



Logistic Automation-G3

User manual

Introduction to Logistic Automation-G3

Logistic Automation-G3 is a modern, Java Swing-based desktop application designed to streamline and optimize logistics operations for businesses of all sizes. The system provides an integrated platform for managing shipments, tracking deliveries, scheduling drivers, and communicating with customers, all within a user-friendly and visually appealing interface.

Developed with a focus on efficiency, accuracy, and user experience, Logistic Automation-G3 automates key logistics processes such as order management, delivery scheduling, and real-time shipment tracking. The application supports robust data analysis and reporting features, enabling organizations to monitor performance, identify bottlenecks, and make data-driven decisions.

Key highlights of Logistic Automation-G3 include:

- **Comprehensive Shipment Management:** Easily create, update, and monitor shipments from dispatch to delivery.
- **Automated Delivery Scheduling:** Assign deliveries to drivers based on availability and optimize routes to ensure timely fulfillment.
- **Real-Time Tracking:** Track shipment progress with up-to-date status updates and detailed history logs.
- **Customer Notifications:** Instantly notify customers of shipment status changes via email and SMS, enhancing transparency and satisfaction.
- **Professional User Interface:** Enjoy a modern, intuitive UI with consistent styling, clear navigation, and responsive feedback.
- **Advanced Reporting:** Generate detailed reports on logistics performance, delivery efficiency, and customer service metrics.

Logistic Automation-G3 is built with scalability and flexibility in mind, making it suitable for both small logistics teams and large-scale operations. By automating routine tasks and centralizing logistics data, the application empowers organizations to reduce manual errors, improve operational visibility, and deliver superior service to their customers.

Data Gathering and Analysis in Logistic Automation-G3

Data Gathering

Logistic Automation-G3 collects a wide range of data throughout its operation, including:

- **Shipment Data**

Information about each shipment, such as shipment ID, sender/receiver details, package contents, origin, destination, and shipping dates.

- **Customer Data**

Customer profiles, contact information, addresses, and communication preferences.

- **Delivery Scheduling Data**

Delivery dates/times, assigned drivers, routes, and vehicle information.

- **Tracking Data**

Real-time and historical status updates for each shipment (e.g., dispatched, in transit, delivered, delayed), including timestamps and locations.

- **Personnel Data**

Details about delivery staff, their schedules, and performance metrics.

- **User Actions**

Logs of user activities within the application, such as creating shipments, updating statuses, or sending notifications.

- **Notification Data**

Records of emails and SMS sent to customers, including timestamps and delivery status. How Data is Gathered.

- **User Input**

Data is entered via forms and panels (e.g., CustomerPanel, ShipmentsPanel, DeliveryPanel).

- **Automated System Events**

Status updates and logs are generated automatically as shipments progress or as notifications are sent.

Data Analysis

Once data is collected, **Logistic Automation-G3** provides tools and features for analysis, such as

- **Report Generation**

Users can generate summary or detailed reports on shipments, deliveries, and personnel performance. These reports help identify trends, bottlenecks, and areas for improvement.

- **Performance Metrics**

Analysis of delivery times, on-time rates, driver workloads, and customer satisfaction.

- **Tracking Analysis**

Visualization of shipment progress, frequency of delays, and common delivery issues.

- **Customer Analysis**

Insights into customer activity, repeat business, and communication effectiveness.

- **Operational Insights**

Data-driven recommendations for optimizing routes, scheduling, and resource allocation. How Analysis is Performed

- **Built-in Reporting Tools**

The Reports & Notifications panel allows users to select parameters (e.g., month, report type) and generate PDF reports.

- **Dashboards and Tables**

The main dashboard and various panels display key metrics and allow filtering/searching for deeper analysis.

- **Export Options**

Data can be exported for further analysis in external tools (e.g., Excel).

Project Design of Logistic Automation-G3

Architecture Overview

- **Layered/Modular Structure:**

The application is organized into logical layers and modules, separating the user interface (UI), business logic, and data access. This makes the codebase maintainable, scalable, and easy to extend.

- **MVC Principles:**

While not strictly enforced, the design follows Model-View-Controller (MVC) principles:

- **Model:** Handles data and business logic (e.g., shipment, customer, and driver data).
- **View:** Java Swing panels and frames that present data and interact with the user.
- **Controller:** Event handlers and listeners that process user actions and update the model/view.

Main Components

UI Layer (View):

- Built using Java Swing, with each major function in its own panel/class (e.g., CustomerPanel, ShipmentsPanel, TrackingPanel, ReportsNotificationsPanel, MainDashboard).
- Consistent styling and layout are achieved using a shared UIStyle utility class.
- Navigation is typically managed via a sidebar or menu, with the main content area switching between panels.

Business Logic Layer (Model/Controller):

- Classes and methods that handle core logistics operations: creating shipments, assigning deliveries, updating statuses, and generating reports.
- Validation and business rules are enforced here (e.g., preventing double-booking of drivers).

Data Access Layer:

- Handles reading and writing data to the underlying storage (could be a database, files, or in-memory structures).
- Data Access Objects (DAOs) like ShipmentDAO, CustomerDAO, etc., abstract the details of data storage and retrieval.

Key Design Features

- **Separation of Concerns:**

Each class or panel has a clear responsibility, making the code easier to understand and modify.

- **Reusability:**

Common UI elements and styles are centralized (e.g., button styling, color schemes), reducing duplication.

- **Extensibility:**
New features (like additional notification types or analytics panels) can be added with minimal changes to existing code.
- **Event-Driven:**
User actions (button clicks, form submissions) are handled by event listeners, which update the UI and data as needed.
- **Feedback and Validation:**
The UI provides immediate feedback (dialogs, status messages) and validates user input to prevent errors.

Design Benefits

- **Maintainability:**
Clear separation and modularity make it easy to fix bugs or add new features.
- **User Experience:**
Consistent, modern UI design ensures a professional look and feel.
- **Scalability:**
The architecture supports future growth, such as integrating new modules or external services.
- **Reliability:**
Validation and error handling throughout the app reduce the risk of user or system errors.

Logistic Automation-G3 is designed with modularity, clarity, and user experience in mind, using Java Swing for the UI and a layered architecture for robust, maintainable logistics management.

File Structure of Logistic Automation-G3

LogisticAutomation-G3/

└─ Source Packages/

└─ dao/

└─ AdminDAO.java
└─ CustomerDAO.java
└─ DeliveryDAO.java
└─ DeliveryPersonnelDAO.java
└─ ShipmentDAO.java

└─ model/

└─ Admin.java
└─ Customer.java
└─ Delivery.java
└─ DeliveryPersonnel.java
└─ Shipment.java

└─ notification/

└─ EmailService.java
└─ SMSService.java

└─ report/

└─ ReportGenerator.java

└─ ui/

└─ CustomerPanel.java
└─ DeliveryPanel.java
└─ DeliveryPersonnelPanel.java
└─ DriverAssignmentPanel.java
└─ LoginFrame.java
└─ Main.java
└─ MainDashboard.java
└─ ReportsNotificationsPanel.java
└─ ShipmentsPanel.java
└─ TrackingPanel.java
└─ UIStyle.java

└─ util/

└─ DBConnection.java

User Management in Logistic Automation-G3

User Roles

The application is primarily designed for admin and staff users (such as logistics managers, dispatchers, or customer service personnel).

There is no self-service account creation for end-users or customers within the application.

User Account Creation

Users cannot create their own accounts through the application interface.

All user accounts (admin/staff) are created and managed by an administrator or are pre-configured in the system/database.

The login screen (LoginFrame.java) only provides fields for username and password—no “Sign Up” or “Register” option is present.

Login Process

Users access the system by entering their credentials on the login screen.

The application validates credentials (likely using a method such as AdminDAO.validate(user, pass)).

Upon successful login, users are granted access to the main dashboard and all authorized features.

User Permissions

Admins/Staff can:

Manage shipments, customers, deliveries, and drivers.

Generate reports and send notifications.

View and update logistics data.

Customers do not log in to the application. They interact with the system only via notifications (email/SMS) sent by the staff/admin.

Security

Only authorized users (with valid credentials) can access the application.

There is no public registration or password reset feature exposed to end-users.

How New Users Are Added

New staff/admin accounts are typically added:

Directly in the database by an administrator.

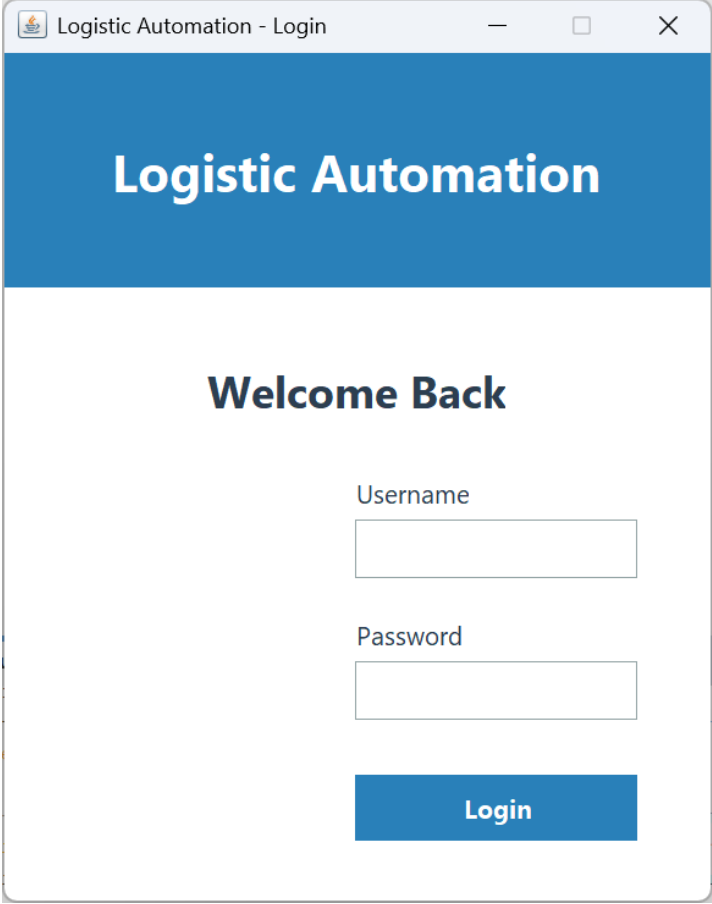
Through a separate admin-only interface (if implemented).

By editing a configuration file (in simple setups).

Introductions For Each Major Ui Panel/Class

LoginFrame.java

The entry point of the application, this screen allows authorized staff and admins to log in using their credentials. It features a modern, branded interface and validates user access before granting entry to the main dashboard.



The image shows a Java Swing window titled "Logistic Automation - Login". The window has a standard title bar with minimize, maximize, and close buttons. The main content area has a blue header bar with the text "Logistic Automation" in white. Below the header, the text "Welcome Back" is centered. There are two input fields: "Username" and "Password", each with a corresponding text label above it. Below the password field is a blue "Login" button.

Logistic Automation - Login

Logistic Automation

Welcome Back

Username

Password

Login

Figure 1: loginframe

MainDashboard.java

The central hub of the application, providing navigation to all major features. It includes a sidebar or menu for quick access to panels like shipments, customers, tracking, delivery, and reports. The dashboard offers a clear overview and a professional, consistent look.

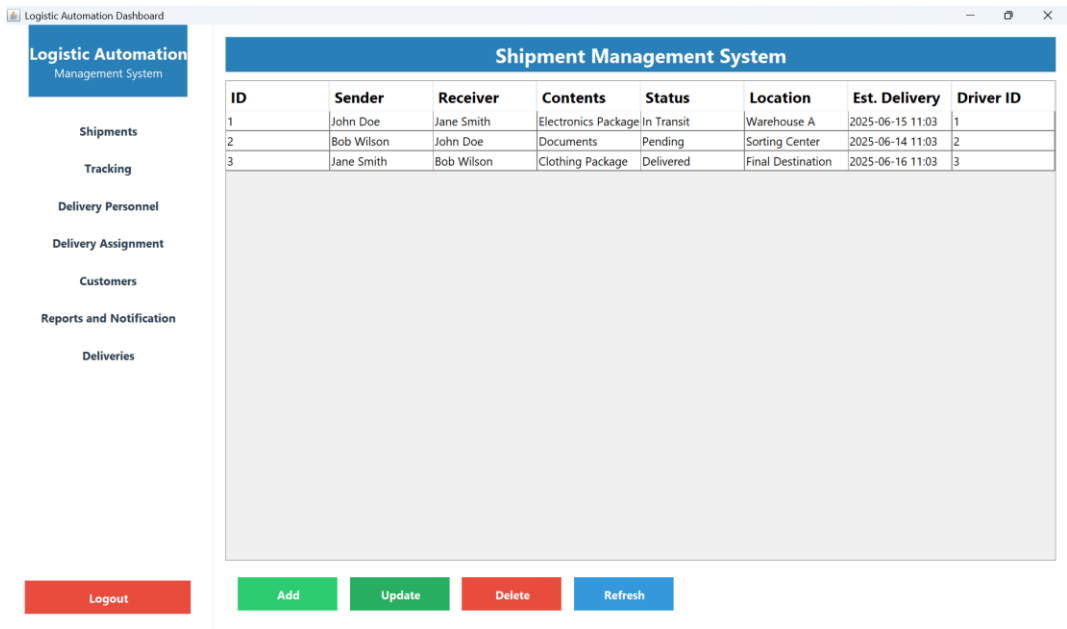


Figure 2: MainDashboard

CustomerPanel.java

A dedicated panel for managing customer information. Staff can add, update, search, and delete customer records. The panel features a searchable table and user-friendly forms to ensure efficient customer management.

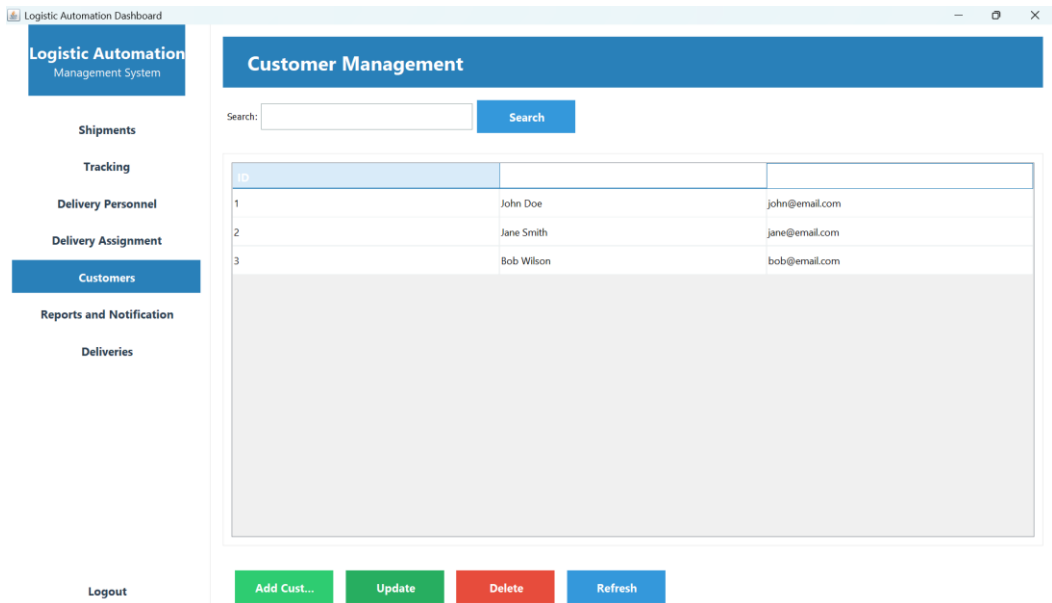


Figure 3: CustomerPanel

ShipmentsPanel.java

This panel handles the creation, updating, and tracking of shipments. Users can enter shipment details, assign them to customers, and monitor their status throughout the delivery process. The panel provides a comprehensive view of all shipments.

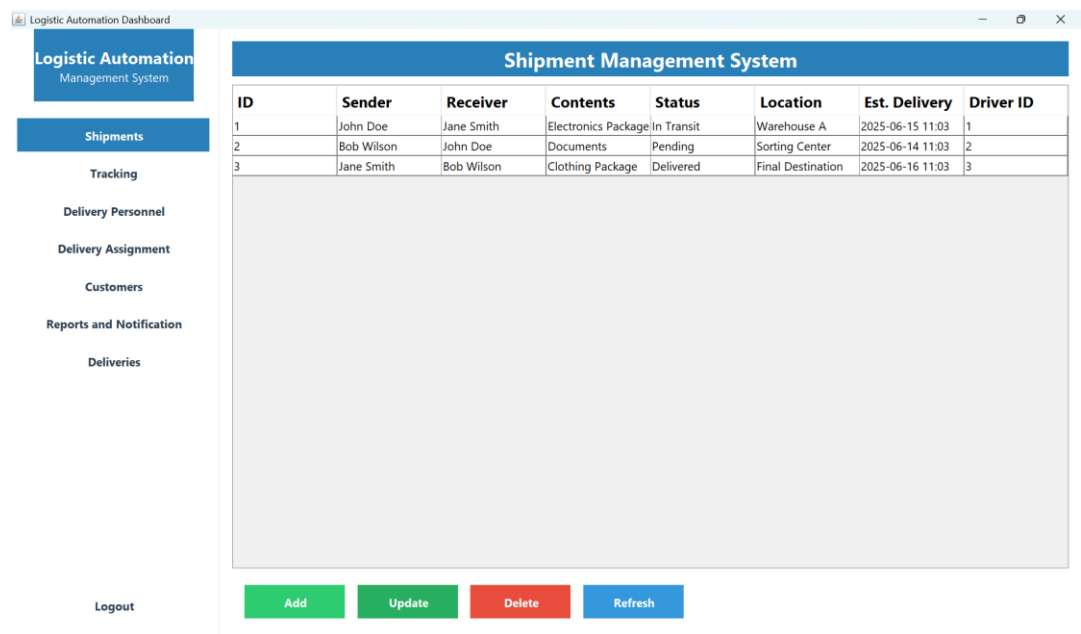


Figure 4: ShipmentsPanel

TrackingPanel.java

Allows users to track the real-time progress of shipments. By entering a tracking number or searching by customer, staff can view the current status, history, and location updates for any shipment, improving transparency and customer service.

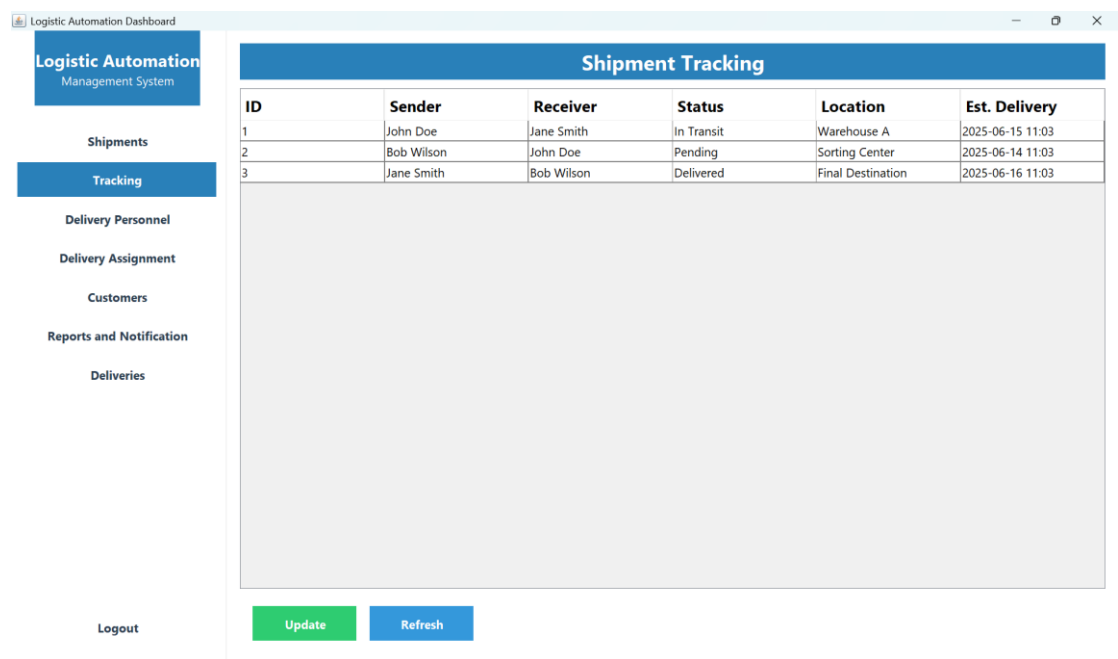


Figure 5: TrackingPanel

DeliveryPanel.java

Manages the scheduling and assignment of deliveries. Staff can assign drivers, set delivery dates and times, and monitor the status of each delivery. The panel helps optimize routes and ensure timely fulfillment.

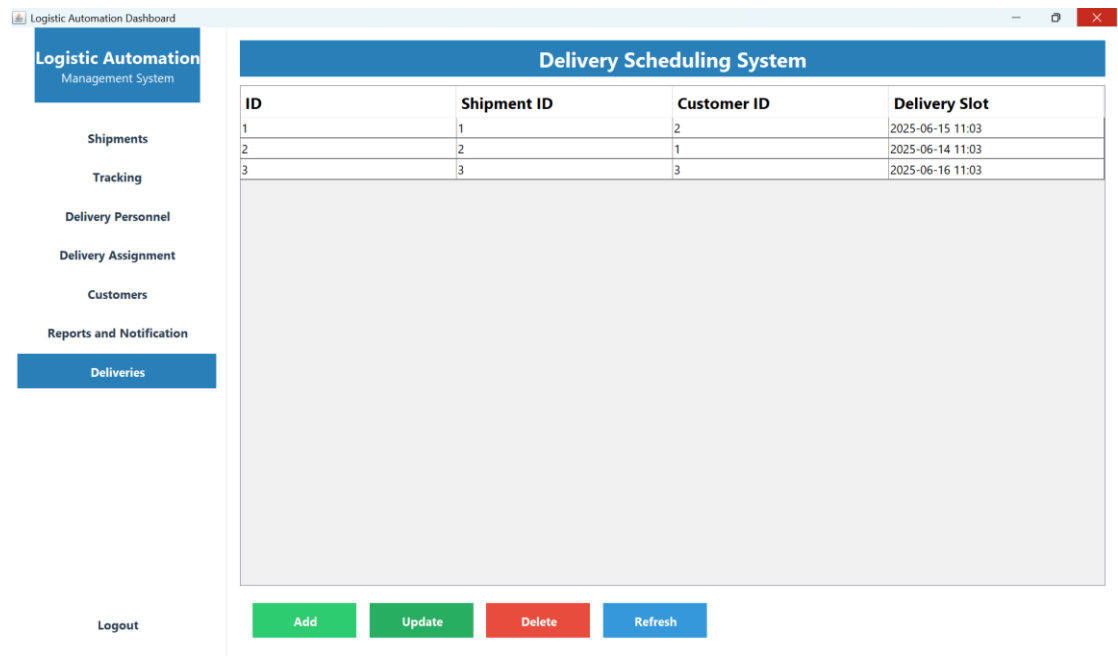


Figure 6: DeliveryPanel

DeliveryPersonnelPanel.java

A panel for managing delivery staff. Users can add, update, and remove delivery personnel, view their schedules, and monitor their performance. This ensures efficient allocation of human resources.

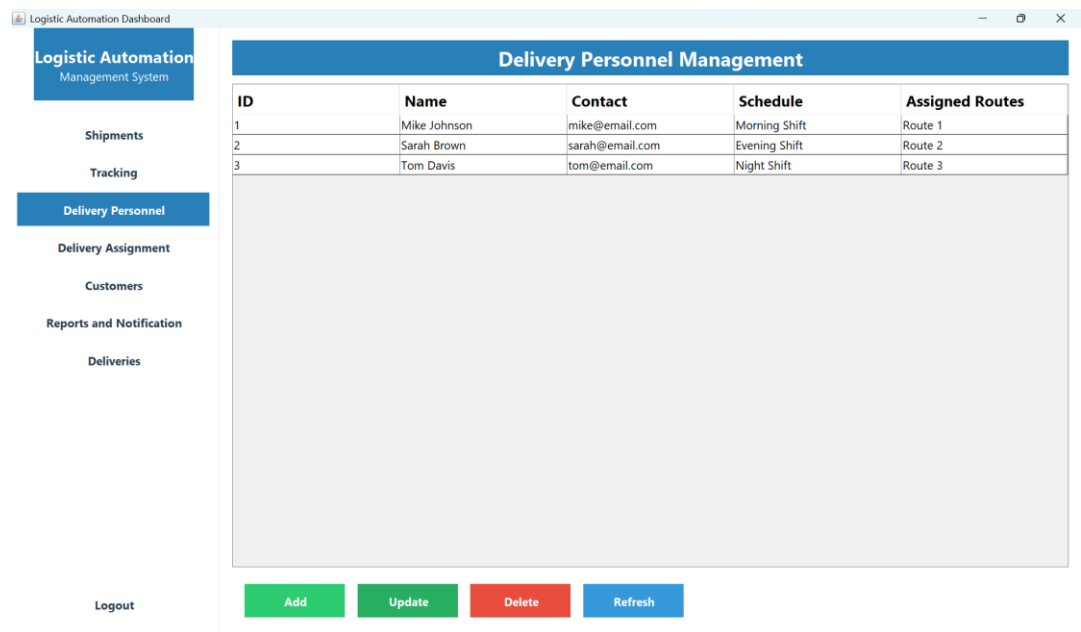


Figure 7: DeliveryPersonnelPanel

DriverAssignmentPanel.java

Specialized for assigning drivers to specific deliveries or routes. The panel helps prevent scheduling conflicts and ensures that each delivery is handled by an available and suitable driver.

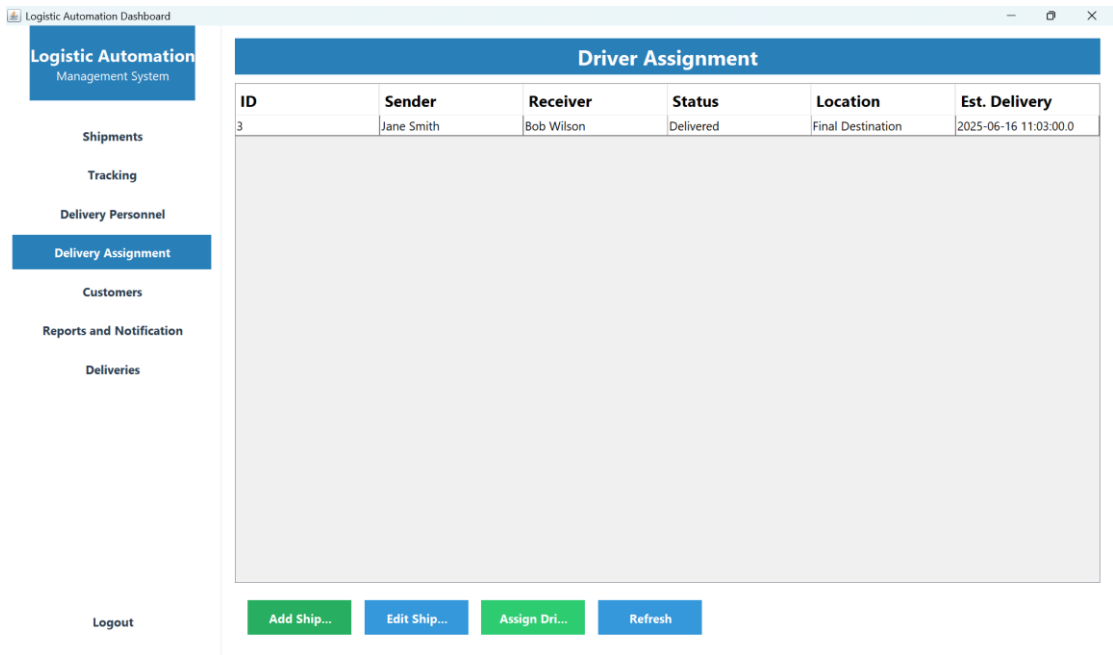


Figure 8: DriverAssignmentPanel

ReportsNotificationsPanel.java

Centralizes reporting and customer communication. Users can generate detailed or summary reports on logistics operations and send notifications (email/SMS) to customers. The panel streamlines both analysis and communication tasks.

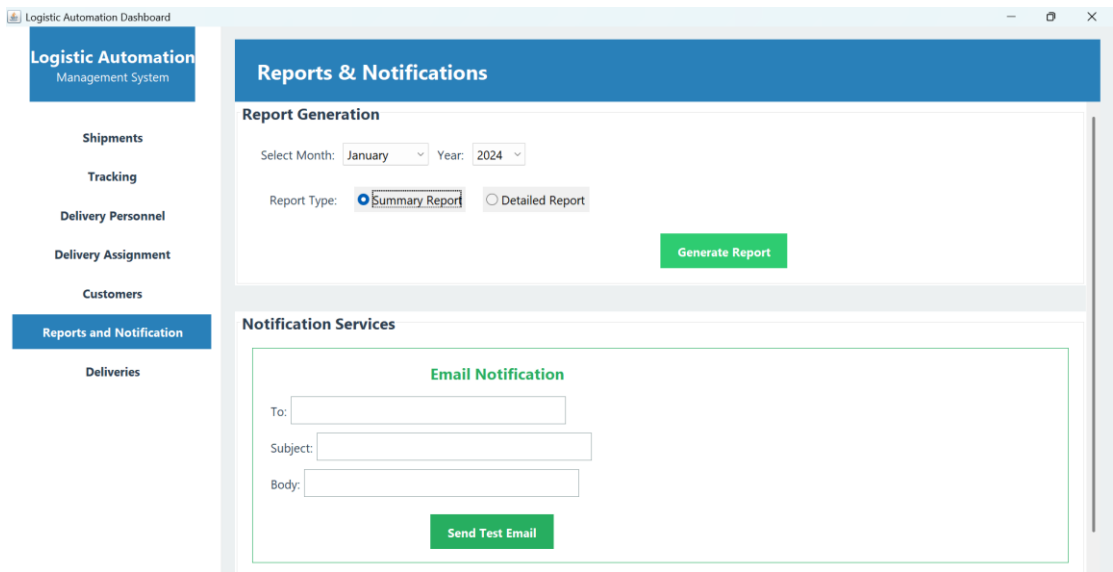


Figure 9: ReportsNotificationsPanel

Logout

SMS Notification

To:

Message:

Send Test SMS

Figure 10: ReportsNotificationsPanel

Database Structure for Logistic Automation-G3

Admin Table

```
CREATE TABLE `admin` (  
  `Id` int(11) NOT NULL AUTO_INCREMENT,  
  `Username` varchar(50) NOT NULL,  
  `Password` varchar(50) NOT NULL,  
  PRIMARY KEY (`Id`),  
  UNIQUE KEY `Username` (`Username`)  
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci;
```

Customer Table

```
CREATE TABLE `customers` (  
  `Id` int(11) NOT NULL AUTO_INCREMENT,  
  `Name` varchar(100) NOT NULL,  
  `Contact` varchar(50) NOT NULL,  
  PRIMARY KEY (`Id`)  
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci;
```

DeliveryPersonnel Table

```
CREATE TABLE `deliverypersonnel` (  
  `Id` int(11) NOT NULL AUTO_INCREMENT,  
  `Name` varchar(100) NOT NULL,  
  `Contact` varchar(50) NOT NULL,  
  `Schedule` varchar(100) DEFAULT NULL,  
  `AssignedRoutes` varchar(200) DEFAULT NULL,  
  PRIMARY KEY (`Id`)  
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci;
```

Deliveries Table

```
CREATE TABLE `deliveries` (  
  `Id` int(11) NOT NULL AUTO_INCREMENT,  
  `ShipmentId` int(11) NOT NULL,  
  `CustomerId` int(11) NOT NULL,  
  `DeliverySlot` datetime DEFAULT NULL,  
  PRIMARY KEY (`Id`),  
  KEY `ShipmentId` (`ShipmentId`),  
  KEY `CustomerId` (`CustomerId`),  
  CONSTRAINT `deliveries_ibfk_1` FOREIGN KEY (`ShipmentId`) REFERENCES `shipments` (`Id`),  
  CONSTRAINT `deliveries_ibfk_2` FOREIGN KEY (`CustomerId`) REFERENCES `customers` (`Id`)  
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci;
```

Shipments Table

```
CREATE TABLE `shipments` (  
  `Id` int(11) NOT NULL AUTO_INCREMENT,  
  `Sender` varchar(100) NOT NULL,  
  `Receiver` varchar(100) NOT NULL,  
  `Contents` varchar(200) NOT NULL,  
  `Status` varchar(50) NOT NULL,  
  `Location` varchar(100) DEFAULT NULL,  
  `EstimatedDelivery` datetime DEFAULT NULL,
```

```

`AssignedDriverId` int(11) DEFAULT NULL,
PRIMARY KEY (`Id`),
KEY `AssignedDriverId` (`AssignedDriverId`),
CONSTRAINT `shipments_ibfk_1` FOREIGN KEY (`AssignedDriverId`) REFERENCES `deliverypersonnel`
(`Id`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci;

```

| Table | Action | Rows | Type | Collation | Size | Overhead |
|--|---|-----------|---------------|---------------------------|------------------|------------|
| <input type="checkbox"/> admin | ★ Browse Structure Search Insert Empty Drop | 2 | InnoDB | utf8mb4_general_ci | 32.0 KiB | - |
| <input type="checkbox"/> customers | ★ Browse Structure Search Insert Empty Drop | 3 | InnoDB | utf8mb4_general_ci | 16.0 KiB | - |
| <input type="checkbox"/> deliveries | ★ Browse Structure Search Insert Empty Drop | 3 | InnoDB | utf8mb4_general_ci | 48.0 KiB | - |
| <input type="checkbox"/> deliverypersonnel | ★ Browse Structure Search Insert Empty Drop | 3 | InnoDB | utf8mb4_general_ci | 16.0 KiB | - |
| <input type="checkbox"/> shipments | ★ Browse Structure Search Insert Empty Drop | 3 | InnoDB | utf8mb4_general_ci | 32.0 KiB | - |
| 5 tables | Sum | 14 | InnoDB | utf8mb4_general_ci | 144.0 KiB | 0 B |

Figure 11: logistic_automation_db

Sample Access to Logistic Automation-G3

Username: admin123

Password: admin

How to Log In:

Open the Logistic Automation-G3 application.

On the login screen, enter

Username: **admin123**

Password: **admin**

Click the **Login** button.

How to Add New Users to the Database

Using SQL (phpMyAdmin or MySQL Command Line)

Example SQL Statement:

```
INSERT INTO admin (Username, Password) VALUES ('newusername', 'newpassword');
```

Using phpMyAdmin (Step-by-Step)

1. Open phpMyAdmin and select your database (logisticautomationg3_db).
2. Click on the admin table in the left sidebar.
3. Click the Insert tab at the top.
4. Enter the new username and password in the respective fields.
5. Leave the Id field blank (it will auto-increment).
6. Click Go to save the new user.

How to Add/Update/Delete data from the application

Add

No row selection is needed.

You simply click the “Add” button, fill in the form, and submit to create a new record.

Delete / Update

A row must be selected in the table.

The application checks if a row is selected before allowing you to delete or update.

If no row is selected, the app will show a warning message (e.g., “Please select a customer to update.”).

How to Logout

Locate the Logout Button

On the main dashboard (after you log in), there is typically a Logout button.

This button is often found in the sidebar, header, or as a menu item.

Click the Logout Button

When you click it, the application will usually:
Show a confirmation dialog (e.g., "Are you sure you want to logout?").
If you confirm, the current session ends.

Return to Login Screen

The application will close the dashboard and return you to the login screen.
You can now log in again with any valid credentials, or close the application.

How to Generate a Report

Open the Reports & Notifications Panel

Navigate to this panel from the main dashboard/sidebar.

Select Report Parameters

Choose the month and year for which you want the report.
Select the report type (e.g., Summary or Detailed).

Click "Generate Report"

There is a button labeled "Generate Report".
When you click it, the application will:
Gather the relevant data (e.g., shipments, deliveries, performance metrics) for the selected period.
Format the data into a report (often as a PDF or another document format).

Save or View the Report

The report is generated and saved to a file (e.g., PDF).
A dialog will confirm the report was generated and show the file location.

Support & Troubleshooting

If you experience any issues while using Logistic Automation-G3, please try the following solutions:

Cannot log in

Ensure you are entering the correct username and password. If you have forgotten your credentials or are unable to log in, please contact your system administrator

.

Unable to add, update, or delete records

Make sure you have selected the appropriate row in the table before attempting to update or delete. For adding new records, fill in all required fields.

Report not generating

Confirm that you have selected the correct month, year, and report type. Also, check that your computer has permission to save files in the selected location.

Application errors or crashes

Restart the application.

----- Thank You! -----