Software Requirements Specification

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1. Abstract

The Courier Management system is designed to optimize the process of parcel management, delivery tracking, and customer interaction for courier services. The platform supports a range of features, including parcel booking, tracking, delivery scheduling, and reporting. The system automates key tasks such as cost calculations based on weight, size, and distance, invoice generation, and the assignment of parcels to delivery personnel. The integration with an SQL database allows efficient and secure storage of data across various entities, including parcels, customers, and staff. The system is accessible by Admin and User credentials, with Admin having full control over system configurations and User access restricted to parcel-related operations.

2. Modules

2.1 Home Page

The application starts with the Homepage where user have options to login, register, or exit. Homepage consists of a welcome message to welcoming the user to the application.

2.2 User Login

From the homepage, users can log in to the application to access the LMS. They must enter their username and password for authentication. The entered values must go through a validation phase to confirm if the user is registered.

2.3 User Registration

The registration page allows new customers to create an account by providing their essential details.

2.4 Parcel Booking

The user can input parcel details to initiate the booking process.

3. Functional Requirements

3.1 User Registration and Login

- **Registration**: New users must register by entering valid information, with verification steps to authenticate their account.
- **Login**: Registered users must log in with credentials (username/email and password).
- **Role-based Access**: Admin users have full access to system configuration, while customers can only manage parcels and track delivery status.

3.2 Parcel Management (Booking)

- **Parcel Booking**: Users can input parcel details, including sender/receiver info, dimensions, and weight.
- **Unique Parcel ID**: Upon successful booking, the system generates a unique parcel ID for tracking purposes.
- **Parcel Status Tracking**: Users can track the status of their parcels in real-time (e.g., "In Transit," "Delivered").

3.3 Tracking and Delivery

- **Delivery Scheduling**: Admins can assign delivery dates and times, and route optimization algorithms will assist in creating the most efficient routes.
- **Notification System**: Customers receive email/SMS notifications at various stages of the process (e.g., booking confirmation, parcel status update, delivery completion).

3.4 Error Handling

System should handle common errors such as invalid parcel information or system failure.

4. Non - Functional Requirements

4.1 Performance

- **Response Time**: The system should respond to user actions within 2 seconds.
- **Scalability**: The system must handle an increasing number of parcels and users efficiently.

4.2 Reusable code

- **Modular Architecture**: Code will be written in a way that promotes reuse across different modules (e.g., parcel tracking, cost calculation).
- **Maintainability**: The system must be easily upgradable and maintainable by future developers.

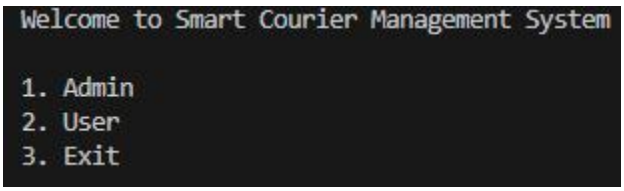
4.3 User friendly

The platform should be responsive and accessible on various devices

5. High-Level Design

The system is designed to provide users with seamless access to its core functionalities.

5.1 Home page



5.2 Admin Authentication

```
Enter your choice: 1

Enter Admin Username: admin
Enter Admin Password: ***********

Admin login successful!

Admin Menu:
1. View All Users
2. View All Parcels
3. Generate Reports
4. Logout
```

5.3 User Authentication

```
1. Admin
2. User
3. Exit

Enter your choice: 2
1. User Registration
2. User Login
3. Exit

Enter your choice: 2

Enter your username: anna
Enter your password: irin123

Login successful! Welcome, anna.

User Menu:
1. Book Parcel
2. Track Parcel
3. Generate Reports
4. Logout
```

5.4 Parcel Booking and Tracking

```
User Menu:
1. Book Parcel
2. Track Parcel
3. Generate Reports
4. Logout

Enter your choice: 1
Enter Sender Name: anand
Enter Receiver Name: binu
Enter Parcel Weight (kg): 30
Enter Distance (km): 107
Enter Place (Delivery Location): aluva
Parcel booked successfully! Cost: $364.00
```

```
User Menu:
1. Book Parcel
2. Track Parcel
3. Generate Reports
4. Logout

Enter your choice: 2
Enter Parcel ID: 3
Current Status: booked
Current Location: aluva
```

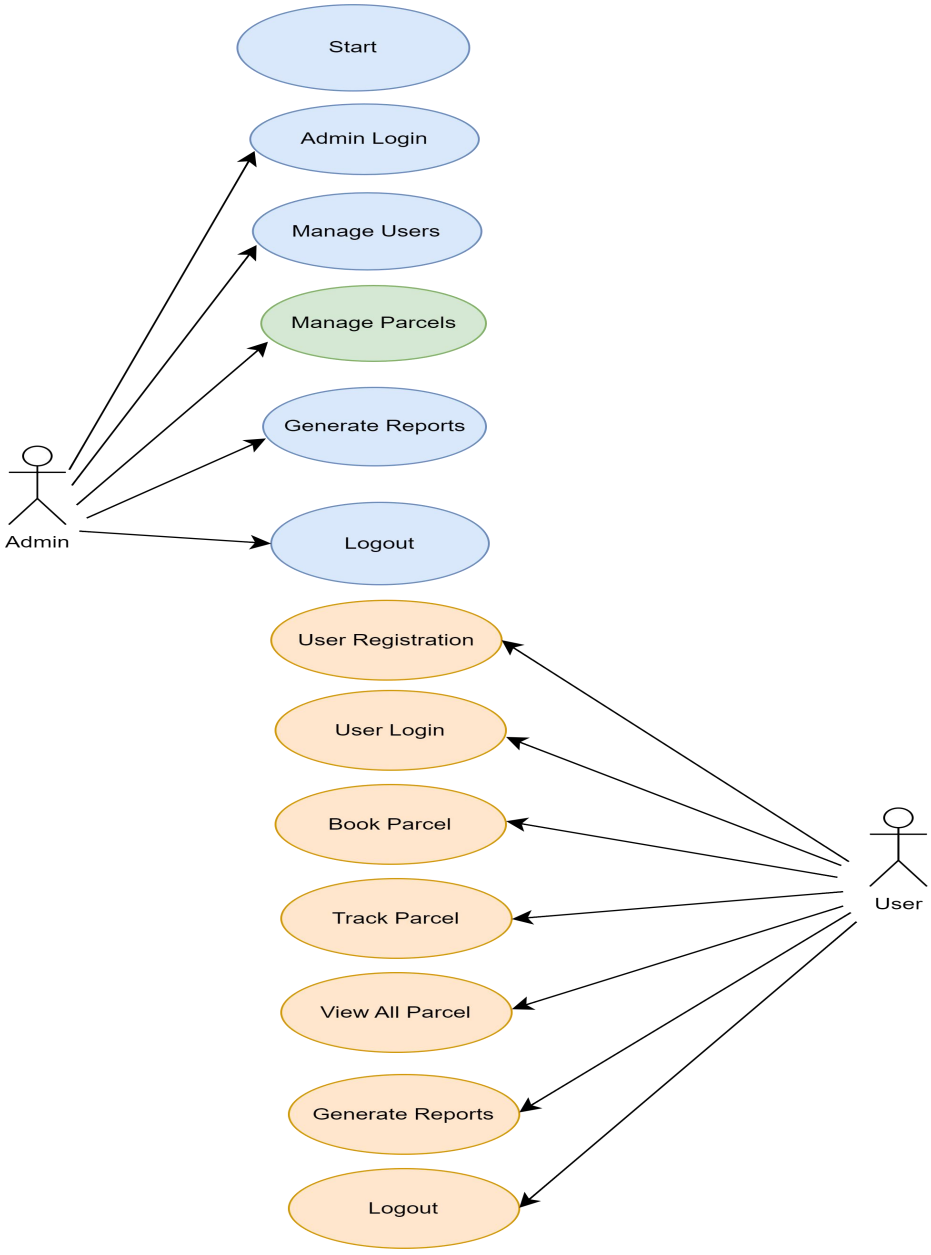
```
1. Admin
2. User
3. Exit

Enter your choice: 1

Enter Admin Username: admin
Enter Admin Password: **********

Admin login successful!

Admin Menu:
1. View All Users
2. View All Parcels
3. Generate Reports
4. Logout

Enter your choice: 2

Parcels:

Parcel ID       BookedBy        Sender      Receiver    Weight  Distance  Cost    Status      Place
-------------------------------------------------------------------------------------------------
1               anna            erty        thaju       75      105       585     Booked      Thevakkal
2               anna            shil        nima        25      250       625     Booked      bengalore
3               anna            anand       binu        30      107       364     booked      aluva
```

6. Low-Level Design

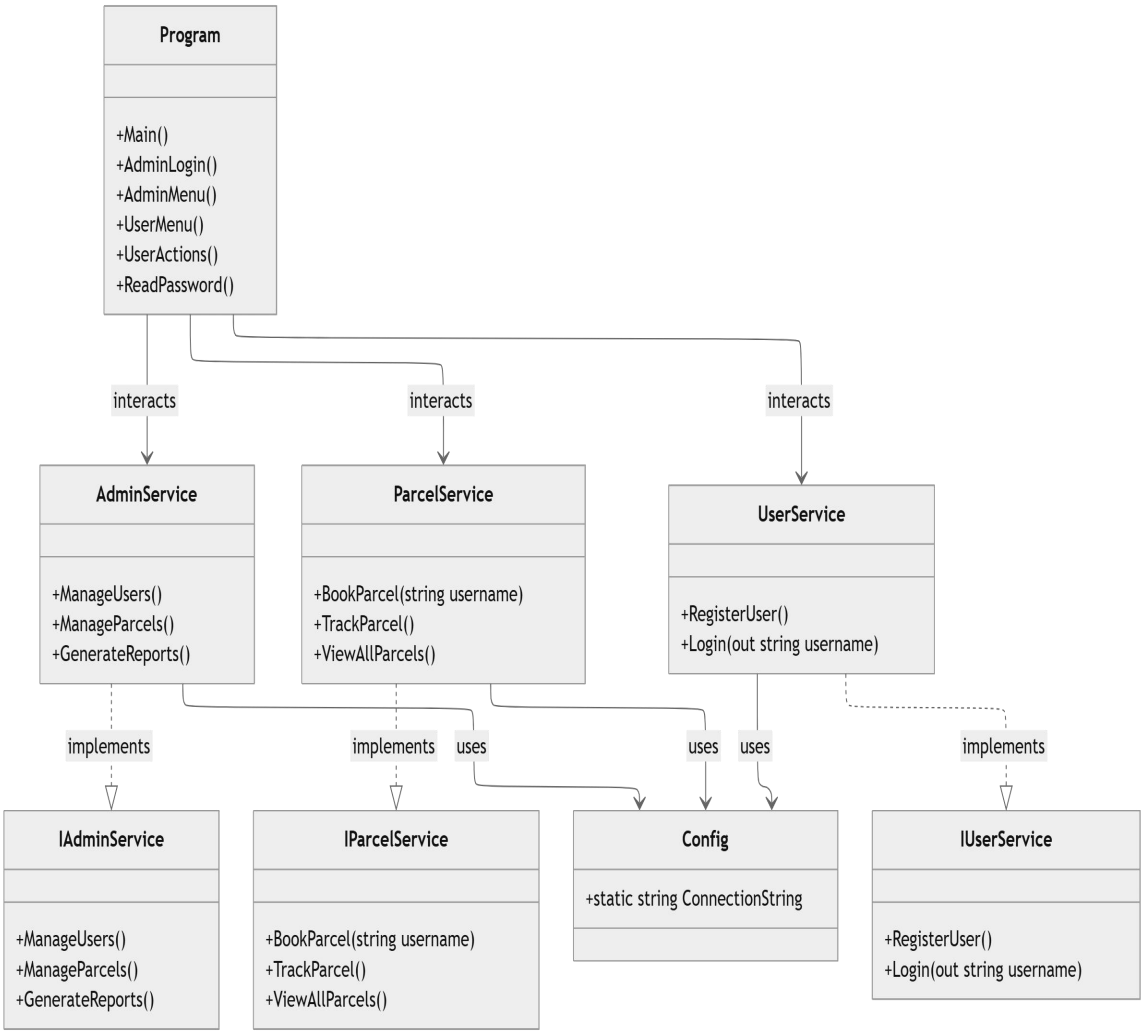
This section will detail the algorithms, data structures, and specific technical solutions for implementing each feature:

- **Database Queries**: Define SQL queries for CRUD operations on parcels, customers, delivery staff, and logs.
- **Business Logic**: Describe algorithms for cost calculation, route optimization, and delivery scheduling.
- **Error Handling**: Detailed information about how exceptions will be managed.

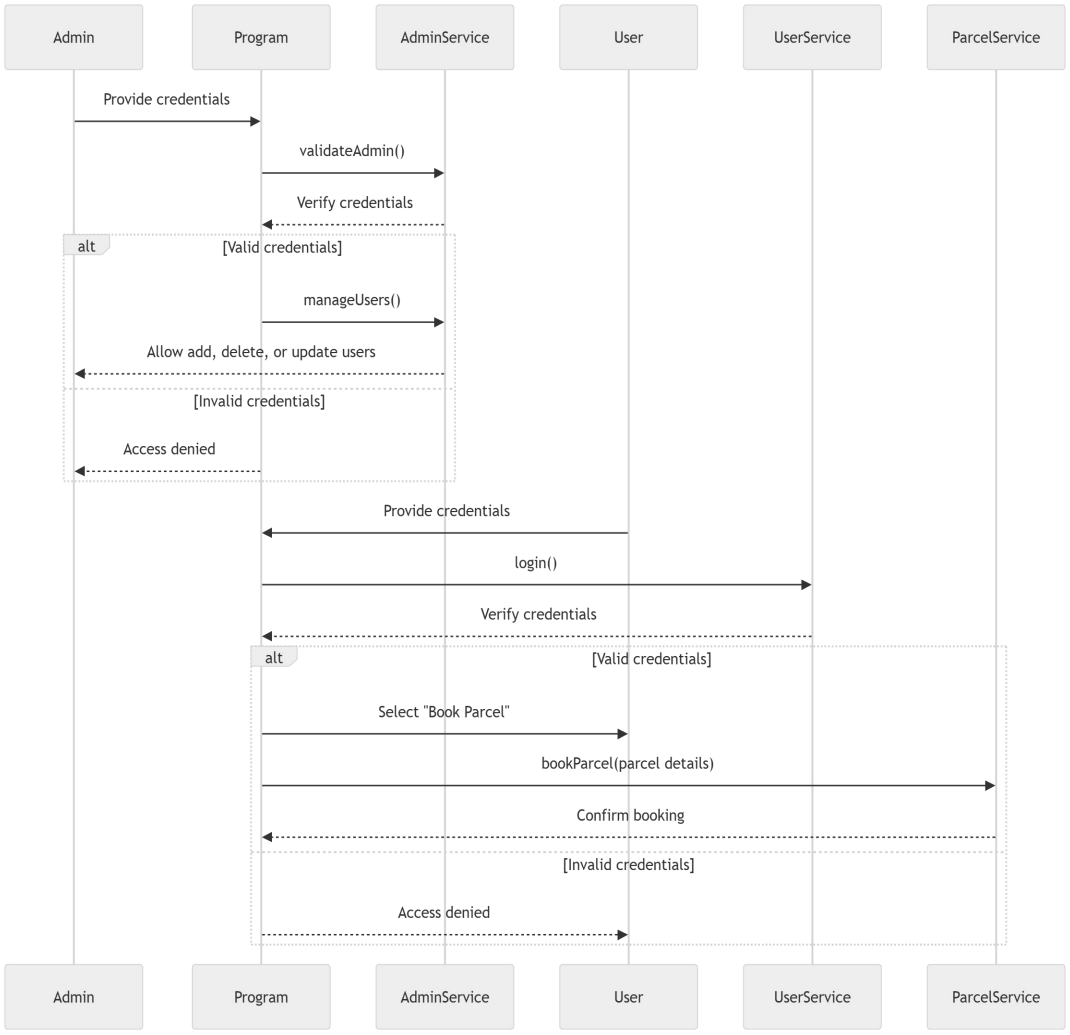
7. Use Case Diagram



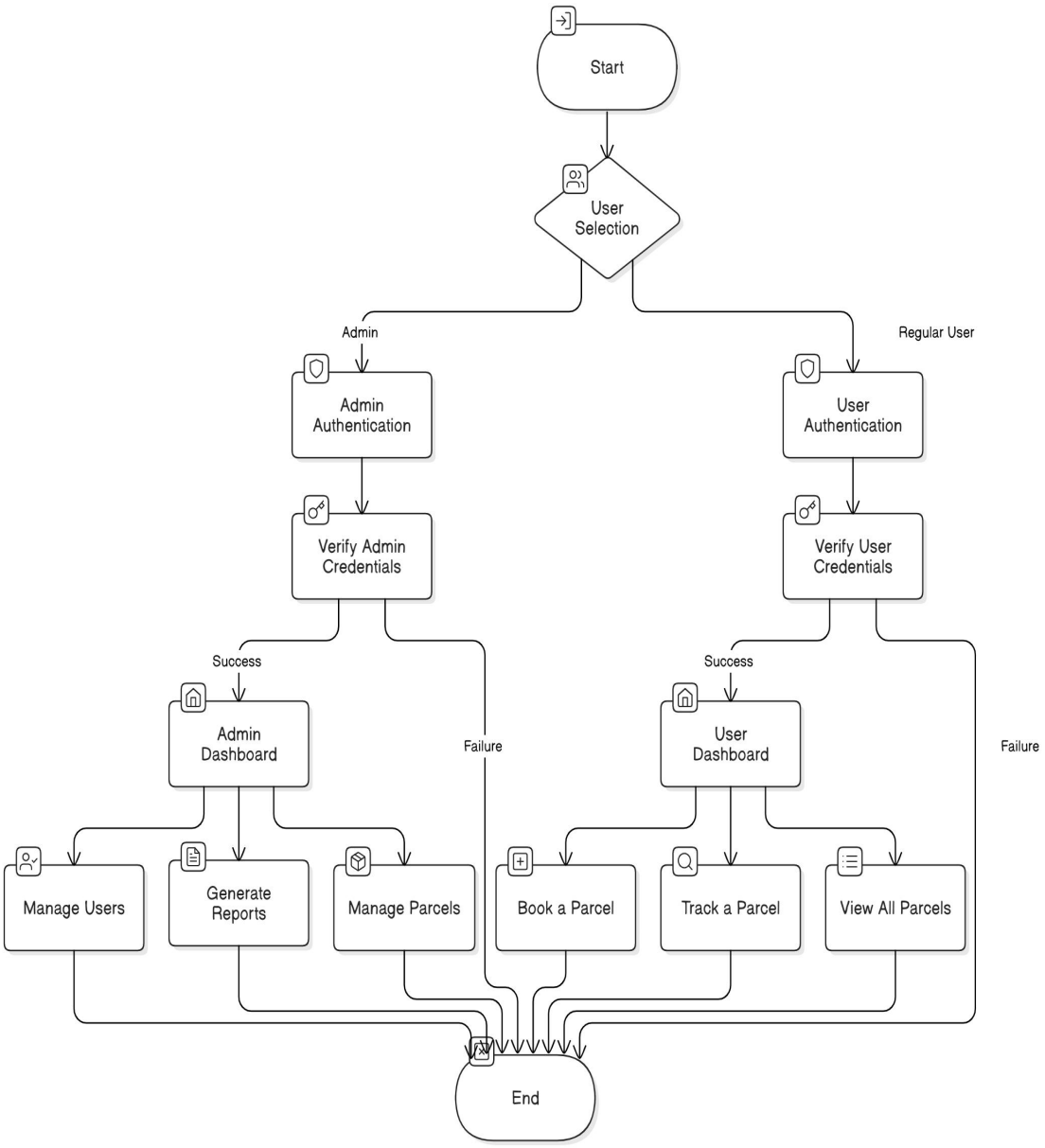
8. Class Diagram



9. Sequence Diagram



10. Flow Chart



11. ER Diagram