2. Open the Project in IntelliJ IDEA

1. Launch IntelliJ IDEA.
2. Select **Open** and navigate to the cloned repository folder.
3. Open the project.

3. Configure JavaFX in IntelliJ IDEA

1. Go to **File > Project Structure > Libraries**.
2. Click the **+** button and select **Java**.
3. Navigate to the directory where JavaFX is installed and select the `lib` folder.
4. Click **OK** to add the JavaFX library.

4. Add VM Options

1. Go to **Run > Edit Configurations**.
2. Navigate to: src/main/java/com.example.bhc_assessment2, select your main class (`HelloApplicationApp`).
3. In the **VM options** field, add the following:

```
bash
Copy
--module-path /path/to/javafx-sdk-XX/lib --add-modules javafx.controls,javafx.fxml
```

Replace `/path/to/javafx-sdk-XX` with the actual path to your JavaFX SDK.

5. Run the Project

1. Click the **Run** button in IntelliJ IDEA.
2. The application window should open, allowing you to interact with the Warehouse Management System.

Usage

Adding Cartons or Pallets

1. Click the **Add Carton** or **Add Pallet** button to add items.
2. Use the **Remove Carton** or **Remove Pallet** button to remove items before sending them to the warehouse.
3. Click **Send to Warehouse** to add the items to the warehouse.

Offloading Packages

1. Enter the serial number of the package in the **Offload Package** field.

2. Click the **Offload Package** button.
3. If the package is not found, an alert will show available packages.

Discarding Packages

1. Enter the serial number of the package in the **Discard Package** field.
2. Click the **Discard Package** button.
3. If the package is not found, an alert will show available packages.

Searching for Packages or Racks

1. Enter the serial number in the **Search** field.
2. Click the **Search** button.
3. If the package or rack is not found, suggestions for available packages will be displayed.

Viewing Warehouse Snapshot

1. Click the **View Warehouse Snapshot** button.
2. A dialog will display the current state of the warehouse, including package locations and capacity utilization.

Viewing Historical Records

1. Click the **View Historical Records** button.
2. A dialog will display logs of all package movements (added, removed, discarded).

Project Structure

- **WarehouseApp.java**: The main application class that launches the JavaFX UI.
- **Warehouse.java**: Manages the warehouse, including racks, lines, and packages.
- **Rack.java**: Represents a rack in the warehouse.
- **Line.java**: Represents a line in a rack.
- **Pallet.java**: Represents a pallet that holds packages.
- **Package.java**: Represents a package (carton or loose package).

Dependencies

- **JavaFX**: Used for the graphical user interface.
- **JDK 11+**: Required to compile and run the project.

Troubleshooting

JavaFX Not Found

If you encounter errors related to JavaFX, ensure that:

1. The JavaFX SDK is correctly configured in IntelliJ IDEA.
2. The VM options are set correctly in the run configuration.

Warehouse Capacity Exceeded

If the warehouse capacity is exceeded, the system will display a warning message. Ensure that the total weight of packages does not exceed the warehouse's maximum capacity.

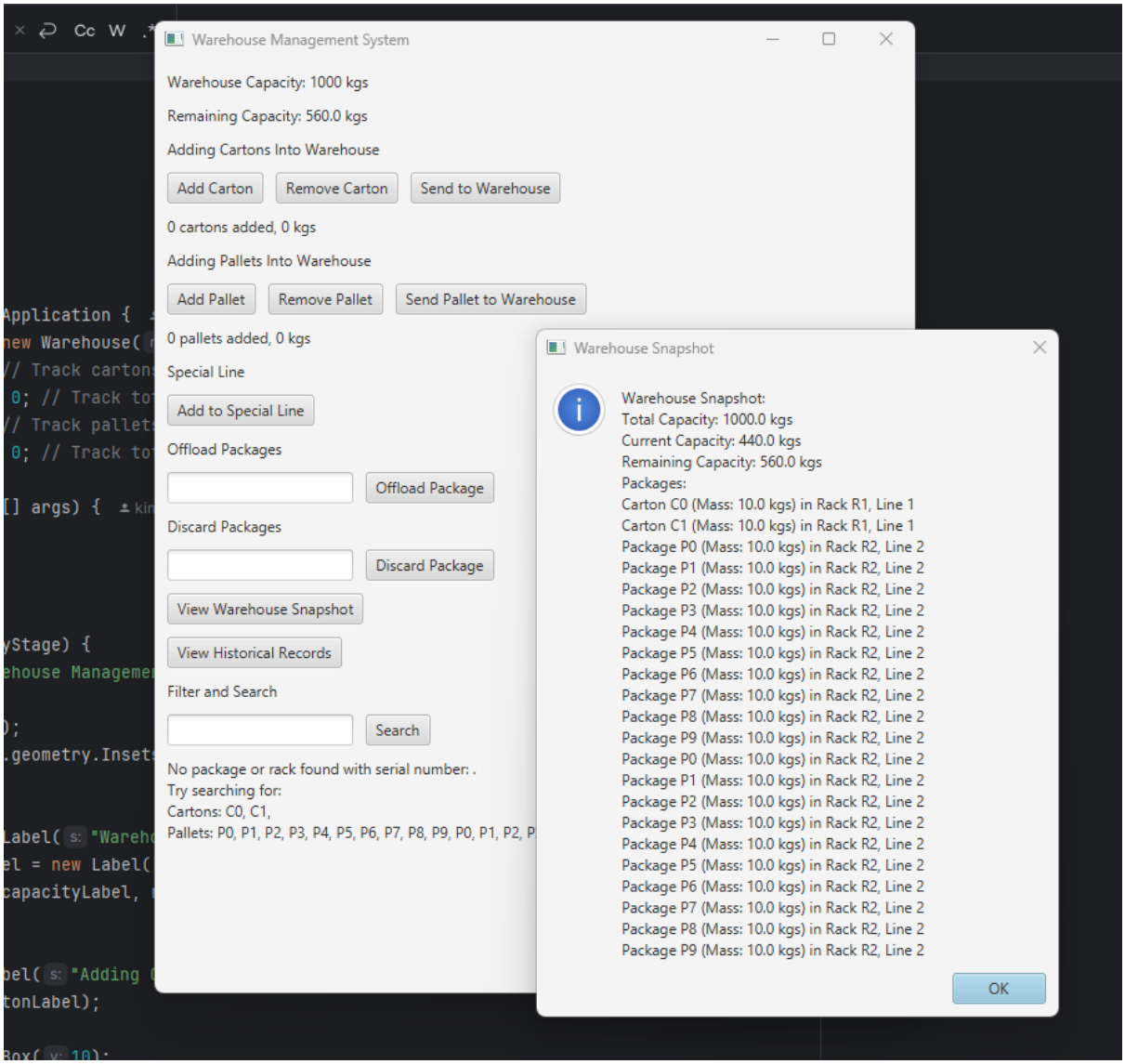
Contributing

Contributions are welcome! If you'd like to contribute, please follow these steps:

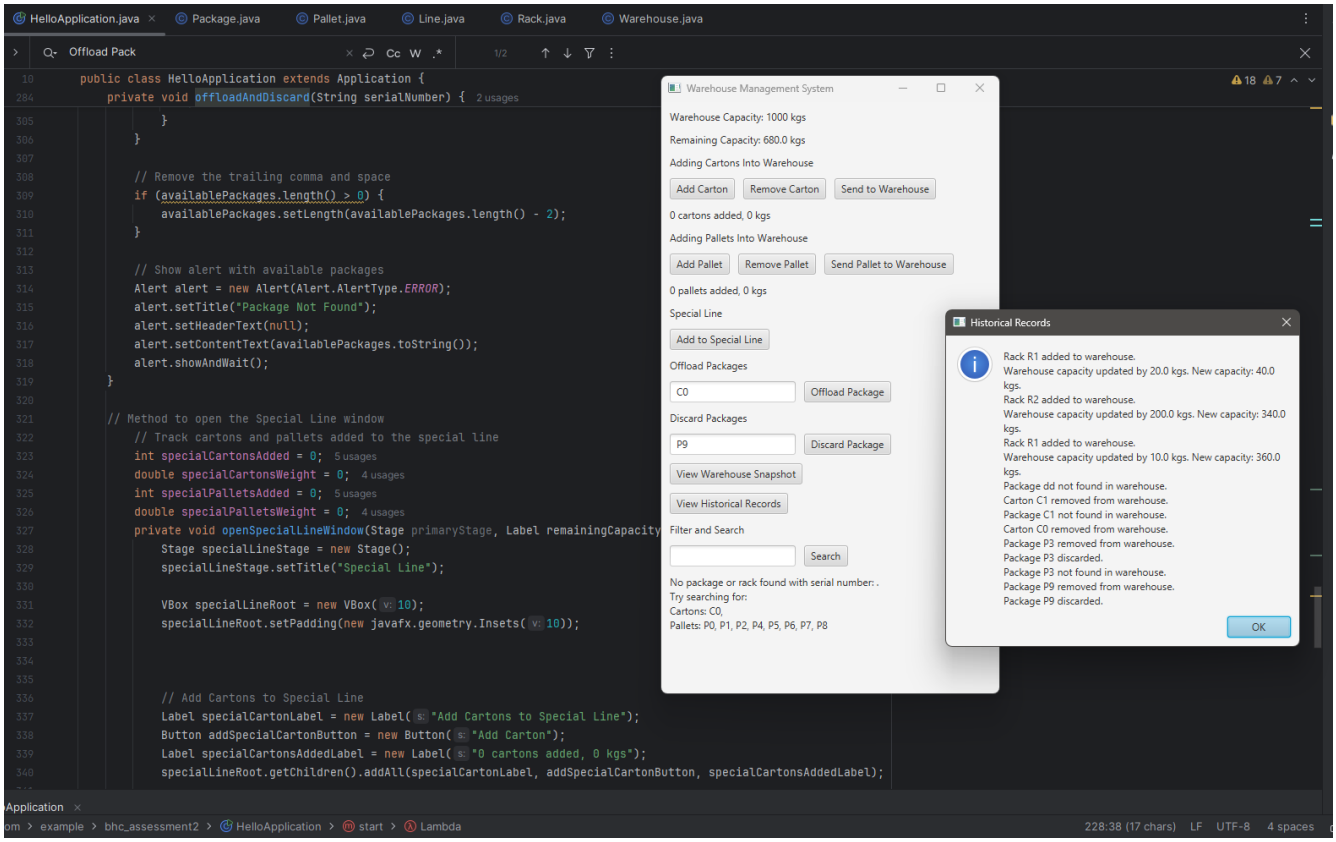
1. Fork the repository.
2. Create a new branch for your feature or bugfix.
3. Submit a pull request with a detailed description of your changes.

Below are the snippets of what you should expect when the projects runs:

USER MANUAL


Warehouse Management System
Warehouse Capacity: 1000 kgs
Remaining Capacity: 560.0 kgs
Adding Cartons Into Warehouse
Add Carton
Remove Carton
Send to Warehouse
0 cartons added, 0 kgs
Adding Pallets Into Warehouse
Add Pallet
Remove Pallet
Send Pallet to Warehouse
0 pallets added, 0 kgs
Special Line
Add to Special Line
Offload Packages
Offload Package
Discard Packages
Discard Package
View Warehouse Snapshot
View Historical Records
Filter and Search
Search
No package or rack found with serial number: .
Try searching for:
Cartons: C0, C1,
Pallets: P0, P1, P2, P3, P4, P5, P6, P7, P8, P9, P0, P1, P2, P
Warehouse Snapshot
Warehouse Snapshot:
Total Capacity: 1000.0 kgs
Current Capacity: 440.0 kgs
Remaining Capacity: 560.0 kgs
Packages:
Carton C0 (Mass: 10.0 kgs) in Rack R1, Line 1
Carton C1 (Mass: 10.0 kgs) in Rack R1, Line 1
Package P0 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P1 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P2 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P3 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P4 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P5 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P6 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P7 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P8 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P9 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P0 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P1 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P2 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P3 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P4 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P5 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P6 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P7 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P8 (Mass: 10.0 kgs) in Rack R2, Line 2
Package P9 (Mass: 10.0 kgs) in Rack R2, Line 2
OK

USER MANUAL


HelloApplication.java
Package.java
Pallet.java
Line.java
Rack.java
Warehouse.java
Offload Pack
public class HelloApplication extends Application {
private void offloadAndDiscard(String serialNumber) { 2 usages
// Remove the trailing comma and space
// Show alert with available packages
Alert alert = new Alert(Alert.AlertType.ERROR);
alert.setTitle("Package Not Found");
alert.setHeaderText(null);
alert.setContentText(availablePackages.toString());
alert.showAndWait();
// Method to open the Special Line window
// Track cartons and pallets added to the special line
int specialCartonsAdded = 0; 5 usages
double specialCartonsWeight = 0; 4 usages
int specialPalletsAdded = 0; 5 usages
double specialPalletsWeight = 0; 4 usages
private void openSpecialLineWindow(Stage primaryStage, Label remainingCapacity
Stage specialLineStage = new Stage();
specialLineStage.setTitle("Special Line");
VBox specialLineRoot = new VBox(v: 10);
specialLineRoot.setPadding(new javafx.geometry.Insets(v: 10));
// Add Cartons to Special Line
Label specialCartonLabel = new Label(s: "Add Cartons to Special Line");
Button addSpecialCartonButton = new Button(s: "Add Carton");
Label specialCartonsAddedLabel = new Label(s: "0 cartons added, 0 kgs");
specialLineRoot.getChildren().addAll(specialCartonLabel, addSpecialCartonButton, specialCartonsAddedLabel);
Warehouse Management System
Warehouse Capacity: 1000 kgs
Remaining Capacity: 680.0 kgs
Adding Cartons Into Warehouse
Add Carton
Remove Carton
Send to Warehouse
0 cartons added, 0 kgs
Adding Pallets Into Warehouse
Add Pallet
Remove Pallet
Send Pallet to Warehouse
0 pallets added, 0 kgs
Special Line
Add to Special Line
Offload Packages
C0
Offload Package
Discard Packages
P9
Discard Package
View Warehouse Snapshot
View Historical Records
Filter and Search
Search
No package or rack found with serial number: .
Try searching for:
Cartons: C0,
Pallets: P0, P1, P2, P4, P5, P6, P7, P8
Historical Records
Rack R1 added to warehouse.
Warehouse capacity updated by 20.0 kgs. New capacity: 40.0 kgs.
Rack R2 added to warehouse.
Warehouse capacity updated by 200.0 kgs. New capacity: 340.0 kgs.
Rack R1 added to warehouse.
Warehouse capacity updated by 10.0 kgs. New capacity: 360.0 kgs.
Package dd not found in warehouse.
Carton C1 removed from warehouse.
Package C1 not found in warehouse.
Carton C0 removed from warehouse.
Package P3 removed from warehouse.
Package P3 discarded.
Package P3 not found in warehouse.
Package P9 removed from warehouse.
Package P9 discarded.
OK
Application
example
bhc_assessment2
HelloApplication
start
Lambda