# **THEORY ASSIGNMENT**

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## **Answer:**

**ArrayList:**

We made a List of String type by implementing Serializable and adding the food items in an ArrayList.

File Handling:

We made a file named data.txt in which we stored the list of food items the restaurant provides.

**IOException:**

We used IOException to deal with exceptions in the program because we used file handling..

**Scene 1:**

• Our scene1 contains a login page. The user has to enter exact username and password which

only the restaurant knows to login into the billing system. When user presses login button, gui

takes it to scene3(Billing System).

• If he/she enters the wrong username or password the system prompts the user that he/she

should signup. Then user has to press signup now button to enter scene2(Signup page).

**Scene2:**

Our scene2 contains a signup page. Here user has to enter username and password of his own choice

and then he will be able to enter the scene3(Billing System) by clicking on signup button.

**Scene3:**

• Scene3 is the actual billing system where there are some buttons representing different food

items. Whichever food the user selects will be shown in a textfield .

• If the user wants to enter that food item to the cart, then he has to press the enter button on

keyboard. Once user press enter, the selected item adds into the cart and is shown in a list on

the screen .

• Along with that, the items of the cart keeps adding their price and the total bill of the user is

shown in a textfield on the screen.

• There is also a more options button at the end of screen. When the user presses that button, he

enters scene4.

**Scene4:**

• Scene4 contains two options. One is the create item button and other is the remove item

button.

• If the user presses the create item button, two text fields appear and the system asks the user

to enter the new food item name and price he wants to add into the menu.

• After entering these details, user has to press the done button. Then user is taken to scene3

again, and he can see the new food item added in the restaurant menu.

• User can now also use this new product in making bills.

• If the user presses the remove item button, a textfield appears and the system prompts the

user to enter the food item name he wishes to remove.

• Once the user types the name and presses done, the system takes the user to scene3 again and

he can see that his selected food item is removed from the list.

Action events on Buttons:

There are several buttons in the application having several actions. The detail is given in the scenes.

Here are the names of buttons having action events:

• Login Button

• Signup now button

• Signup Button

• Burger Button

• Chicken Piece Button

• Pepsi Button

• Fries Button

• More Options Button

• Create Item Button

• Done Button

• Remove Item button

• Second Done Button

**Mouse Event:**

There is also a mouse event in the application i.e. when the user presses the enter button, the selected

item is added into cart and the total bill of all selected items is displayed in a textfield.

**Logged In Class:**

There is a separate loggedIn class in which the usernames and passwords of loggedin users are

stored.

Main method: the main method contains the launch() function call. This function call is used to run the

entire program.

**Main Class method and JAR File:**

There is a second main method in main class. In this main method, there is a function call

HelloApplication() to run the entire application and this main class is used to make the jar file of the

application. When user double clicks on the jar file, the application runs.

package com.example.project;

import javafx.application.Application;

import javafx.beans.value.ChangeListener;

import javafx.event.ActionEvent;

import javafx.event.EventHandler;

import javafx.fxml.FXMLLoader;

import javafx.geometry.Insets;

import javafx.geometry.Pos;

import javafx.scene.Parent;

import javafx.scene.Scene;

import javafx.scene.control.\*;

import javafx.scene.input.KeyEvent;

import javafx.scene.input.MouseEvent;

import javafx.scene.layout.GridPane;

import javafx.scene.layout.HBox;

import javafx.scene.paint.Color;

import javafx.scene.text.Font;

import javafx.scene.text.FontPosture;

import javafx.scene.text.FontWeight;

import javafx.scene.text.Text;

import javafx.stage.Stage;

import java.io.\*;

import java.util.ArrayList;

import java.util.Arrays;

import java.util.List;

import java.util.Scanner;

import static com.example.project.LoggedIn.passWord;

import static com.example.project.LoggedIn.userName;

import static javafx.scene.text.Font.font;

//serialization

public class HelloApplication extends Application implements Serializable {

public static void main(String[] args) throws IOException {

launch();

}

//arraylist of items name and their prices

@Override

public void start(Stage stage) throws IOException, ClassNotFoundException {

List<String> list = new ArrayList<String>();

list.add(0, "Burger :500");

list.add(1, "Chicken Piece :400");

list.add(2, "Fries :200");

list.add(3, "Pepsi :100");

System.out.println(list);

File file = new File("data.dat");

FileOutputStream fout = new FileOutputStream("data.txt");

ObjectOutputStream outputStream = new ObjectOutputStream(fout);

outputStream.writeObject(list);

FileInputStream fin = new FileInputStream("data.txt");

ObjectInputStream oin = new ObjectInputStream(fin);

ArrayList<String> list2 = (ArrayList<String>) oin.readObject();

//SCENE 1

//main project name

stage.setTitle(" KFC BILLING SYSTEM");

GridPane gridpane = new GridPane();

Scene scene = new Scene(gridpane, 700, 700);

stage.setScene(scene);

gridpane.setHgap(10);

gridpane.setVgap(10);

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

gridpane.setAlignment(Pos.CENTER);

//sign up and login page(first page)

Text text = new Text("Enter your Username and Password to Login: ");

gridpane.add(text, 0, 0);

Label username = new Label("Username=");

username.setFont(Font.font("Callibri", FontWeight.BOLD,FontPosture.REGULAR, 15));

username.setTextFill(Color.RED);

gridpane.add(username, 0, 1);

TextField textfield = new TextField();

gridpane.add(textfield, 1, 1);

Label password = new Label("Password=");

password.setFont(Font.font("Callibri", FontWeight.BOLD, FontPosture.REGULAR, 15));

password.setTextFill(Color.BLUE);

gridpane.add(password, 0, 2);

PasswordField passwordField = new PasswordField();

gridpane.add(passwordField, 1, 2);

Button login = new Button("Login");

login.setFont(Font.font("Callibri",FontWeight.BOLD, FontPosture.REGULAR, 15 ));

login.setTextFill(Color.BLACK);

gridpane.add(login, 2, 3);

Button signUpNow = new Button("SignUp Now");

signUpNow.setFont(Font.font("Callibri",FontWeight.BOLD, FontPosture.REGULAR, 15));

signUpNow.setTextFill(Color.BLACK);

gridpane.add(signUpNow, 2, 4);

//sign up page

//second page in case user is not logged in

//SCENE 2

GridPane grid1 = new GridPane();

grid1.setHgap(12);

grid1.setVgap(12);

grid1.setPadding(new Insets(12, 12, 12, 12));

grid1.setAlignment(Pos.CENTER);

Text text1 = new Text("Enter your Username and Password to SignUp: ");

grid1.add(text1, 0, 0);

Scene scene1 = new Scene(grid1, 700, 700);

Label username1 = new Label("Username=");

username1.setFont(Font.font("Callibri", FontWeight.BOLD,FontPosture.REGULAR, 15));

username1.setTextFill(Color.RED);

grid1.add(username1, 0, 1);

TextField textfield1 = new TextField();

grid1.add(textfield1, 1, 1);

Label password1 = new Label("Password=");

password1.setFont(Font.font("Callibri", FontWeight.BOLD, FontPosture.REGULAR, 15));

password1.setTextFill(Color.BLUE);

grid1.add(password1, 0, 2);

PasswordField passwordField1 = new PasswordField();

grid1.add(passwordField1, 1, 2);

Button signUp = new Button("SignUp");

signUp.setFont(Font.font("Callibri",FontWeight.BOLD, FontPosture.REGULAR, 15));

signUp.setTextFill(Color.BLACK);

grid1.add(signUp, 2, 3);

//items and their prices

//bill is also form in this

//SCENE 3

GridPane grid2 = new GridPane();

grid2.setHgap(10);

grid2.setVgap(10);

grid2.setPadding(new Insets(10, 10, 10, 10));

grid2.setAlignment(Pos.CENTER);

Text line = new Text("Select your Item here and press ENTER: ");

grid2.add(line, 0, 0);

Scene scene2 = new Scene(grid2, 700, 700);

Button burgerButton = new Button("Burger");

burgerButton.setFont(Font.font("Callibri",FontWeight.BOLD, FontPosture.REGULAR, 10 ));

burgerButton.setTextFill(Color.BLACK);

grid2.add(burgerButton, 0, 1);

Button chickenButton = new Button("Chicken Piece");

chickenButton.setFont(Font.font("Callibri",FontWeight.BOLD, FontPosture.REGULAR, 10 ));

chickenButton.setTextFill(Color.BLACK);

grid2.add(chickenButton, 1, 1);

Button friesButton = new Button("Fries");

friesButton.setFont(Font.font("Callibri",FontWeight.BOLD, FontPosture.REGULAR, 10 ));

friesButton.setTextFill(Color.BLACK);

grid2.add(friesButton, 0, 2);

Button pepsiButton = new Button("Pepsi");

pepsiButton.setFont(Font.font("Callibri",FontWeight.BOLD, FontPosture.REGULAR, 10 ));

pepsiButton.setTextFill(Color.BLACK);

grid2.add(pepsiButton, 1, 2);

TextField t1 = new TextField();

grid2.add(t1, 2, 3);

Text text3 = new Text("For more options CLICK HERE:");

grid2.add(text3, 0, 16);

Button moreOptions = new Button("MORE OPTIONS");

grid2.add(moreOptions, 0, 17);

Text t2 = new Text();

grid2.add(t2, 0, 4);

Text t3 = new Text();

grid2.add(t3, 0, 5);

Text t4 = new Text();

grid2.add(t4, 0, 6);

Text t5 = new Text();

grid2.add(t5, 0, 7);

Text t6 = new Text();

grid2.add(t6, 0, 8);

Text t7 = new Text();

grid2.add(t7, 0, 9);

Text t8 = new Text();

grid2.add(t8, 0, 10);

Text t9 = new Text();

grid2.add(t9, 0, 11);

TextField t11 = new TextField();

grid2.add(t11, 2, 13);

//create any item

//delete any existing item

//SCENE 4

GridPane grid3 = new GridPane();

grid3.setHgap(10);

grid3.setVgap(10);

grid3.setAlignment(Pos.CENTER);

grid3.setPadding(new Insets(10, 10, 10, 10));

Scene scene3 = new Scene(grid3, 700, 700);

Text text4 = new Text("Click on CREATE to create a new food item:");

Button createButton = new Button("Create Item");

grid3.add(text4, 0, 0);

grid3.add(createButton, 1, 0);

Text text5 = new Text("Click on REMOVE to remove a food item:");

Button removeButton = new Button("Remove Item");

grid3.add(text5, 0, 6);

grid3.add(removeButton, 1, 6);

//action on sign up and login button

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

@Override

public void handle(ActionEvent actionEvent) {

for (int i = 0; i < userName.length; i++)

if (textfield.getText().equals(userName[i]) && passwordField.getText().equals(passWord[i])) {

stage.setScene(scene2);

} else {

Text text1 = new Text("You are not Logged in. Click on SignupNow Button to Sign Up");

gridpane.add(text1, 0, 4);

}

}

});

//action pon sign up

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

@Override

public void handle(ActionEvent actionEvent) {

ArrayList<String> arrayList = new ArrayList<String>(Arrays.asList(userName));

arrayList.add(textfield1.getText());

userName = arrayList.toArray(userName);

Arrays.toString(userName);

ArrayList<String> arrayList1 = new ArrayList<String>(Arrays.asList(passWord));

arrayList.add(passwordField1.getText());

passWord = arrayList1.toArray(passWord);

Arrays.toString(passWord);

stage.setScene(scene2);

}

});

//action on second sign up button

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

@Override

public void handle(ActionEvent actionEvent) {

stage.setScene(scene1);

}

});

//burger button

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

@Override

public void handle(ActionEvent actionEvent) {

t1.setText(list.get(0).toString());

}

});

//chicken button

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

@Override

public void handle(ActionEvent actionEvent) {

t1.setText(list.get(1).toString());

}

});

//fries button

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

@Override

public void handle(ActionEvent actionEvent) {

t1.setText(list.get(2).toString());

}

});

//action on button of pepsi

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

@Override

public void handle(ActionEvent actionEvent) {

t1.setText(list.get(3).toString());

}

});

//more options button

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

@Override

public void handle(ActionEvent actionEvent) {

stage.setScene(scene3);

}

});

// event handler

EventHandler<KeyEvent> enter = new EventHandler<KeyEvent>() {

@Override

public void handle(KeyEvent keyEvent) {

if (t2.getText().isEmpty()) {

t2.setText(t1.getText());

t11.setText(t2.getText());

} else if (t3.getText().isEmpty()) {

t3.setText(t1.getText());

String s2;

s2 = t2.getText().substring(22);

int i2 = Integer.parseInt(s2);

t11.setText(String.valueOf(i2));

String s3;

s3 = t3.getText().substring(22);

int i3 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3));

} else if (t4.getText().isEmpty()) {

t4.setText(t1.getText());

String s2;

s2 = t2.getText().substring(22);

int i2 = Integer.parseInt(s2);

t11.setText(String.valueOf(i2));

String s3;

s3 = t3.getText().substring(22);

int i3 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3));

String s4;

s4 = t4.getText().substring(22);

int i4 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3 + i4));

} else if (t5.getText().isEmpty()) {

t5.setText(t1.getText());

String s2;

s2 = t2.getText().substring(22);

int i2 = Integer.parseInt(s2);

t11.setText(String.valueOf(i2));

String s3;

s3 = t3.getText().substring(22);

int i3 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3));

String s4;

s4 = t4.getText().substring(22);

int i4 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3 + i4));

String s5;

s5 = t5.getText().substring(22);

int i5 = Integer.parseInt(s5);

t11.setText(String.valueOf(i2 + i3 + i4 + i5));

} else if (t6.getText().isEmpty()) {

t6.setText(t1.getText());

String s2;

s2 = t2.getText().substring(22);

int i2 = Integer.parseInt(s2);

t11.setText(String.valueOf(i2));

String s3;

s3 = t3.getText().substring(22);

int i3 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3));

String s4;

s4 = t4.getText().substring(22);

int i4 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3 + i4));

String s5;

s5 = t5.getText().substring(22);

int i5 = Integer.parseInt(s5);

t11.setText(String.valueOf(i2 + i3 + i4 + i5));

String s6;

s6 = t6.getText().substring(22);

int i6 = Integer.parseInt(s6);

t11.setText(String.valueOf(i2 + i3 + i4 + i5 + 16));

} else if (t7.getText().isEmpty()) {

t7.setText(t1.getText());

String s2;

s2 = t2.getText().substring(22);

int i2 = Integer.parseInt(s2);

t11.setText(String.valueOf(i2));

String s3;

s3 = t3.getText().substring(22);

int i3 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3));

String s4;

s4 = t4.getText().substring(22);

int i4 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3 + i4));

String s5;

s5 = t5.getText().substring(22);

int i5 = Integer.parseInt(s5);

t11.setText(String.valueOf(i2 + i3 + i4 + i5));

String s6;

s6 = t6.getText().substring(22);

int i6 = Integer.parseInt(s6);

t11.setText(String.valueOf(i2 + i3 + i4 + i5 + i6));

String s7;

s7 = t7.getText().substring(22);

int i7 = Integer.parseInt(s7);

t11.setText(String.valueOf(i2 + i3 + i4 + i5 + i6 + i7));

} else if (t8.getText().isEmpty()) {

t8.setText(t1.getText());

String s2;

s2 = t2.getText().substring(22);

int i2 = Integer.parseInt(s2);

t11.setText(String.valueOf(i2));

String s3;

s3 = t3.getText().substring(22);

int i3 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3));

String s4;

s4 = t4.getText().substring(22);

int i4 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3 + i4));

String s5;

s5 = t5.getText().substring(22);

int i5 = Integer.parseInt(s5);

t11.setText(String.valueOf(i2 + i3 + i4 + i5));

String s6;

s6 = t6.getText().substring(22);

int i6 = Integer.parseInt(s6);

t11.setText(String.valueOf(i2 + i3 + i4 + i5 + i6));

String s7;

s7 = t7.getText().substring(22);

int i7 = Integer.parseInt(s7);

t11.setText(String.valueOf(i2 + i3 + i4 + i5 + i6 + i7));

String s8;

s8 = t8.getText().substring(22);

int i8 = Integer.parseInt(s8);

t11.setText(String.valueOf(i2 + i3 + i4 + i5 + i6 + i7 + i8));

} else if (t9.getText().isEmpty()) {

t9.setText(t1.getText());

String s2;

s2 = t2.getText().substring(22);

int i2 = Integer.parseInt(s2);

t11.setText(String.valueOf(i2));

String s3;

s3 = t3.getText().substring(22);

int i3 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3));

String s4;

s4 = t4.getText().substring(22);

int i4 = Integer.parseInt(s3);

t11.setText(String.valueOf(i2 + i3 + i4));

String s5;

s5 = t5.getText().substring(22);

int i5 = Integer.parseInt(s5);

t11.setText(String.valueOf(i2 + i3 + i4 + i5));

String s6;

s6 = t6.getText().substring(22);

int i6 = Integer.parseInt(s6);

t11.setText(String.valueOf(i2 + i3 + i4 + i5 + i6));

String s7;

s7 = t7.getText().substring(22);

int i7 = Integer.parseInt(s7);

t11.setText(String.valueOf(i2 + i3 + i4 + i5 + i6 + i7));

String s8;

s8 = t8.getText().substring(22);

int i8 = Integer.parseInt(s8);

t11.setText(String.valueOf(i2 + i3 + i4 + i5 + i6 + i7 + i8));

String s9;

s9 = t9.getText().substring(22);

int i9 = Integer.parseInt(s9);

t11.setText(String.valueOf(i2 + i3 + i4 + i5 + i6 + i7 + i8 + i9));

} else {

Text t = new Text("You have selected enough Items.");

grid2.add(t, 0, 14);

}

}

};

grid2.addEventHandler(KeyEvent.ANY, enter);

// create button

//4th page

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

@Override

public void handle(ActionEvent actionEvent) {

Text text6 = new Text("Enter product name:");

TextField text7 = new TextField();

Text text8 = new Text("Enter product price:");

TextField text9 = new TextField();

Text text10 = new Text("Enter food and price and press Enter");

grid3.add(text6, 0, 2);

grid3.add(text7, 1, 2);

grid3.add(text8, 0, 3);

grid3.add(text9, 1, 3);

grid3.add(text10, 0, 4);

Button done = new Button("Done");

grid3.add(done, 1, 4);

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

@Override

public void handle(ActionEvent actionEvent) {

String s = text7.getText();

String ss = " :";

String sss = text9.getText();

String s1 = s.concat(ss);

String s2 = s1.concat(sss);

list.add(4, s2);

stage.setScene(scene2);

Button newButton = new Button(text7.getText());

grid2.add(newButton, 0, 3);

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

@Override

public void handle(ActionEvent actionEvent) {

t1.setText(list.get(4));

}

});

}

});

System.out.println(list);

}

});

//remove button

//last page

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

@Override

public void handle(ActionEvent actionEvent) {

Text text13 = new Text("Enter product name:");

TextField text14 = new TextField();

grid3.add(text13, 0, 7);

grid3.add(text14, 1, 7);

Button done1 = new Button("Done");

grid3.add(done1, 1, 8);

done1.setOnAction(new EventHandler<ActionEvent>() {

@Override

public void handle(ActionEvent actionEvent) {

if (text14.getText().equals(burgerButton.getText())) {

stage.setScene(scene2);

burgerButton.setVisible(false);

} else if (text14.getText().equals(chickenButton.getText())) {

stage.setScene(scene2);

chickenButton.setVisible(false);

} else if (text14.getText().equals(friesButton.getText())) {

stage.setScene(scene2);

friesButton.setVisible(false);

} else if (text14.getText().equals(pepsiButton.getText())) {

stage.setScene(scene2);

pepsiButton.setVisible(false);

} else {

Text notFound = new Text("Product entered not found in menu");

grid3.add(notFound, 0, 7);

}

}

});

}

});

stage.show();

}

}

**Logged In class:**

package com.example.demo3;

public class LoggedIn {

public static String[] userName={"ezza","laiba","marleen","saba"};

public static String[] passWord={"1234","1234","1234","1234"};

public LoggedIn(String[] userName,String[] passWord) {

this.userName=userName;

this.passWord=passWord;

}

public static String[] getUserName() {

return userName;

}

public static void setUserName(String[] userName) {

LoggedIn.userName = userName;

}

public static String[] getPassWord() {

return passWord;

}

public static void setPassWord(String[] passWord) {

LoggedIn.passWord = passWord;

}

}







