CAB MANAGEMENT SYSTEM

A Project Report

Submitted by

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Under the Guidance of

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CONTENTS OF TOPIC

1. Problem Statement

In today's fast-paced world, there is a growing demand for efficient and user-friendly transportation services. However, existing cab booking systems are often complex, resource-intensive, or inaccessible to users without smartphones or internet access. The problem is to create a simple, console-based Online Cab Booking System that allows users to book cabs, manage payments, and simulate basic ride interactions — using just core Java.

2. Problem Description

Over the last few years, urban transportation has undergone a major shift with the growth of online taxi booking services. The services are convenient, accessible, and efficient for daily commuting. While many of the current systems are resource-hungry, need an internet connection, and are designed using complicated architectures that might be too costly for inexperienced operators or smaller service providers to adopt, some alternative methods are being considered.
The Online Cab Booking System intends to offer a simple simulation of such services via a Java console application. This project is meant for learning purposes and as a prototype for developers learning Java or who intend to develop scalable applications in the future.
The system allows users to execute fundamental functions such as:

- Booking a cab from a collection of available rides
- Managing a digital wallet, such as adding balance and checking balance
- Withdrawing fare after successful booking
- Showcasing ride confirmation messages
- Offering a menu-driven interface for effortless navigation

Internally, the system is separated into modular pieces. The CabBookingSystem class is the central controller, with single methods executing functionalities such as fare deduction, checking wallet balance, and simulating a ride. The system validates user input and takes action, accordingly, resulting in smooth and logical interaction.
Even though simple in nature, this project deals with fundamental programming principles such as:

- Object-oriented design
- Exception handling
- Loops and conditional statements
- User interface and console interaction

It provides a solid groundwork for features like integration with a graphical user interface (GUI), database connectivity for persistent storage, real-time tracking using GPS APIs, and better payment mechanisms. The project is thus a stepping stone to developing more sophisticated, real-world transport management systems.

3. Details of Development for Cab Management System

1. Methods/Techniques/Algorithms Used:

i. Authentication System

- Role-based access control (RBAC) implemented with three distinct user types (User, Driver, Admin)
- Password validation with basic string matching (not recommended for production - would normally use hashing)
- Session management through frame switching (login to dashboard)

ii. Core Functionality

- CardLayout for dynamic panel switching in all dashboards
- Model-View-Controller (MVC) pattern (though not strictly separated)
- Object-oriented programming with User, Driver, and Booking classes
- Data persistence using in-memory HashMaps (would normally use a database)

iii. UI Components

- Swing components (JFrame, JPanel, JButton, JTable, etc.)
- Custom rendering for table buttons and UI elements
- Responsive design using BorderLayout, GridBagLayout, and BoxLayout

iv. Booking System

- Simple matching algorithm based on vehicle type
- Fare calculation with fixed rates per vehicle type
- Booking state management (Pending → Accepted → In Progress → Completed)

2. Tools/Software/Libraries Used:

i. Core Technologies

- Java SE (Standard Edition) as the base platform
- Java Swing for the graphical user interface
- AWT (Abstract Window Toolkit) for basic graphics and event handling

ii. Development Tools

- Java Development Kit (JDK) - for compilation and execution
- Integrated Development Environment (IDE) - likely Eclipse, IntelliJ IDEA, or NetBeans
- Version control - (not shown but recommended: Git)

iii. Libraries

- Standard Java libraries:

- javax.swing.* - for GUI components
- java.awt.* - for basic graphics and layout
- java.util.* - for collections (HashMap) and date handling
- javax.imageio.* - for image handling (in dashboard)

3. Data/Charts/Datasets Used:

i. Data Structures

- HashMaps for in-memory data storage:
- users - stores registered users
- drivers - stores driver profiles
- bookings - stores all booking records

ii. Sample Data

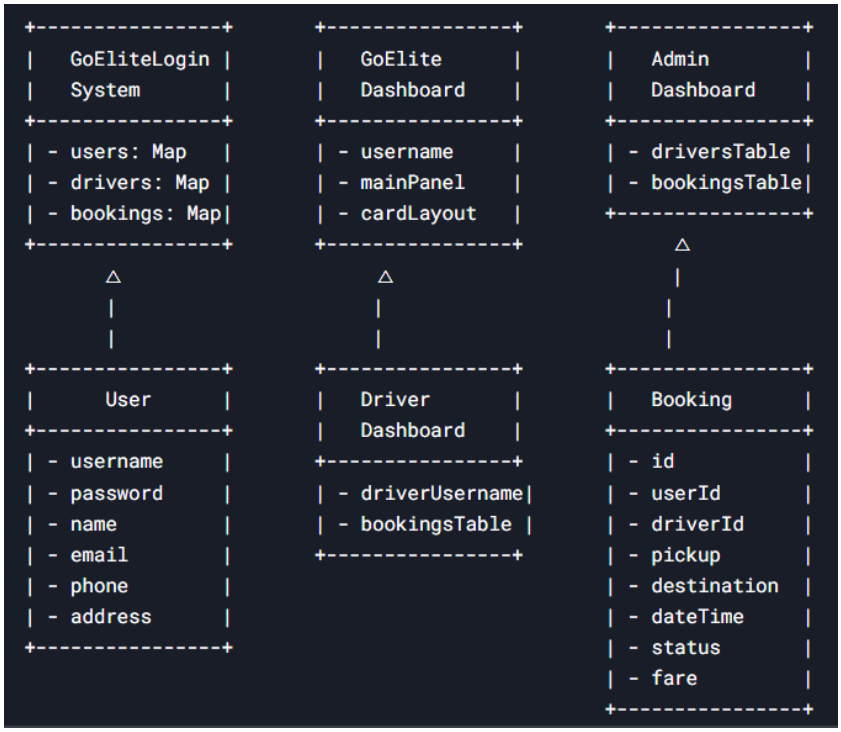
The system includes initial sample data:

```
static {
   // Add some sample data
   users.put("user1", new User("user1", "password1", "John Doe",
         "john@example.com", "1234567890", "123 Main St"));
   drivers.put("driver1", new Driver("driver1", "password1", "Mike Driver",
          "mike@example.com", "9876543210", "456 Driver St",
          "DL12345", "5", "Sedan", "Male"));
}
```

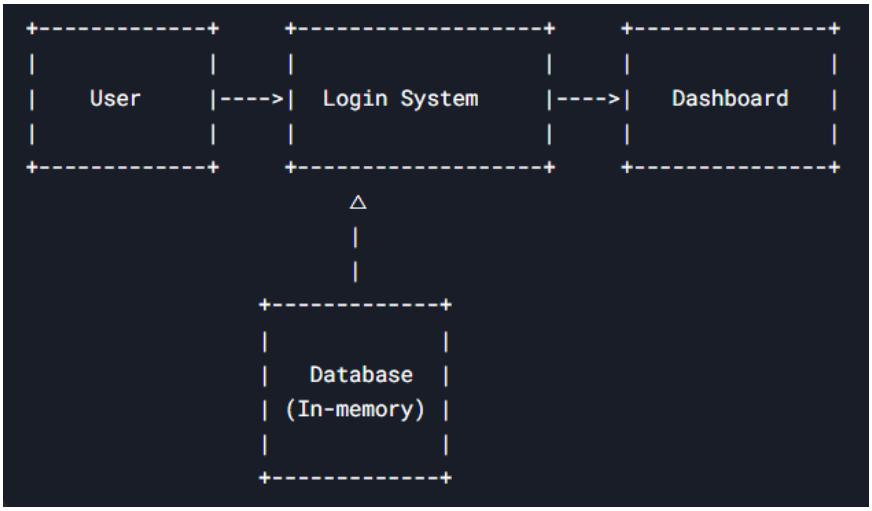
- Data Fields
  - User Class:
    - username, password, name, email, phone, address
  - Driver Class (extends User):
    - licenseNumber, experience, vehicleType, gender
  - Booking Class:
    - id, userId, driverId, pickup, destination, dateTime, status, fare

4. DFDs/Class Diagrams

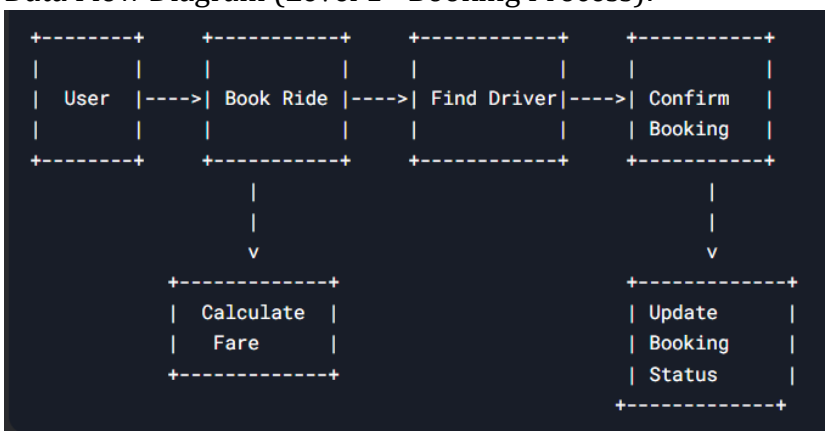
- Class Diagram (Simplified):



- Data Flow Diagram (Level 0):



- Data Flow Diagram (Level 1 - Booking Process):



4. Component Relationships
    i. Login System:
        - Authenticates users, drivers, and admin
        - Routes to appropriate dashboard
        - Manages user sessions
    ii. User Dashboard:
        - Allows booking rides
        - Views booking history
        - Manages profile
    iii. Driver Dashboard:
        - Views/accepts booking requests
        - Updates trip status
        - Manages profile

    iv. Admin Dashboard:
        - Manages users and drivers
        - Views all bookings
        - Assigns drivers to bookings

The system follows a modular design with clear separation between authentication, user interfaces, and data management components. While functional, it would benefit from proper database integration and enhanced security measures for a production environment.

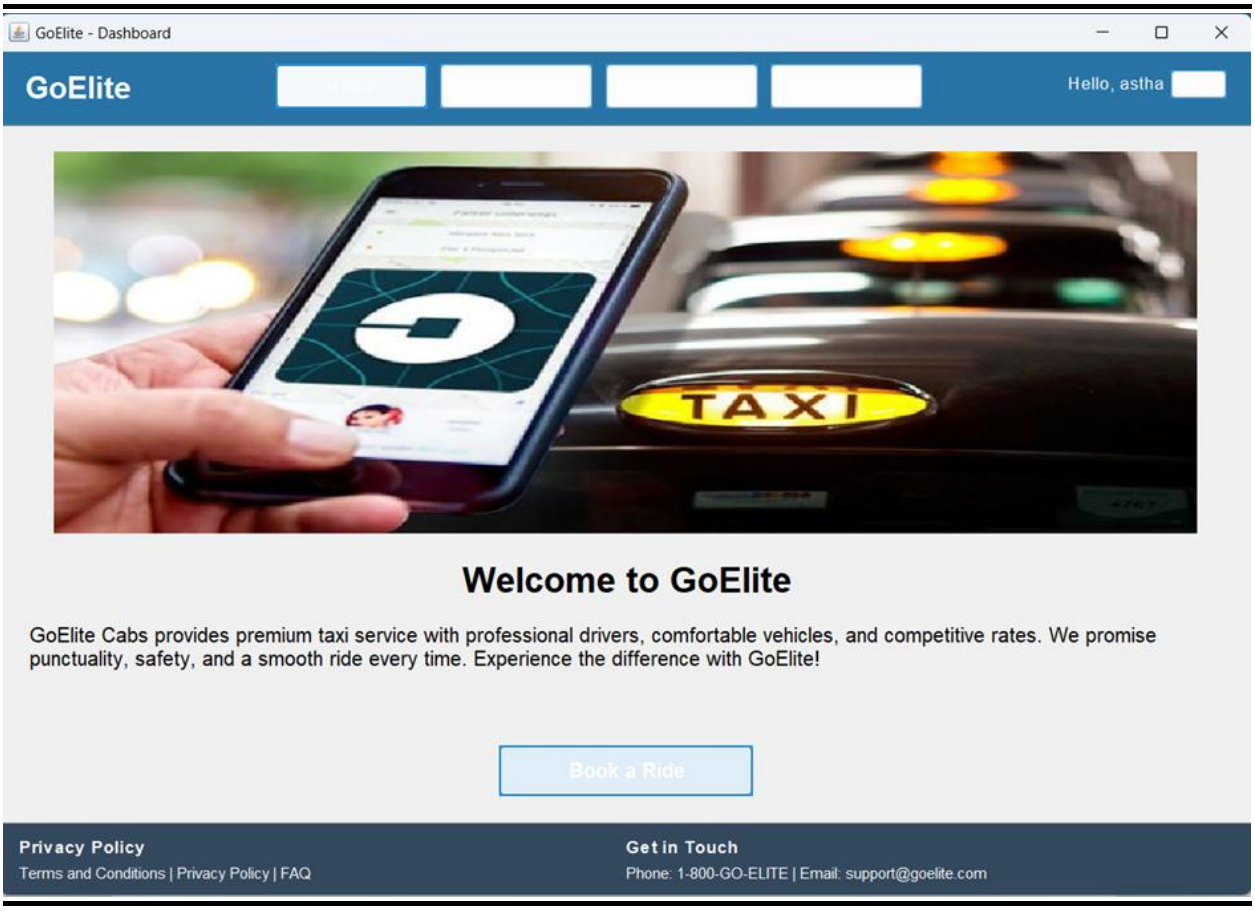
4. Application Advantages and Limitations of the Project

1) Advantages:
    - Simple, intuitive interface suitable for beginners.
    - Lightweight and runs on basic hardware without internet.
    - Encourages understanding of Java fundamentals like OOP and exception handling.
    - Can be used in academic settings to demonstrate application logic.

2) Limitations:
    - Lacks real-time features like GPS-based cab tracking.
    - No GUI; console-based interface only.
    - No login or user session management.
    - Doesn't support multi-user or driver-side interfaces.
    - Limited to hardcoded values without database integration.

5. Snapshots of the JAVA Application


GoElite Cab Booking
Welcome to GoElite
User
Driver
Admin
Sign In
Sign Up
User Registration
Full Name:
Email:
Phone:
Username:
Password:
Confirm Password:
I agree to the Terms and Conditions


GoElite - Dashboard
GoElite
Hello, astha
TAXI
Welcome to GoElite
GoElite Cabs provides premium taxi service with professional drivers, comfortable vehicles, and competitive rates. We promise punctuality, safety, and a smooth ride every time. Experience the difference with GoElite!
Book a Ride
Privacy Policy
Terms and Conditions | Privacy Policy | FAQ
Get in Touch
Phone: 1-800-GO-ELITE | Email: support@goelite.com

GoElite - Dashboard

GoElite

About Us

Hello, astha

About GoElite

GoElite Taxi Service was founded in 2025 with a vision to revolutionize the way people travel in cities. Our fleet consists of modern, comfortable vehicles driven by experienced professionals who are committed to providing exceptional service.

We prioritize safety, comfort, and convenience for our customers. All our drivers undergo rigorous background checks and training to ensure the highest standards of service and security.

At GoElite, we leverage technology to make booking and tracking your ride seamless. Our mission is to provide reliable transportation that gets you where you need to go, when you need to be there.

Privacy Policy
Terms and Conditions | Privacy Policy | FAQ

Get in Touch
Phone: 1-800-GO-ELITE | Email: support@goelite.com

GoElite - Dashboard

GoElite

Contact Us

Hello, astha

Contact Us

Phone: 1-800-GO-ELITE (1-800-465-3483)

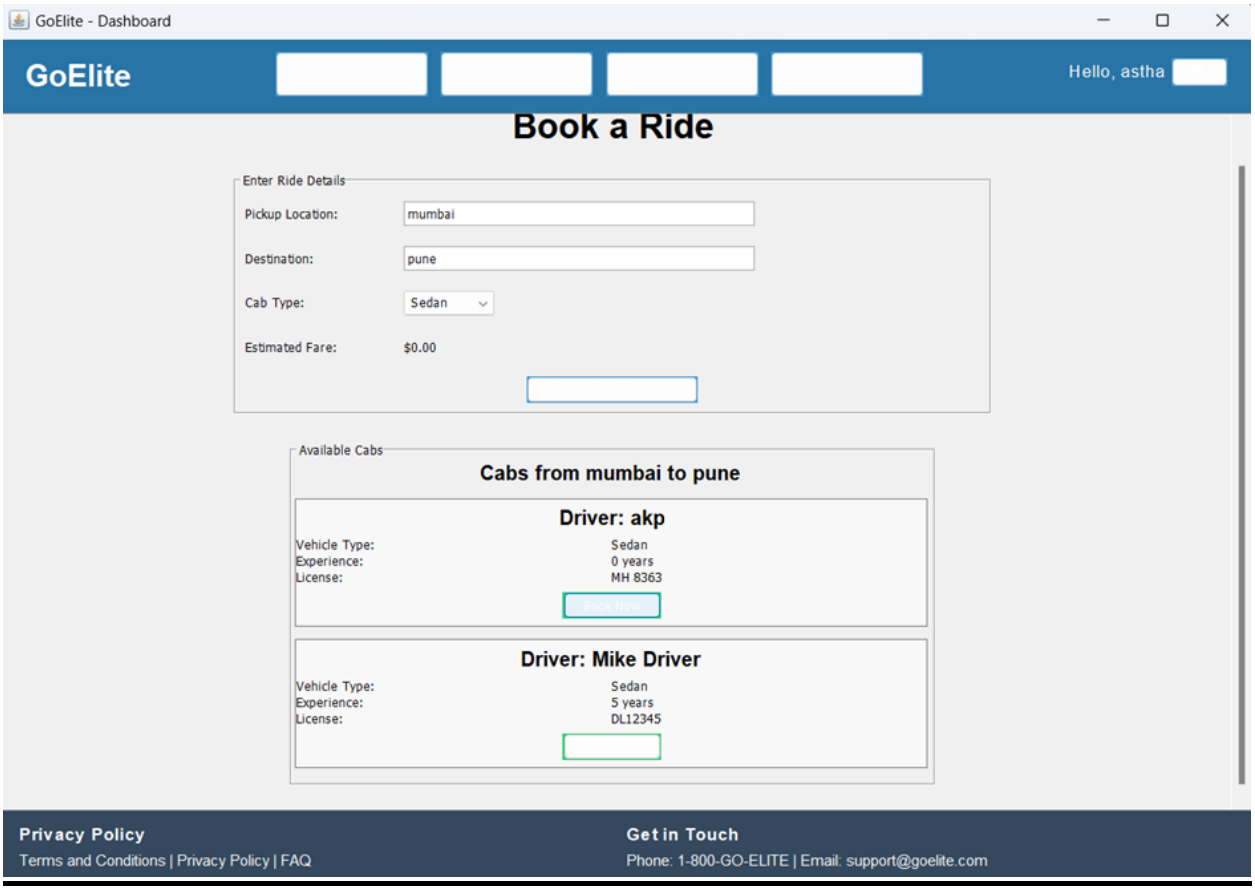
Email: support@goelite.com

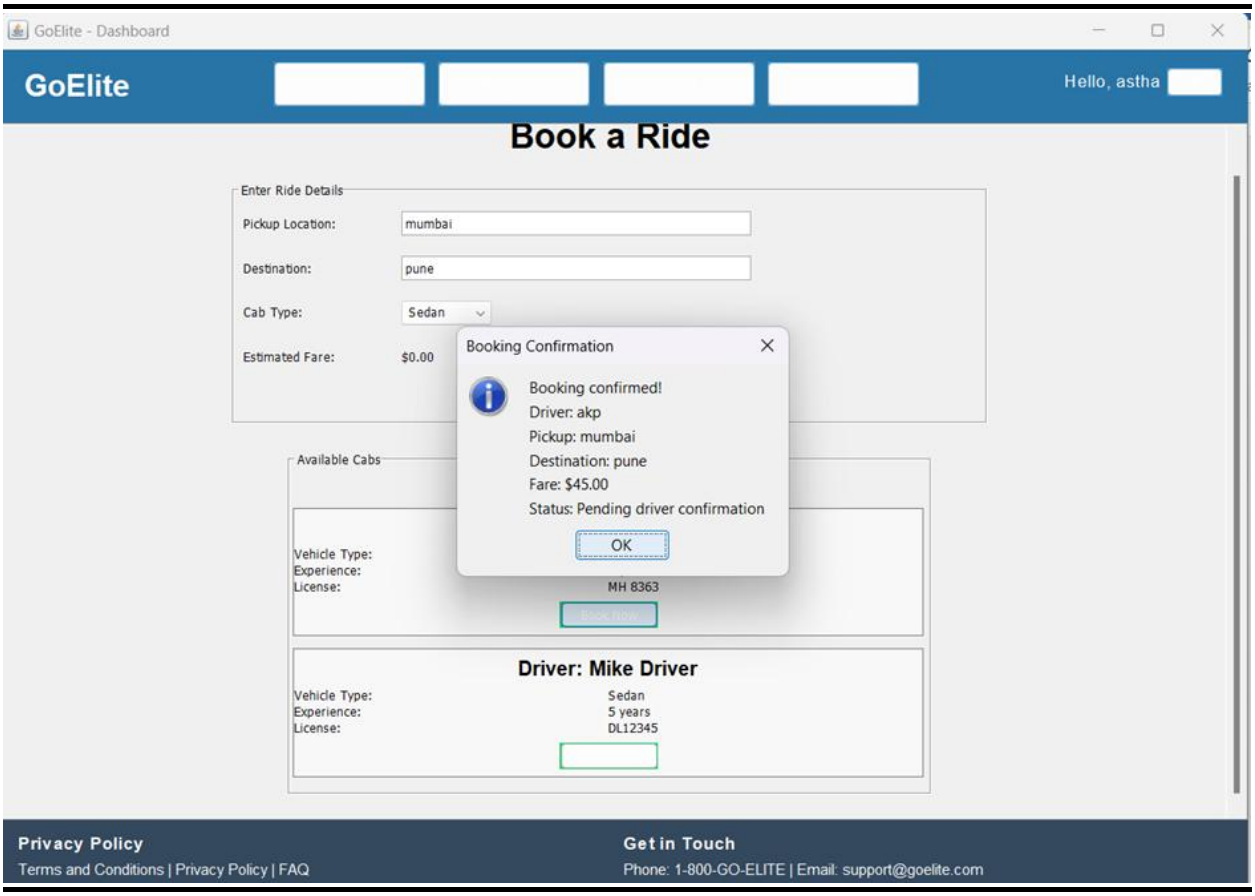
Address: 123 Transport Avenue, Suite 400, New York, NY 10001

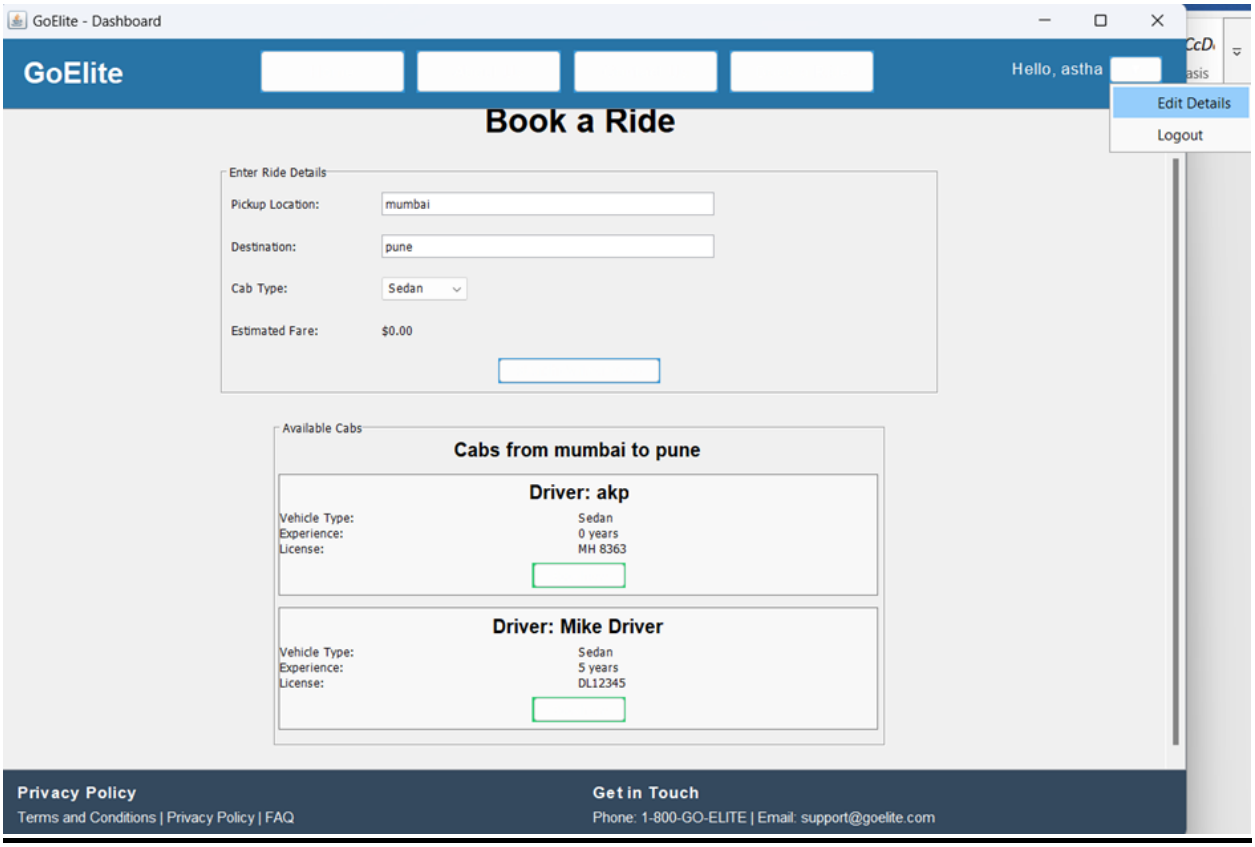
Business Hours: 24/7 - We're always here for you!

Privacy Policy
Terms and Conditions | Privacy Policy | FAQ

Get in Touch
Phone: 1-800-GO-ELITE | Email: support@goelite.com


GoElite - Dashboard
GoElite
Hello, astha
Book a Ride
Enter Ride Details
Pickup Location:
mumbai
Destination:
pune
Cab Type:
Sedan
Estimated Fare:
$0.00
Available Cabs
Cabs from mumbai to pune
Driver: akp
Vehicle Type:
Sedan
Experience:
0 years
License:
MH 8363
Book Now
Driver: Mike Driver
Vehicle Type:
Sedan
Experience:
5 years
License:
DL12345
Privacy Policy
Terms and Conditions | Privacy Policy | FAQ
Get in Touch
Phone: 1-800-GO-ELITE | Email: support@goelite.com


GoElite - Dashboard
GoElite
Hello, astha
Book a Ride
Enter Ride Details
Pickup Location:
mumbai
Destination:
pune
Cab Type:
Sedan
Estimated Fare:
$0.00
Booking Confirmation
Booking confirmed!
Driver: akp
Pickup: mumbai
Destination: pune
Fare: $45.00
Status: Pending driver confirmation
OK
Available Cabs
Vehicle Type:
Experience:
License:
MH 8363
Book Now
Driver: Mike Driver
Vehicle Type:
Sedan
Experience:
5 years
License:
DL12345
Privacy Policy
Terms and Conditions | Privacy Policy | FAQ
Get in Touch
Phone: 1-800-GO-ELITE | Email: support@goelite.com


GoElite - Dashboard
GoElite
Hello, astha
Edit Details
Logout
Book a Ride
Enter Ride Details
Pickup Location:
mumbai
Destination:
pune
Cab Type:
Sedan
Estimated Fare:
$0.00
Available Cabs
Cabs from mumbai to pune
Driver: akp
Vehicle Type:
Experience:
License:
Sedan
0 years
MH 8363
Driver: Mike Driver
Vehicle Type:
Experience:
License:
Sedan
5 years
DL12345
Privacy Policy
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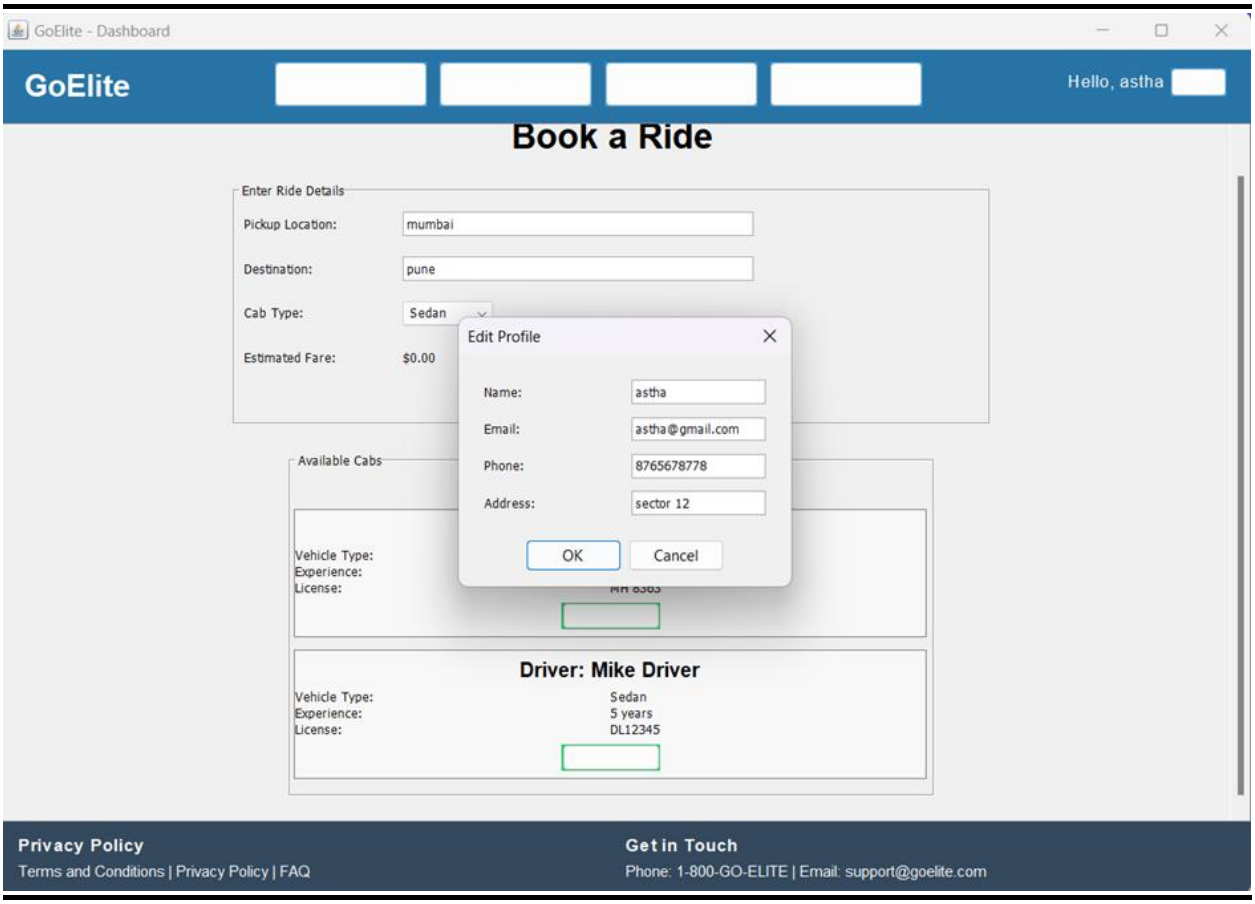
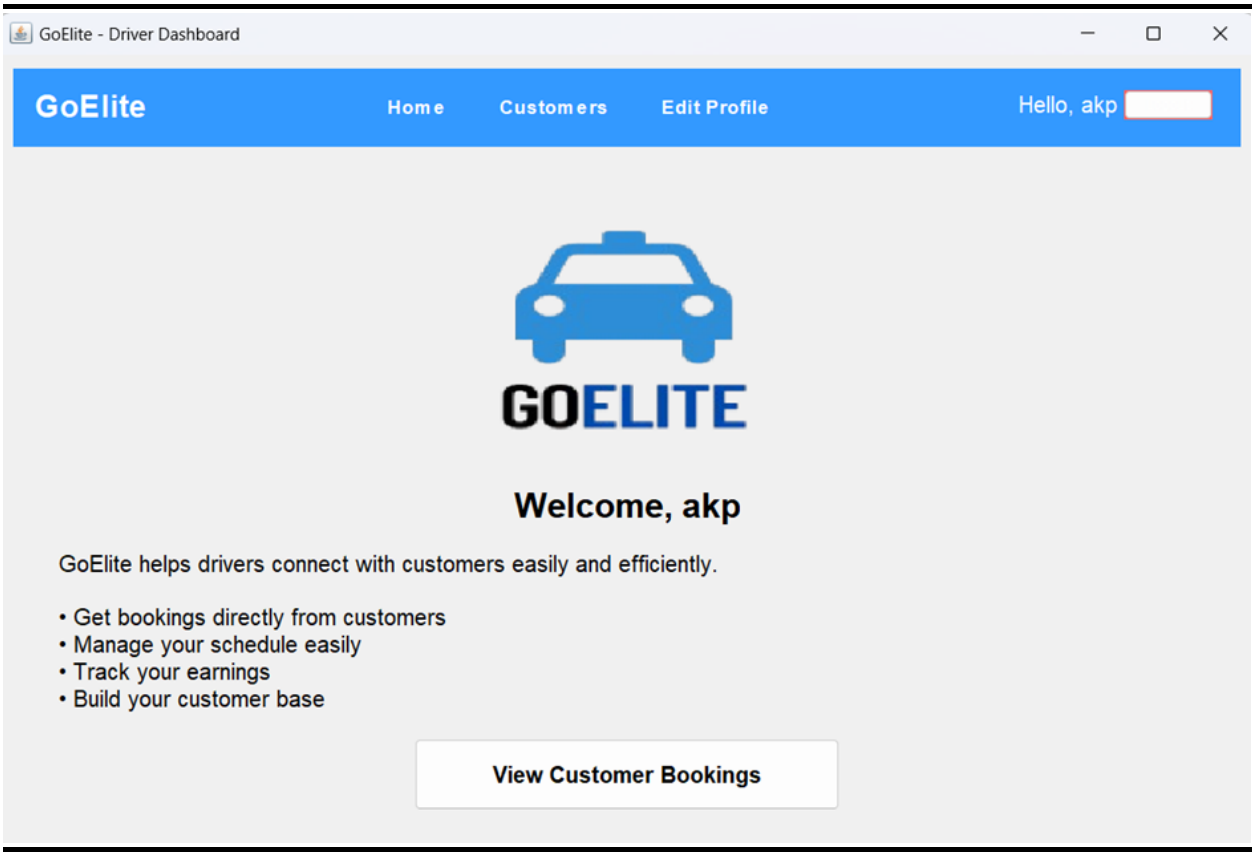
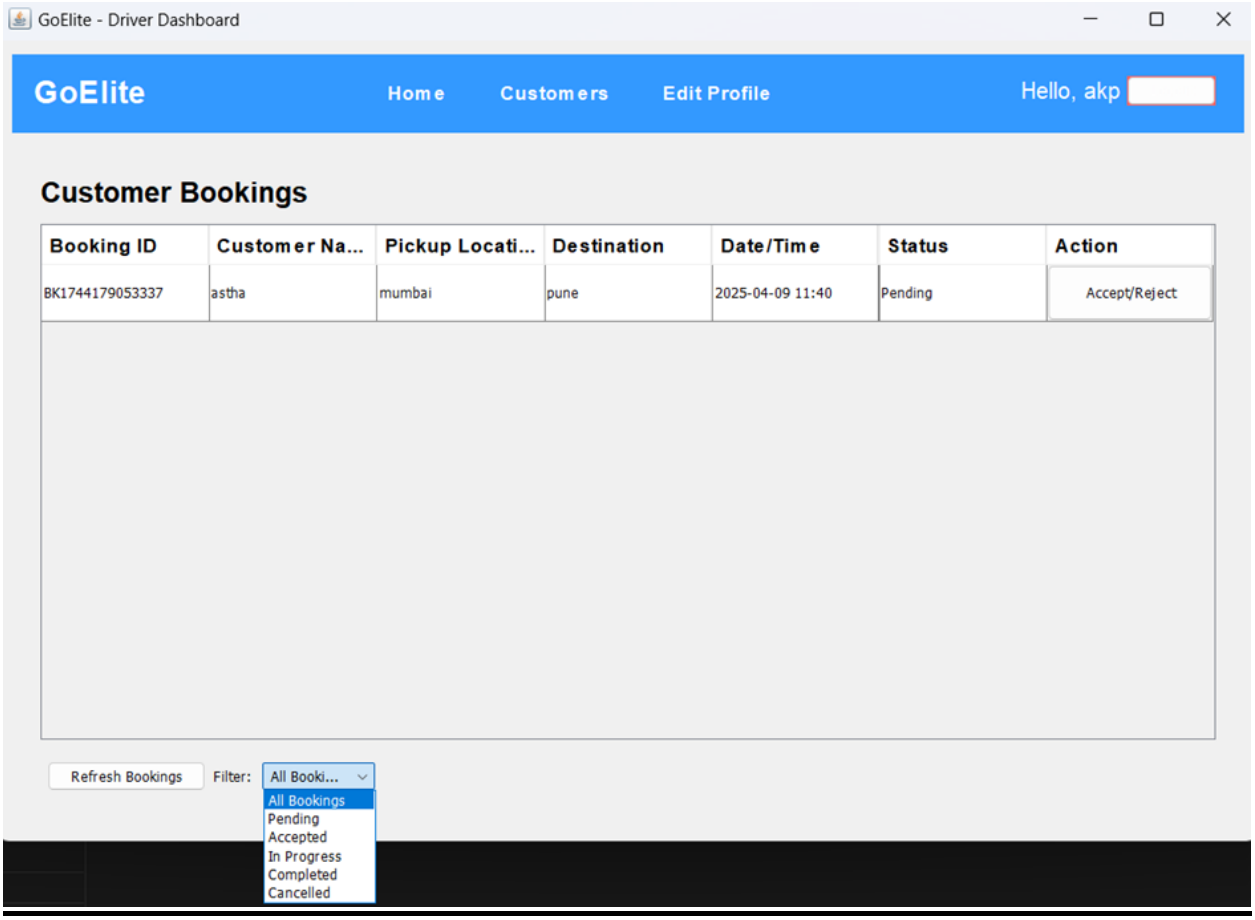
Get in Touch
Phone: 1-800-GO-ELITE | Email: support@goelite.com

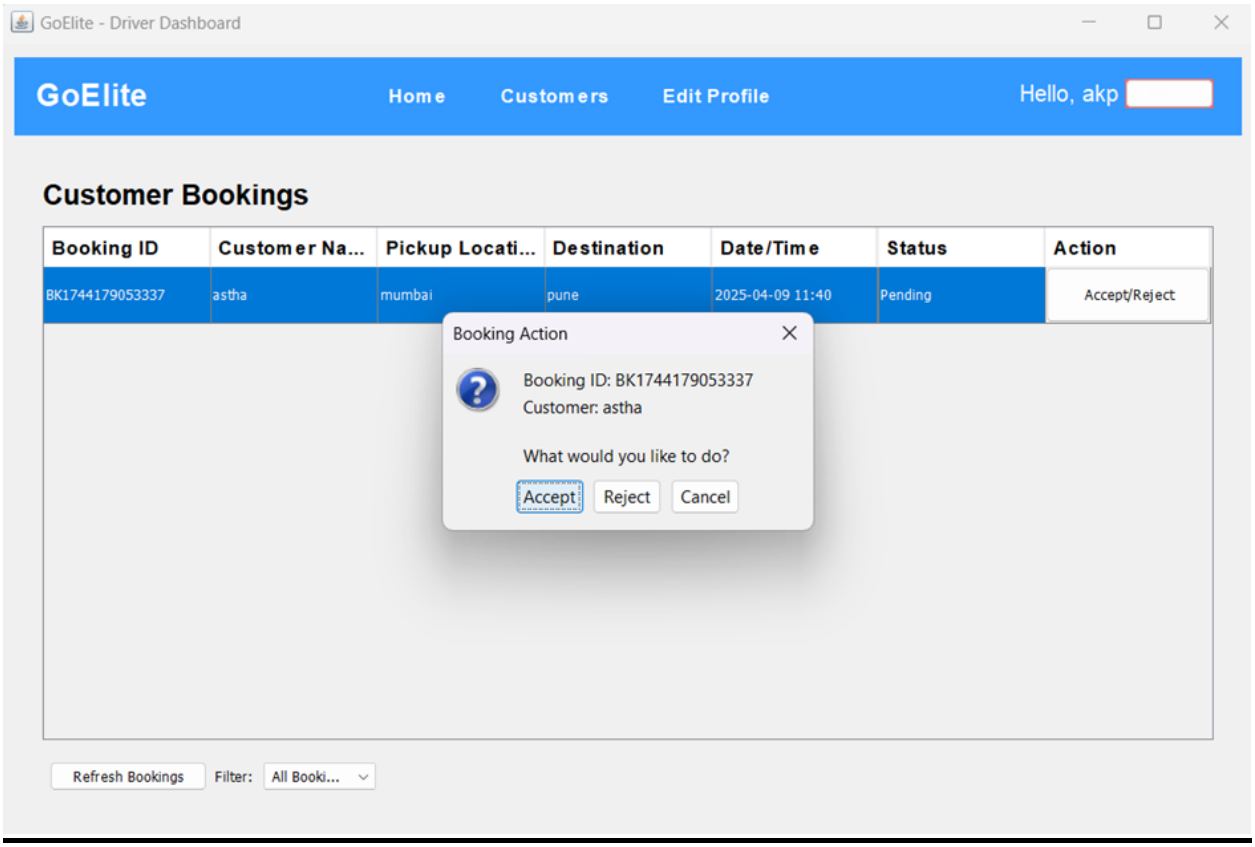

GoElite - Dashboard
GoElite
Hello, astha
Book a Ride
Enter Ride Details
Pickup Location:
mumbai
Destination:
pune
Cab Type:
Sedan
Estimated Fare:
$0.00
Edit Profile
Name:
astha
Email:
astha@gmail.com
Phone:
8765678778
Address:
sector 12
OK
Cancel
Available Cabs
Vehicle Type:
Experience:
License:
Driver: Mike Driver
Vehicle Type:
Experience:
License:
Sedan
5 years
DL12345
Privacy Policy
Terms and Conditions | Privacy Policy | FAQ
Get in Touch
Phone: 1-800-GO-ELITE | Email: support@goelite.com

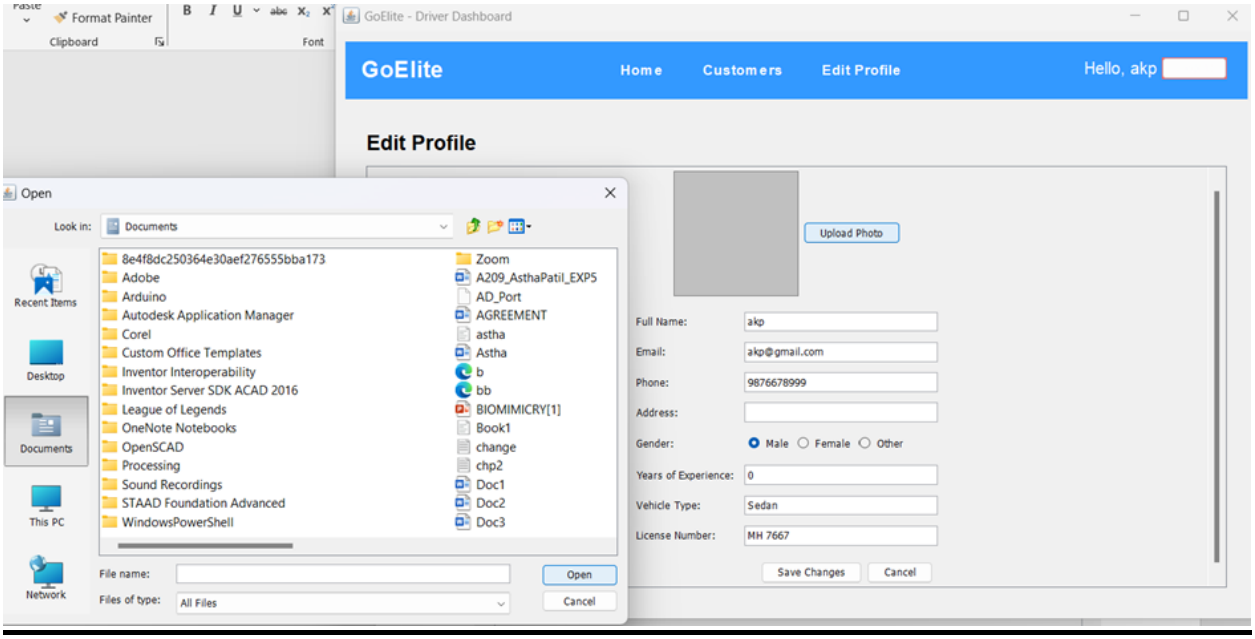

GoElite Cab Booking
Welcome to GoElite
User
Driver
Admin
Sign In
Sign Up
Driver Login
Username:
akp
Password:
Remember me
Sign In
Forgot password?

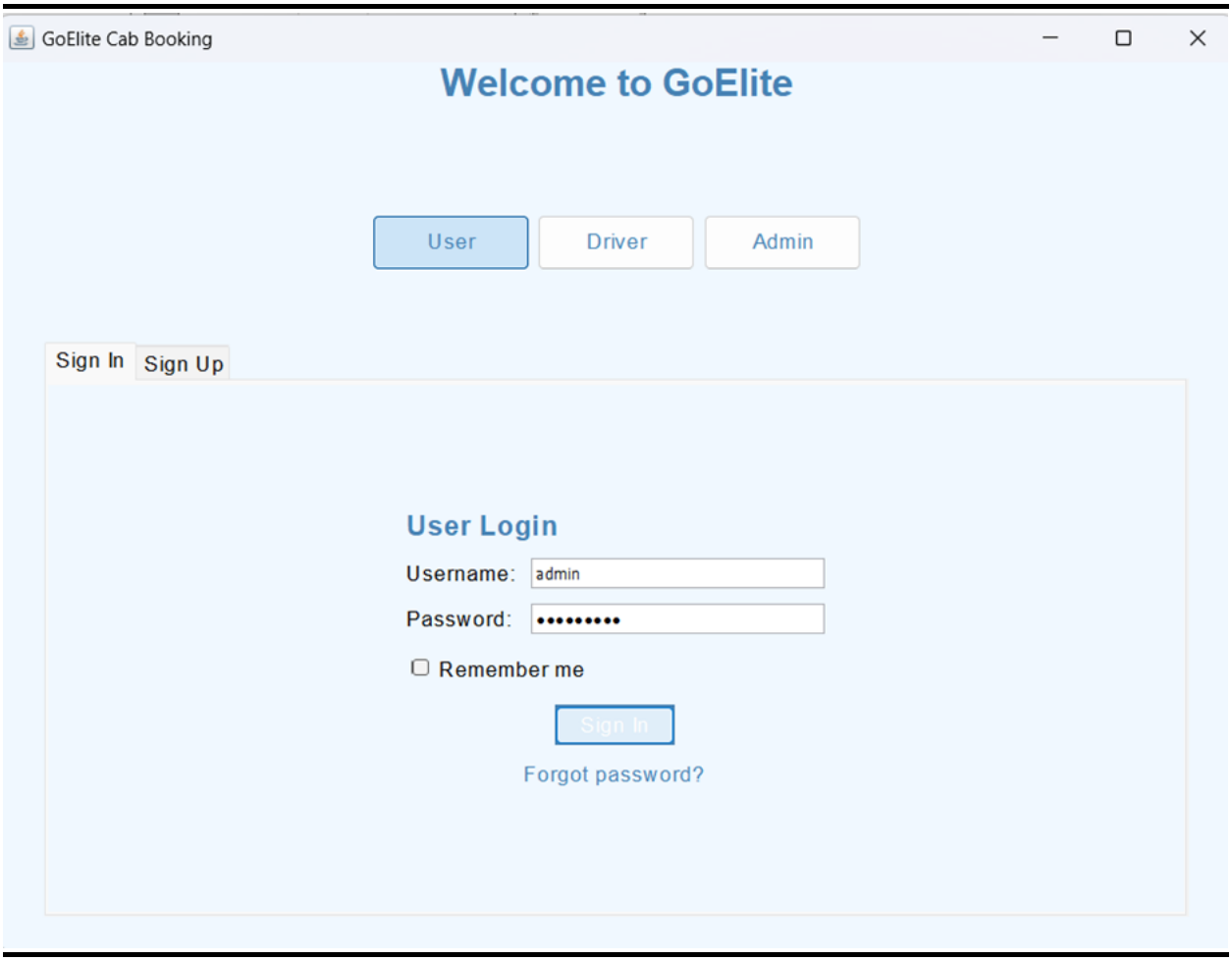

GoElite Cab Booking
Welcome to GoElite
User
Driver
Admin
Sign In
Sign Up
Driver Registration
Full Name:
Email:
Phone:
Username:
Password:
Confirm Password:
License Number:
Vehicle Type:
Sedan
I agree to the Terms and Conditions

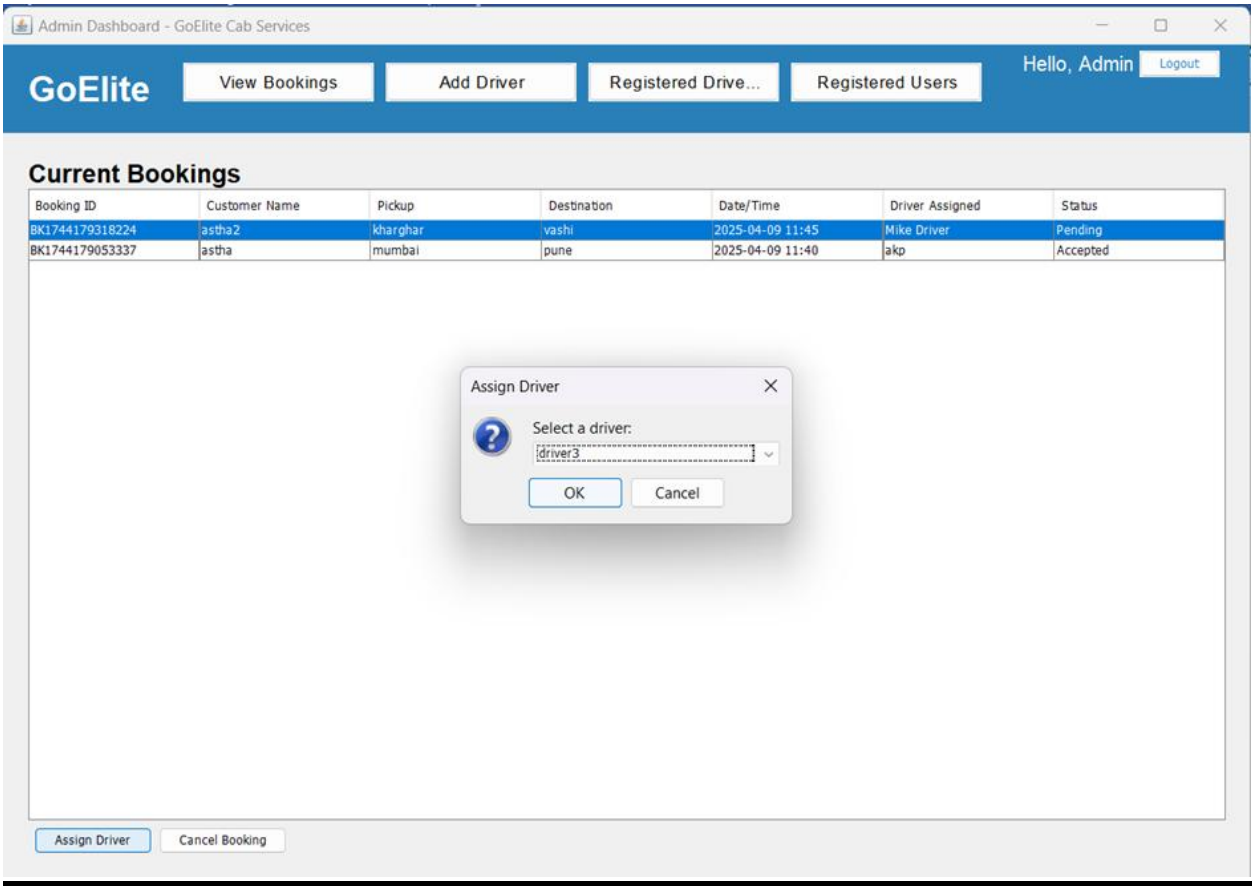

GoElite - Driver Dashboard
GoElite
Home
Customers
Edit Profile
Hello, akp
GOELITE
Welcome, akp
GoElite helps drivers connect with customers easily and efficiently.
• Get bookings directly from customers
• Manage your schedule easily
• Track your earnings
• Build your customer base
View Customer Bookings

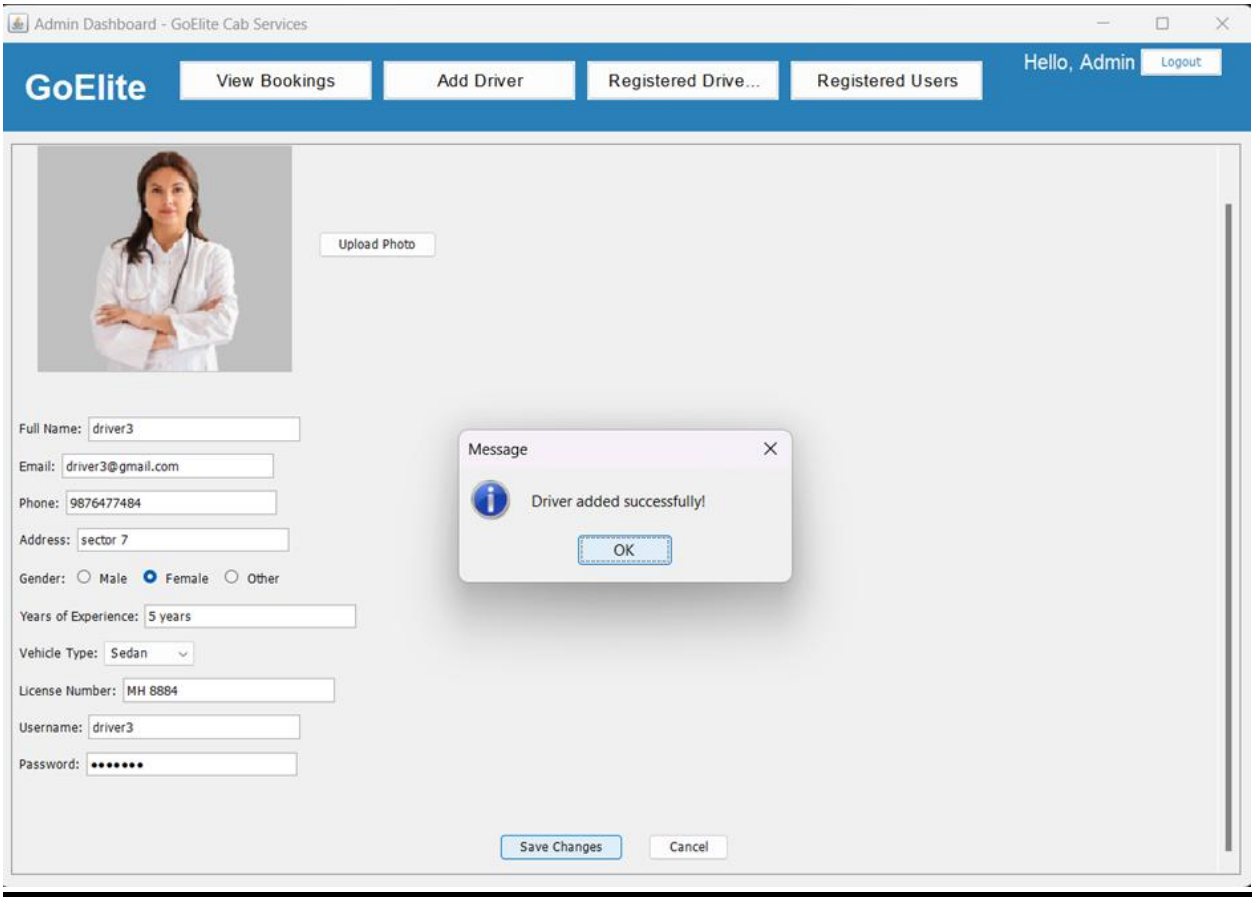

GoElite - Driver Dashboard
GoElite
Home
Customers
Edit Profile
Hello, akp
Customer Bookings
Booking ID
Customer Na...
Pickup Locati...
Destination
Date/Time
Status
Action
BK1744179053337
astha
mumbai
pune
2025-04-09 11:40
Pending
Accept/Reject
Refresh Bookings
Filter:
All Booki...
All Bookings
Pending
Accepted
In Progress
Completed
Cancelled

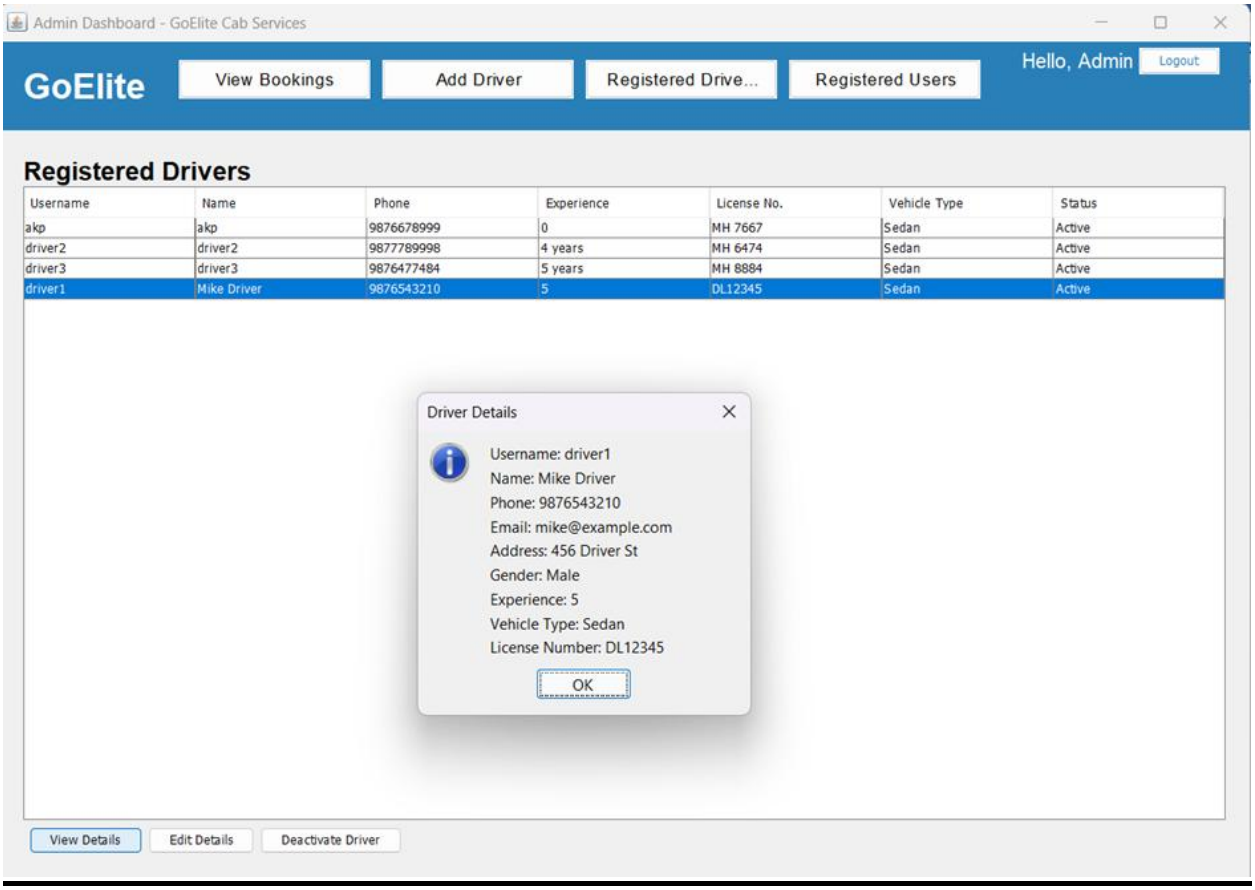

GoElite - Driver Dashboard
GoElite
Home
Customers
Edit Profile
Hello, akp
Customer Bookings
Booking ID
Customer Na...
Pickup Locati...
Destination
Date/Time
Status
Action
BK1744179053337
astha
mumbai
pune
2025-04-09 11:40
Pending
Accept/Reject
Booking Action
Booking ID: BK1744179053337
Customer: astha
What would you like to do?
Accept
Reject
Cancel
Refresh Bookings
Filter:
All Booki...

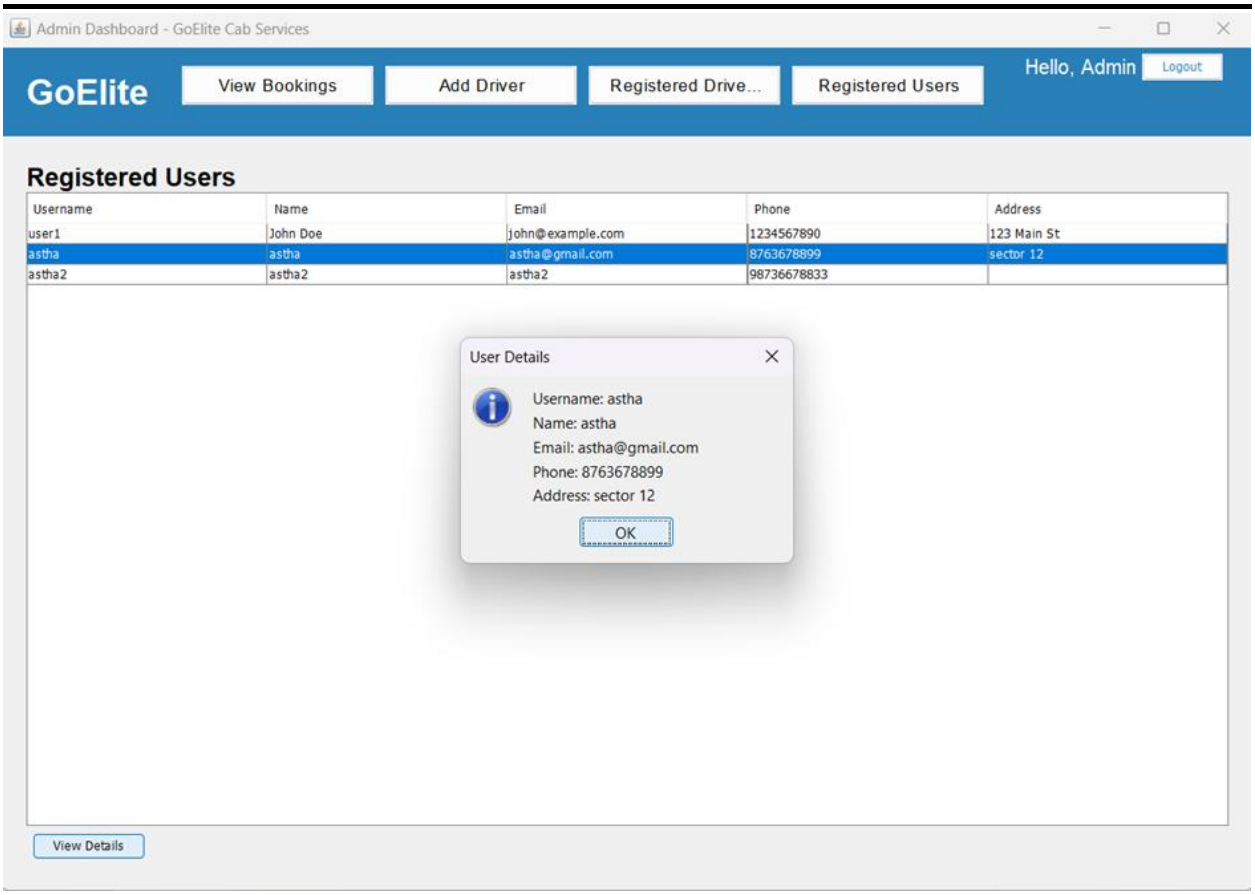

Format Painter
Clipboard
Font
GoElite - Driver Dashboard
GoElite
Home
Customers
Edit Profile
Hello, akp
Edit Profile
Upload Photo
Full Name:
akp
Email:
akp@gmail.com
Phone:
9876678999
Address:
Gender:
Male
Female
Other
Years of Experience:
0
Vehicle Type:
Sedan
License Number:
MH 7667
Save Changes
Cancel
Open
Look in:
Documents
Recent Items
Desktop
Documents
This PC
Network
8e4f8dc250364e30aef276555bba173
Adobe
Arduino
Autodesk Application Manager
Corel
Custom Office Templates
Inventor Interoperability
Inventor Server SDK ACAD 2016
League of Legends
OneNote Notebooks
OpenSCAD
Processing
Sound Recordings
STAAD Foundation Advanced
WindowsPowerShell
Zoom
A209_AsthaPatil_EXP5
AD_Port
AGREEMENT
astha
Astha
b
bb
BIOMIMICRY[1]
Book1
change
chp2
Doc1
Doc2
Doc3
File name:
Files of type:
All Files
Open
Cancel


GoElite Cab Booking
Welcome to GoElite
User
Driver
Admin
Sign In
Sign Up
User Login
Username:
admin
Password:
Remember me
Sign In
Forgot password?


Admin Dashboard - GoElite Cab Services
GoElite
View Bookings
Add Driver
Registered Drive...
Registered Users
Hello, Admin
Logout
Current Bookings
Booking ID
Customer Name
Pickup
Destination
Date/Time
Driver Assigned
Status
BK1744179318224
astha2
kharghar
vashi
2025-04-09 11:45
Mike Driver
Pending
BK1744179053337
astha
mumbai
pune
2025-04-09 11:40
akp
Accepted
Assign Driver
Select a driver:
driver3
OK
Cancel
Assign Driver
Cancel Booking


Admin Dashboard - GoElite Cab Services
GoElite
View Bookings
Add Driver
Registered Drive...
Registered Users
Hello, Admin
Logout
Upload Photo
Full Name: driver3
Email: driver3@gmail.com
Phone: 9876477484
Address: sector 7
Gender: Male Female Other
Years of Experience: 5 years
Vehicle Type: Sedan
License Number: MH 8884
Username: driver3
Password: ••••••
Message
Driver added successfully!
OK
Save Changes
Cancel


Admin Dashboard - GoElite Cab Services
GoElite
View Bookings
Add Driver
Registered Drive...
Registered Users
Hello, Admin
Logout
Registered Drivers
Username
Name
Phone
Experience
License No.
Vehicle Type
Status
akp
akp
9876678999
0
MH 7667
Sedan
Active
driver2
driver2
9877789998
4 years
MH 6474
Sedan
Active
driver3
driver3
9876477484
5 years
MH 8884
Sedan
Active
driver1
Mike Driver
9876543210
5
DL12345
Sedan
Active
Driver Details
Username: driver1
Name: Mike Driver
Phone: 9876543210
Email: mike@example.com
Address: 456 Driver St
Gender: Male
Experience: 5
Vehicle Type: Sedan
License Number: DL12345
OK
View Details
Edit Details
Deactivate Driver


Admin Dashboard - GoElite Cab Services
GoElite
View Bookings
Add Driver
Registered Drive...
Registered Users
Hello, Admin
Logout
Registered Users
Username
Name
Email
Phone
Address
user1
John Doe
john@example.com
1234567890
123 Main St
astha
astha
astha@gmail.com
8763678899
sector 12
astha2
astha2
astha2
98736678833
User Details
Username: astha
Name: astha
Email: astha@gmail.com
Phone: 8763678899
Address: sector 12
OK
View Details

6. Future Scope

i. Add graphical interface using JavaFX or Swing.
ii. Include real-time GPS tracking.
iii. Integrate secure payment gateways.
iv. Enable database connectivity for storing rides and user data.
v. Allow multi-user login and cab driver management.
vi. Expand to mobile or web platforms.

7. REFRENCES

Oracle Java Documentation
https://docs.oracle.com/javase/8/docs/
(Official Java documentation for APIs, syntax, and best practices.)

GeeksforGeeks - Java OOPs Concepts
https://www.geeksforgeeks.org/java-oops-concepts/
(Covers object-oriented principles and examples in Java.)

TutorialsPoint - Java Programming
https://www.tutorialspoint.com/java/index.htm
(Comprehensive guide for Java basics to advanced topics.)

Stack Overflow
https://stackoverflow.com/
(Community-driven platform for coding questions and troubleshooting.)

Core Java Volume I – Fundamentals by Cay S. Horstmann
(Book reference widely used for learning core Java programming concepts.)

8. CLOUD/GITHUB LINK TO ALL THE .JAVA, .CLASS FILES, AND .DOC FILES

https://github.com/AsthaPatil-akp/Cab-Management-System