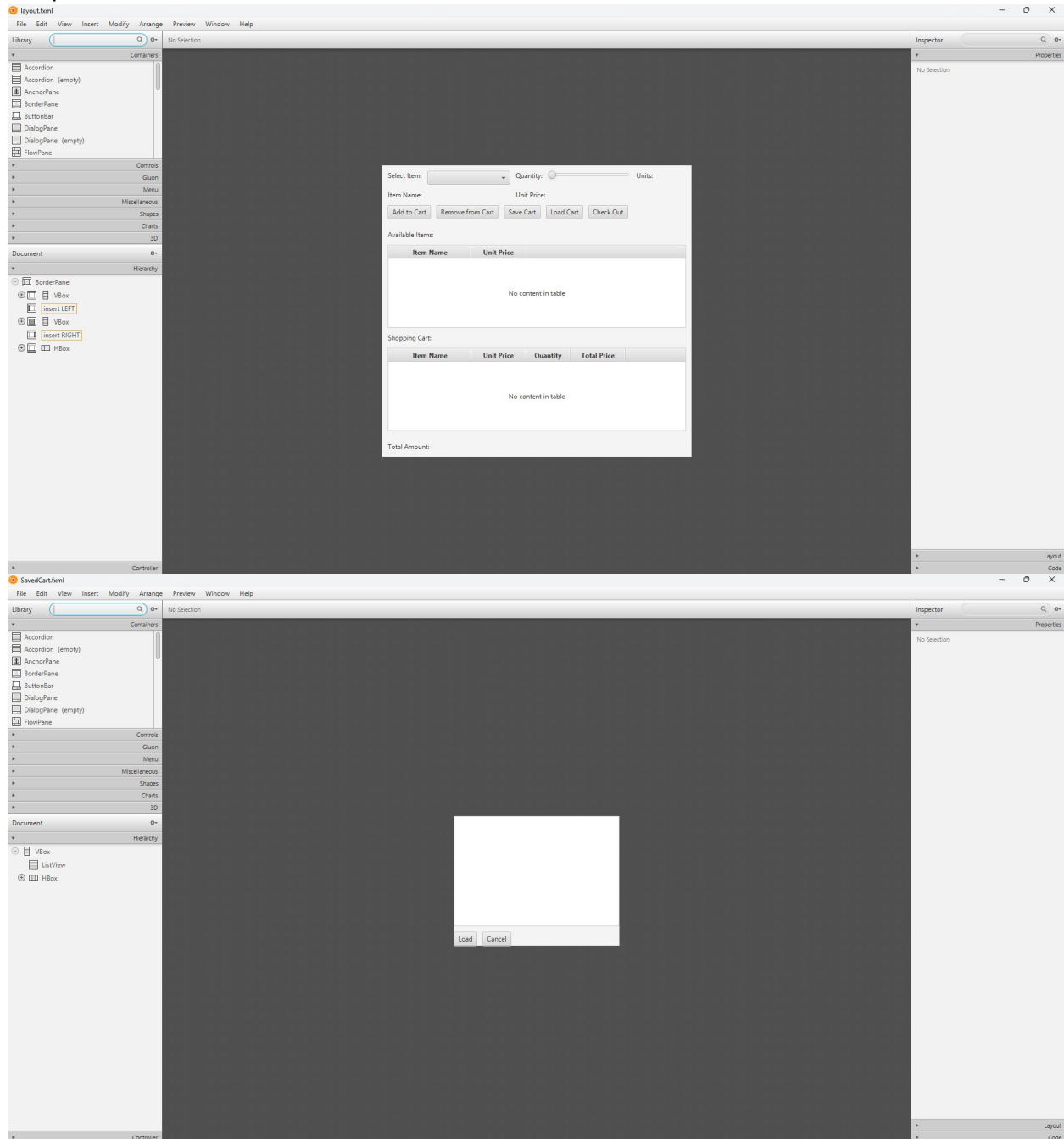Application Development(APD545NDD.12037.2251)

Full Name: Radmehr Behzadfar
Id: 148786221
Seneca email: rbehzadfar@myseneca.ca

Output:

Grocery Cart Application

Select Item: [⌄]   Quantity: ◯━━━━━━━━━   Units: 1

Item Name: Unit Price:

[Add to Cart] [Remove from Cart] [Save Cart] [Load Cart] [Check Out]

Available Items:

Item Name	Unit Price	
Apple	1.5	
Banana	0.75	
Bread	2.25	
Milk	3.0	
Eggs	4.0	

Shopping Cart:

Item Name	Unit Price	Quantity	Total Price	
		No content in table		

Total Amount: 0.00

Grocery Cart Application

Select Item: Banana ▼   Quantity: ⬤   Units: 10

Item Name: Banana   Unit Price: 0.75

[Add to Cart] [Remove from Cart] [Save Cart] [Load Cart] [Check Out]

Available Items:

Item Name ▼	Unit Price	
Rice	5.0	
Milk	3.0	
Eggs	4.0	
Chicken	8.5	
Bread	2.25	

Shopping Cart:

Item Name	Unit Price	Quantity	Total Price	
Apple	1.5	5	7.5	
Apple	1.5	5	7.5	
Eggs	4.0	2	8.0	
Banana	0.75	10	7.5	

Total Amount: 30.50

Grocery Cart Application

Select Item: Banana ▼   Quantity: ⬤   Units: 10

Item Name: Banana   Unit Price: 0.75

[Add to Cart] [Remove from Cart] [Save Cart] [Load Cart] [Check Out]

Message ✕

Message ⓘ

Cart saved.

[OK]

Available Items:

Item Name	
Rice	
Milk	
Eggs	
Chicken	
Bread	2.25

Shopping Cart:

Item Name	Unit Price	Quantity	Total Price	
Apple	1.5	5	7.5	
Apple	1.5	5	7.5	
Eggs	4.0	2	8.0	
Banana	0.75	10	7.5	

Total Amount: 30.50

Grocery Cart Application

Select Item: Banana ▼   Quantity: ◯ Units: 10

Item Name: Banana   Unit Price: 0.75
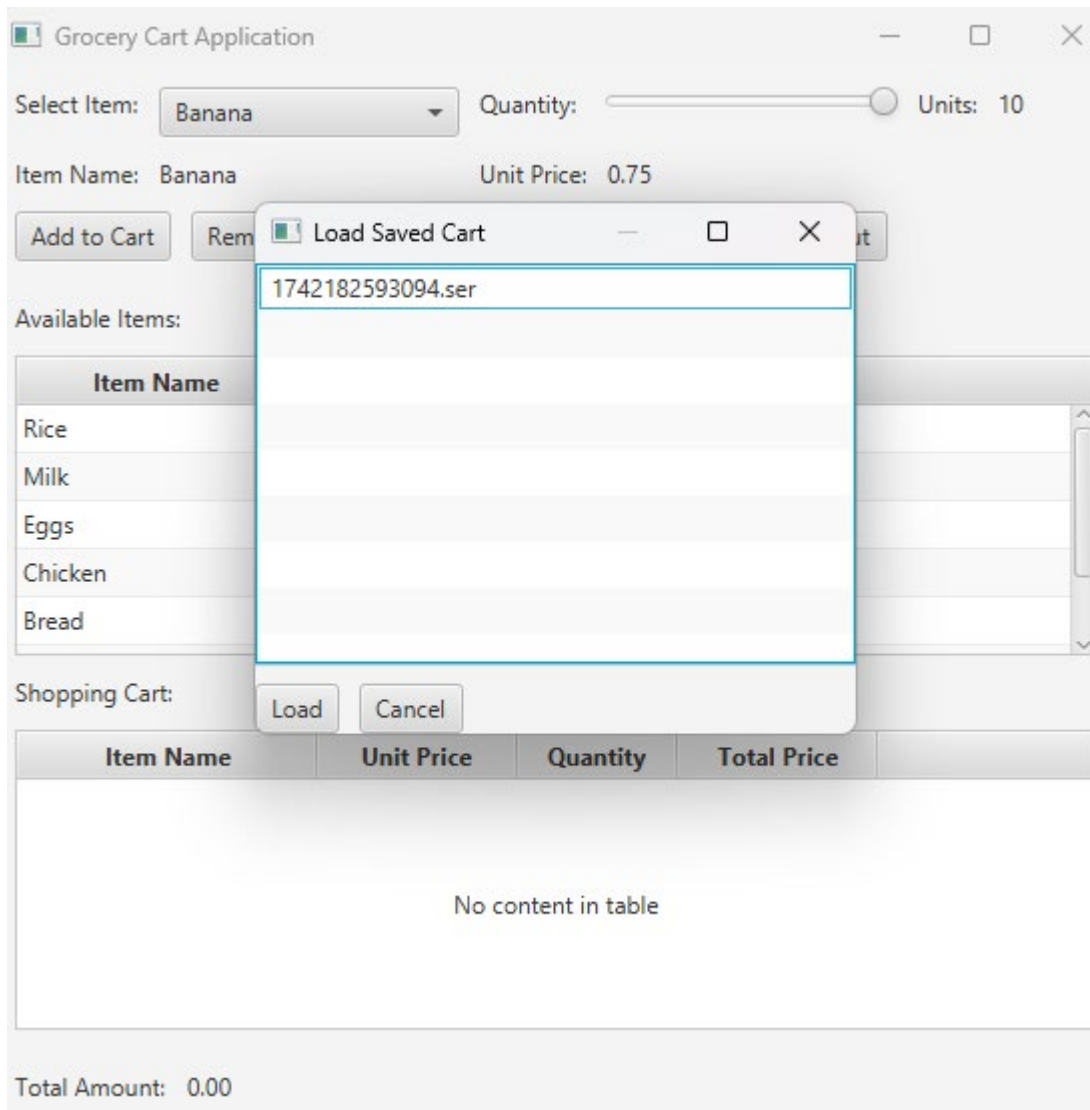
[Add to Cart] [Remove from Cart] [Save Cart] [Load Cart] [Check Out]

Confirmation   ✕

Confirmation   ❓

Are you done with your groceries?

[OK]   [Cancel]

Available Items:

Item Nan
Rice
Milk
Eggs
Chicken
Bread

2.25

Shopping Cart:

Item Name	Unit Price	Quantity	Total Price	
Apple	1.5	5	7.5	
Apple	1.5	5	7.5	
Eggs	4.0	2	8.0	
Banana	0.75	10	7.5	

Total Amount: 30.50

Grocery Cart Application — □ ×

Select Item: [Banana ▼] Quantity: ○—————○ Units: 10

Item Name: Banana   Unit Price: 0.75

[Add to Cart] [Remove from Cart] [Save Cart] [Load Cart] [Check Out]

Available Items:

Item Name ▼	Unit Price	
Rice	5.0	
Milk	3.0	
Eggs	4.0	
Chicken	8.5	
Bread	2.25	

Shopping Cart:

Item Name	Unit Price	Quantity	Total Price	
		No content in table		

Total Amount: 0.00

Code:

-- Cart.java:

```
/*********************************************

Workshop #05

Course: APD545 - Winter
```

Last Name: BEHZADFAR

First Name: RADMEHR

ID: 148786221

Section:NDD

This assignment represents my own work in accordance with Seneca Academic Policy.

Signature: RadmehrBehzadfar

Date:2025-03-16

```java
**********************************************/

package grocerystore;

import javafx.application.Application;

import javafx.beans.binding.Bindings;

import javafx.beans.binding.DoubleBinding;

import javafx.collections.FXCollections;

import javafx.collections.ObservableList;

import javafx.fxml.FXML;

import javafx.fxml.FXMLLoader;

import javafx.scene.Scene;
```

```java
import javafx.scene.control.Alert;

import javafx.scene.control.Button;

import javafx.scene.control.ButtonType;

import javafx.scene.control.ComboBox;

import javafx.scene.control.Label;

import javafx.scene.control.Slider;

import javafx.scene.control.TableColumn;

import javafx.scene.control.TableView;

import javafx.scene.Parent;

import javafx.stage.Modality;

import javafx.stage.Stage;

import java.io.IOException;

import java.util.List;

public class Cart extends Application {

    @FXML private ComboBox<Item> itemsComboBox;

    @FXML private Slider quantitySlider;

    @FXML private Label purchaseUnitsLabel;
```

```java
@FXML private Label unitValueLabel;

@FXML private Label unitPriceValueLabel;

@FXML private TableView<Item> itemsTableView;

@FXML private TableColumn<Item, String> itemNameColumn;

@FXML private TableColumn<Item, Number> unitPriceColumn;

@FXML private TableView<ItemInCart> cartTableView;

@FXML private TableColumn<ItemInCart, String> cartItemNameColumn;

@FXML private TableColumn<ItemInCart, Number> cartUnitPriceColumn;

@FXML private TableColumn<ItemInCart, Number> cartQuantityColumn;

@FXML private TableColumn<ItemInCart, Number> cartTotalPriceColumn;

@FXML private Button addButton;

@FXML private Button removeButton;

@FXML private Button saveCartButton;

@FXML private Button loadCartButton;

@FXML private Button checkOutButton;

@FXML private Label totalValueLabel;

private Model model;
```

```java
    private ObservableList<ItemInCart> cartObservableList =
FXCollections.observableArrayList();

    @Override

    public void start(Stage primaryStage) throws IOException {

        FXMLLoader loader = new FXMLLoader(getClass().getResource("/layout.fxml"));

        primaryStage.setTitle("Grocery Cart Application");

        primaryStage.setScene(new Scene(loader.load()));

        primaryStage.show();

    }

    @FXML

    private void initialize() {

        model = new Model();

        String csvPath = getClass().getResource("/ItemsMaster.csv").getPath();

        model.loadData(csvPath);

        setupAction();

    }

    public void setupAction() {

        itemsComboBox.setItems(model.getItemsObservableList());
```

```java
        itemsComboBox.getSelectionModel().clearSelection();

        purchaseUnitsLabel.textProperty().bind(Bindings.format("%.0f",
quantitySlider.valueProperty()));

        unitValueLabel.textProperty().bind(Bindings.createStringBinding(() -> {

            Item selectedItem = itemsComboBox.getValue();

            return selectedItem != null ? selectedItem.getName() : "";

        }, itemsComboBox.valueProperty()));

        unitPriceValueLabel.textProperty().bind(Bindings.createStringBinding(() -> {

            Item selectedItem = itemsComboBox.getValue();

            return selectedItem != null ? String.format("%.2f", selectedItem.getUnitPrice()) : "";

        }, itemsComboBox.valueProperty()));

        itemNameColumn.setCellValueFactory(cellData ->
cellData.getValue().nameProperty());

        unitPriceColumn.setCellValueFactory(cellData ->
cellData.getValue().unitPriceProperty());

        itemsTableView.setItems(model.getItemsObservableList());

        cartTableView.setItems(cartObservableList);

        cartItemNameColumn.setCellValueFactory(data ->
data.getValue().itemNameProperty());
```

```java
cartUnitPriceColumn.setCellValueFactory(data -> data.getValue().unitPriceProperty());

cartQuantityColumn.setCellValueFactory(data -> data.getValue().quantityProperty());

cartTotalPriceColumn.setCellValueFactory(data ->
data.getValue().totalPriceProperty());

addButton.setOnAction(event -> {

    Item selectedItem = itemsComboBox.getSelectionModel().getSelectedItem();

    if (selectedItem != null) {

        int quantity = (int) quantitySlider.getValue();

        ItemInCart itemInCart = new ItemInCart(selectedItem.getName(),
selectedItem.getUnitPrice(), quantity);

        cartObservableList.add(itemInCart);

    }

});

DoubleBinding totalBinding = Bindings.createDoubleBinding(() ->

    cartObservableList.stream().mapToDouble(ItemInCart::getTotalPrice).sum(),

    cartObservableList

);

totalValueLabel.textProperty().bind(Bindings.format("%.2f", totalBinding));
```

```java
        cartTableView.getSelectionModel().selectedItemProperty().addListener((obs,
oldSelection, newSelection) -> {

        if (newSelection != null) {

            for (int i = 0; i < model.getItemsObservableList().size(); i++) {

                if
(model.getItemsObservableList().get(i).getName().equals(newSelection.getItemName())) {

                    itemsComboBox.getSelectionModel().select(i);

                    quantitySlider.setValue(newSelection.getQuantity());

                    break;

                }

            }

        }

    });

    removeButton.setOnAction(event -> {

        int selectedIndex = cartTableView.getSelectionModel().getSelectedIndex();

        if (selectedIndex >= 0) {

            cartObservableList.remove(selectedIndex);

        }
```

```java
        });

        saveCartButton.setOnAction(event -> {

            CartFileHandler.saveCart(new java.util.ArrayList<>(cartObservableList));

            new Alert(Alert.AlertType.INFORMATION, "Cart saved.").showAndWait();

        });

        loadCartButton.setOnAction(event -> {

            try {

                FXMLLoader loader = new
FXMLLoader(getClass().getResource("/SavedCart.fxml"));

                Parent root = loader.load();

                SavedCartController controller = loader.getController();

                controller.setMainController(this);

                Stage stage = new Stage();

                stage.initModality(Modality.APPLICATION_MODAL);

                stage.setScene(new Scene(root));

                stage.setTitle("Load Saved Cart");

                stage.showAndWait();

            } catch (Exception e) {
```

```java
                e.printStackTrace();

            }

        });

        checkOutButton.setOnAction(event -> {

            Alert alert = new Alert(Alert.AlertType.CONFIRMATION, "Are you done with your
groceries?");

            alert.showAndWait().ifPresent(response -> {

                if (response == ButtonType.OK) {

                    cartObservableList.clear();

                }

            });

        });

    }

    public void loadCartData(List<ItemInCart> loadedItems) {

        cartObservableList.clear();

        cartObservableList.addAll(loadedItems);

    }

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

```java
        launch(args);

    }

}
```

-- CartFileHandler.java:

```java
/**********************************************

Workshop #05

Course: APD545 - Winter

Last Name: BEHZADFAR

First Name: RADMEHR

ID: 148786221

Section:NDD

This assignment represents my own work in accordance with Seneca Academic Policy.

Signature: RadmehrBehzadfar

Date:2025-03-16

**********************************************/

package grocerystore;

import java.io.File;
```

```java
import java.io.FileOutputStream;

import java.io.FileInputStream;

import java.io.ObjectOutputStream;

import java.io.ObjectInputStream;

import java.util.ArrayList;

import java.util.List;

public class CartFileHandler {

    private static final String CARTS_DIR = "saved_carts";

    public static void saveCart(List<ItemInCart> cart) {

        try {

            File dir = new File(CARTS_DIR);

            if (!dir.exists()) {

                dir.mkdir();

            }

            String filename = CARTS_DIR + File.separator + System.currentTimeMillis() + ".ser";

            ObjectOutputStream oos = new ObjectOutputStream(new FileOutputStream(filename));

            oos.writeObject(cart);
```

```java
            oos.close();

    } catch (Exception e) {

        e.printStackTrace();

    }

}

@SuppressWarnings("unchecked")

public static List<ItemInCart> loadCart(File file) {

    try {

        ObjectInputStream ois = new ObjectInputStream(new FileInputStream(file));

        List<ItemInCart> loaded = (List<ItemInCart>) ois.readObject();

        ois.close();

        return loaded;

    } catch (Exception e) {

        e.printStackTrace();

        return null;

    }

}
```

```java
    public static List<File> listSavedCarts() {

        List<File> result = new ArrayList<>();

        File dir = new File(CARTS_DIR);

        if (dir.exists() && dir.isDirectory()) {

            File[] files = dir.listFiles((d, name) -> name.endsWith(".ser"));

            if (files != null) {

                for (File f : files) {

                    result.add(f);

                }

            }

        }

        return result;

    }

}
```

-- Item.java:

```
/*********************************************
```

Workshop #05

```java
package grocerystore;

import javafx.beans.property.SimpleDoubleProperty;

import javafx.beans.property.SimpleStringProperty;

import java.io.Serializable;

public class Item implements Serializable {

    private static final long serialVersionUID = 1L;

    private transient SimpleStringProperty name;

    private transient SimpleDoubleProperty unitPrice;
```

```java
private String nameCache;

private double priceCache;

public Item(String name, double unitPrice) {

    this.name = new SimpleStringProperty(name);

    this.unitPrice = new SimpleDoubleProperty(unitPrice);

    this.nameCache = name;

    this.priceCache = unitPrice;

}

public String getName() {

    return name.get();

}

public void setName(String name) {

    this.name.set(name);

    this.nameCache = name;

}

public double getUnitPrice() {

    return unitPrice.get();
```

```java
    }

    public void setUnitPrice(double unitPrice) {

        this.unitPrice.set(unitPrice);

        this.priceCache = unitPrice;

    }

    public SimpleStringProperty nameProperty() {

        return name;

    }

    public SimpleDoubleProperty unitPriceProperty() {

        return unitPrice;

    }

    private void writeObject(java.io.ObjectOutputStream out) throws java.io.IOException {

        out.defaultWriteObject();

    }

    private void readObject(java.io.ObjectInputStream in) throws java.io.IOException,
ClassNotFoundException {

        in.defaultReadObject();

        name = new SimpleStringProperty(nameCache);
```

```java
      unitPrice = new SimpleDoubleProperty(priceCache);

   }

   @Override

   public String toString() {

      return getName();

   }

}
```

-- ItemInCart.java:

```java
/*********************************************

Workshop #05

Course: APD545 - Winter

Last Name: BEHZADFAR

First Name: RADMEHR

ID: 148786221

Section:NDD

This assignment represents my own work in accordance with Seneca Academic Policy.

Signature: RadmehrBehzadfar
```

Date:2025-03-16

```
*********************************************/

package grocerystore;

import javafx.beans.property.SimpleDoubleProperty;

import javafx.beans.property.SimpleIntegerProperty;

import javafx.beans.property.SimpleStringProperty;

import java.io.Serializable;

public class ItemInCart implements Serializable {

    private static final long serialVersionUID = 1L;

    private transient SimpleStringProperty itemName;

    private transient SimpleDoubleProperty unitPrice;

    private transient SimpleIntegerProperty quantity;

    private transient SimpleDoubleProperty totalPrice;

    private String itemNameCache;

    private double unitPriceCache;

    private int quantityCache;

    private double totalPriceCache;
```

```java
public ItemInCart(String itemName, double unitPrice, int quantity) {

    this.itemName = new SimpleStringProperty(itemName);

    this.unitPrice = new SimpleDoubleProperty(unitPrice);

    this.quantity = new SimpleIntegerProperty(quantity);

    this.totalPrice = new SimpleDoubleProperty(unitPrice * quantity);

    this.itemNameCache = itemName;

    this.unitPriceCache = unitPrice;

    this.quantityCache = quantity;

    this.totalPriceCache = unitPrice * quantity;

}

public String getItemName() {

    return itemName.get();

}

public void setItemName(String itemName) {

    this.itemName.set(itemName);

    this.itemNameCache = itemName;

    updateTotalPrice();
```

```java
    }

    public double getUnitPrice() {

        return unitPrice.get();

    }

    public void setUnitPrice(double unitPrice) {

        this.unitPrice.set(unitPrice);

        this.unitPriceCache = unitPrice;

        updateTotalPrice();

    }

    public int getQuantity() {

        return quantity.get();

    }

    public void setQuantity(int quantity) {

        this.quantity.set(quantity);

        this.quantityCache = quantity;

        updateTotalPrice();

    }
```

```java
public double getTotalPrice() {

    return totalPrice.get();

}

private void updateTotalPrice() {

    totalPrice.set(getUnitPrice() * getQuantity());

    totalPriceCache = getUnitPrice() * getQuantity();

}

public SimpleStringProperty itemNameProperty() {

    return itemName;

}

public SimpleDoubleProperty unitPriceProperty() {

    return unitPrice;

}

public SimpleIntegerProperty quantityProperty() {

    return quantity;

}

public SimpleDoubleProperty totalPriceProperty() {
```

```java
        return totalPrice;

    }

    private void writeObject(java.io.ObjectOutputStream out) throws java.io.IOException {

        updateTotalPrice();

        out.defaultWriteObject();

    }

    private void readObject(java.io.ObjectInputStream in) throws java.io.IOException,
ClassNotFoundException {

        in.defaultReadObject();

        itemName = new SimpleStringProperty(itemNameCache);

        unitPrice = new SimpleDoubleProperty(unitPriceCache);

        quantity = new SimpleIntegerProperty(quantityCache);

        totalPrice = new SimpleDoubleProperty(totalPriceCache);

    }

}
```

-- Model.java:

/***

Workshop #05

```java
package grocerystore;

import javafx.collections.FXCollections;

import javafx.collections.ObservableList;

import java.io.BufferedReader;

import java.io.FileReader;

import java.io.IOException;

public class Model {

    private ObservableList<Item> itemsObservableList;
```

```java
public Model() {

    itemsObservableList = FXCollections.observableArrayList();

}

public ObservableList<Item> getItemsObservableList() {

    return itemsObservableList;

}

public void loadData(String csvFilePath) {

    try (BufferedReader br = new BufferedReader(new FileReader(csvFilePath))) {

        String line;

        while ((line = br.readLine()) != null) {

            String[] values = line.split(",");

            if (values.length > 0) {

                String name = values[0].trim();

                double unitPrice = 10.0;

                if (values.length > 1) {

                    try {

                        unitPrice = Double.parseDouble(values[1].trim());
```

```java
            } catch (NumberFormatException e) {}

        }

        itemsObservableList.add(new Item(name, unitPrice));

      }

    } catch (IOException e) {

      e.printStackTrace();

    }

  }

}
```

```java
package grocerystore;

import javafx.fxml.FXML;

import javafx.scene.control.ListView;

import javafx.scene.control.Button;

import javafx.stage.Stage;

import java.io.File;

import java.util.List;

public class SavedCartController {

    @FXML private ListView<String> savedCartList;

    @FXML private Button loadButton;

    @FXML private Button cancelButton;

    private Cart mainController;
```

```java
private List<File> cartFiles;

@FXML

private void initialize() {

    cartFiles = CartFileHandler.listSavedCarts();

    for (File f : cartFiles) {

        savedCartList.getItems().add(f.getName());

    }

}

@FXML

private void handleLoad() {

    int index = savedCartList.getSelectionModel().getSelectedIndex();

    if (index >= 0) {

        File file = cartFiles.get(index);

        List<ItemInCart> loadedCart = CartFileHandler.loadCart(file);

        if (loadedCart != null) {

            mainController.loadCartData(loadedCart);

        }
```

```java
        Stage stage = (Stage) loadButton.getScene().getWindow();

        stage.close();

    }

}

@FXML

private void handleCancel() {

    Stage stage = (Stage) cancelButton.getScene().getWindow();

    stage.close();

}

public void setMainController(Cart c) {

    mainController = c;

}

}
```

-- ItemsMaster.csv

Apple,1.50

Banana,0.75

Bread,2.25

Milk,3.00

Eggs,4.00

Chicken,8.50

Rice,5.00

-- layout.fxml :

```xml
<?xml version="1.0" encoding="UTF-8"?>

<!--

/*********************************************

Workshop #05

Course: APD545 - Winter

Last Name: BEHZADFAR

First Name: RADMEHR

ID: 148786221

Section:NDD

This assignment represents my own work in accordance with Seneca Academic Policy.

Signature: RadmehrBehzadfar

Date:2025-03-16
```

```
**********************************************/

 -->

<?**import** javafx.geometry.Insets?>

<?**import** javafx.scene.control.Button?>

<?**import** javafx.scene.control.ComboBox?>

<?**import** javafx.scene.control.Label?>

<?**import** javafx.scene.control.Slider?>

<?**import** javafx.scene.control.TableColumn?>

<?**import** javafx.scene.control.TableView?>

<?**import** javafx.scene.layout.BorderPane?>

<?**import** javafx.scene.layout.HBox?>

<?**import** javafx.scene.layout.VBox?>

<**BorderPane** xmlns:fx="http://javafx.com/fxml" xmlns="http://javafx.com/javafx"

        fx:controller="grocerystore.Cart">

  <**top**>

    <**VBox** spacing="10">

      <**padding**>
```

```xml
        <Insets top="10" right="10" bottom="10" left="10"/>

</padding>

<HBox spacing="10">

    <Label text="Select Item:"/>

    <ComboBox fx:id="itemsComboBox" prefWidth="150"/>

    <Label text="Quantity:"/>

    <Slider fx:id="quantitySlider" min="1" max="10" value="1" prefWidth="150"/>

    <Label text="Units:"/>

    <Label fx:id="purchaseUnitsLabel" prefWidth="50"/>

</HBox>

<HBox spacing="10">

    <Label text="Item Name:"/>

    <Label fx:id="unitValueLabel" prefWidth="150"/>

    <Label text="Unit Price:"/>

    <Label fx:id="unitPriceValueLabel" prefWidth="100"/>

</HBox>

<HBox spacing="10">
```

```xml
            <Button fx:id="addButton" text="Add to Cart"/>

            <Button fx:id="removeButton" text="Remove from Cart"/>

            <Button fx:id="saveCartButton" text="Save Cart"/>

            <Button fx:id="loadCartButton" text="Load Cart"/>

            <Button fx:id="checkOutButton" text="Check Out"/>

        </HBox>

    </VBox>

</top>

<center>

    <VBox spacing="10">

        <padding>

            <Insets top="10" right="10" bottom="10" left="10"/>

        </padding>

        <Label text="Available Items:"/>

        <TableView fx:id="itemsTableView" prefHeight="150">

            <columns>

                <TableColumn fx:id="itemNameColumn" text="Item Name" prefWidth="150"/>
```

```xml
                <TableColumn fx:id="unitPriceColumn" text="Unit Price" prefWidth="100"/>

            </columns>

        </TableView>

        <Label text="Shopping Cart:"/>

        <TableView fx:id="cartTableView" prefHeight="150">

            <columns>

                <TableColumn fx:id="cartItemNameColumn" text="Item Name"
prefWidth="150"/>

                <TableColumn fx:id="cartUnitPriceColumn" text="Unit Price" prefWidth="100"/>

                <TableColumn fx:id="cartQuantityColumn" text="Quantity" prefWidth="80"/>

                <TableColumn fx:id="cartTotalPriceColumn" text="Total Price"
prefWidth="100"/>

            </columns>

        </TableView>

    </VBox>

  </center>

  <bottom>

    <HBox spacing="10">
```

```xml
    <padding>

        <Insets top="10" right="10" bottom="10" left="10"/>

    </padding>

    <Label text="Total Amount:"/>

    <Label fx:id="totalValueLabel" prefWidth="100"/>

  </HBox>

 </bottom>

</BorderPane>
```

-- SaveedCart.fxml :

```xml
<?xml version="1.0" encoding="UTF-8"?>

<!--

/*********************************************

Workshop #05

Course: APD545 - Winter

Last Name: BEHZADFAR

First Name: RADMEHR

ID: 148786221
```

```xml
<?import javafx.scene.control.Button?>

<?import javafx.scene.control.ListView?>

<?import javafx.scene.layout.HBox?>

<?import javafx.scene.layout.VBox?>

<VBox xmlns="http://javafx.com/javafx" xmlns:fx="http://javafx.com/fxml"

   fx:controller="grocerystore.SavedCartController" spacing="10">

  <children>

    <ListView fx:id="savedCartList" prefHeight="200" prefWidth="300"/>

    <HBox spacing="10">

      <children>

        <Button fx:id="loadButton" text="Load" onAction="#handleLoad"/>
```

```xml
            <Button fx:id="cancelButton" text="Cancel" onAction="#handleCancel"/>

        </children>

      </HBox>

    </children>

  </VBox>
```