

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 PROGRAM FILE.
2. SUBMIT ALSO ONE ZIPPED PROJECT FILE THAT CONTAINS ALL THE EXERCISES 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.

Name: John Doe
 Address: 100 Developer Road
 Province: ON
 City: Toronto
 Postal Code: M3T 2Y7
 Phone Number: (416) 222-3434
 Email: jdoe@java.ca

☒ Student Council
☒ Volunteer Work

☒ Computer Science ☐ Business

Java
 Python
 C#
 Java

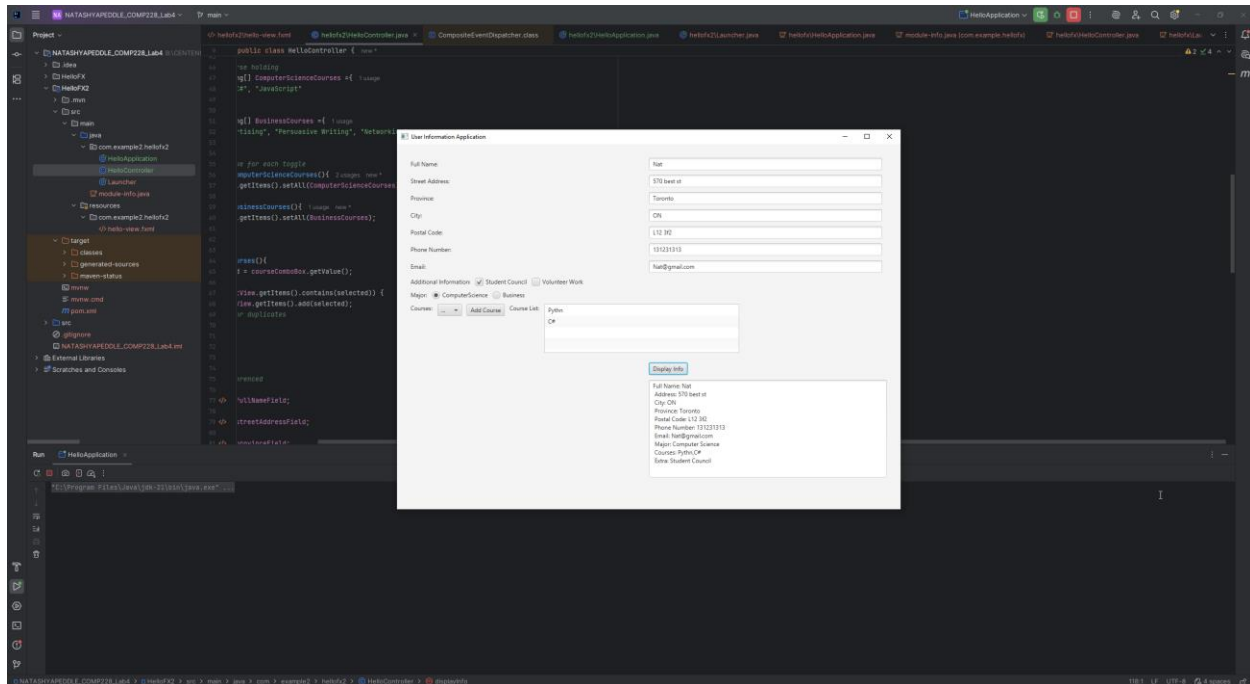
Display

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

Evaluation:

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

        /// Add an icon to the stage
        ///Image icon = new Image("https://upload.wikimedia.org/wikipedia/en/c/cc/JavaFX_Logo.png");
    }
}

```

```

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

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

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

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 {

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

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

    @FXML
    private ListView<String> courseListView;

    /// toggle group
    @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",          "Pythn",          "C#",          "JavaScript"
};

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

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

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

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

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

```

```

@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;

@FXML
private          void              displayInfo(){
    String        name              =          fullNameField.getText();
    String        address            =          streetAddressField.getText();
    String        city              =          this.cityField.getText();
    String        province           =          provinceField.getText();
    String        postalcode         =          postalField.getText();
    String        phone              =          phoneNumField.getText();
    String        email              =          emailField.getText();

//                      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,                                args);
    }
}

```

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

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

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

</HBox>

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

```