GridPane.rowIndex="2" GridPane.columnIndex="0" styleClass=" " />
<TextField fx:id="provinceField" GridPane.rowIndex="2" GridPane.columnIndex="1" promptText="e.g., ON" styleClass="textfield"/>
<!--City-->
<Label text="City:" GridPane.rowIndex="3" GridPane.columnIndex="0" styleClass=" " />
<TextField fx:id="cityField" GridPane.rowIndex="3" GridPane.columnIndex="1" promptText="e.g., Toronto" styleClass="textfield"/>
<!--Postal Code-->
<Label text="Postal Code:" GridPane.rowIndex="4" GridPane.columnIndex="0" styleClass=" " />
<TextField fx:id="postalField" GridPane.rowIndex="4" GridPane.columnIndex="1" promptText="e.g., L1K2G3" styleClass="textfield"/>
<!--Phone#-->
<Label text="Phone Number:" GridPane.rowIndex="5" GridPane.columnIndex="0" styleClass=" " />
<TextField fx:id="phoneNumField" GridPane.rowIndex="5" GridPane.columnIndex="1" promptText="e.g., 123-456-7890" styleClass="textfield"/>
<!--Email-->
<Label text="Email:" GridPane.rowIndex="6" GridPane.columnIndex="0" styleClass=" " />
<TextField fx:id="emailField" GridPane.rowIndex="6" GridPane.columnIndex="1" promptText="e.g., Email@gmail.com" styleClass="textfield"/>

<!--additional info checkboxes-->
<HBox spacing="10" GridPane.rowIndex="7" GridPane.columnIndex="0" GridPane.columnSpan="3">
<Label text="Additional Information:" styleClass=" " />
<CheckBox fx:id="studentCouncilCheckmark" text="Student Council" />
<CheckBox fx:id="VolunteerCheckmark" text="Volunteer Work" />
</HBox>

```

```

<!--Pick
<HBox      spacing="10"      GridPane.rowIndex="8"      GridPane.columnIndex="0">
    <Label
        <!--Computer
        <RadioButton      text="ComputerScience"      Major-->
        <!--Business-->
        <RadioButton      text="Business"      Science-->
    </HBox>

    <HBox      spacing="10"      GridPane.rowIndex="9"      GridPane.columnIndex="0"
GridPane.columnSpan="2">
    <Label
        <ComboBox      fx:id="courseComboBox"      prefWidth="-Infinity"/>
    <Button  text="Add Course"  fx:id="addCourseButton"  onAction="#addCourses"/>

    <!--List
    <Label      text      =      "Course"      view-->
    <ListView   fx:id="courseListView"      prefWidth="400"      prefHeight="100"/>
        List:"/>

    </HBox>

<!--display
<Button  text="Display Info"  fx:id="displayButton"  GridPane.rowIndex="11"
GridPane.columnIndex="1"  styleClass="btn, btn-primary"  onAction="#displayInfo">
    <tooltip> <!--They can see what its used for when they hover it-->
        <Tooltip  styleClass="tooltip-info"  text="Display the info above"/>
    </tooltip>
</Button>

<TextArea  text="Information"  fx:id="displayInfo"  GridPane.rowIndex="12"
GridPane.columnIndex="1"  GridPane.columnSpan="2"  prefHeight="200"  wrapText="true"/>

</GridPane>

<!--<VBox  alignment="CENTER"  spacing="20.0"  xmlns:fx="http://javafx.com/fxml"
fx:controller="com.example2.hellofx2.HelloController">
<padding>
    <Insets      bottom="20.0"      left="20.0"      right="20.0"      top="20.0"/>
</padding>

    <Label
    <Button      text="Hello!"      fx:id="welcomeText"/>
        onAction="#onHelloButtonClick"/>
</VBox>-->

```