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SWE Practical Project - Transportation Booking System

Software Requirements Document (SRD)

Transportation Booking System

Course: Software Engineering 1

Supervised by: Ayman Hasaneen

Co-Supervised by:

Eng. Mohamed Amer

Eng. Ahmed Abd-Elmen3m

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Prepared by:

Name: إسلام محمد عبدالفضيل السعداوي

Code: 23013314

Name: عمر محمد السيد ابو سريع

Code: 23016131

Name: نورالدين نوارة

Code: 23012791

1. Introduction

1.1 System Overview

The Transportation Booking System is a mobile and web-based application that connects customers with nearby drivers to book and track rides. Customers can register, request rides, track trips, and make payments using cash or online payment methods. Drivers accept or reject ride requests and update trip statuses after admin verification. Admins manage users, verify drivers, handle complaints, and generate system reports. The system integrates GPS and payment gateway services to ensure secure, reliable, and efficient operations.

1.2 System Work Flow

- System allows Customer to registers or login to the system
- Also, customer can request booking to a specific ride and waits to driver until accepts or rejects the request
- If driver accepts the customer’s request, the system allows the customer to track his trip
- System shall activate a driver only after all documents are verified by admin
- System allows customer and driver to post review or complaint for his trip experience
- System allows Admins of the system to manage system data such as user accounts (customer or driver), view all driver’s or customer’s complaints and do action
- Customer can pay for the trip based on his selection (cash, visa)
- Driver may modify trip status in case the trip is accepted
- Admin shall review a report and download it

1.3 Stakeholders

- **Customer:** Books and tracks rides
- **Driver:** Accepts rides and completes trips
- **Admin:** Manages users, drivers, reports and handle complaints
- **Payment Gateway:** External system for online secure transactions

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2. Overall Description

2.1 Constraints

- Only registered users may request rides
- System must use security standards (password encryption, HTTPS)
- System should be available 21/12/2025 as deadline

2.2 Assumptions

- Users have smartphones and internet access
- Drivers are verified before activation, verification includes
  - Personal Information: (Name, SSD, Phone Number, Email)
  - Deriver’s documents: Driver’s License, Car License, Car Insurance, Criminal Record Certificate
- Payment gateway is always online

3. Functional Requirements

3.1 Customer Functional Requirements

1. Customer Registration & Login

- The system shall allow customers to create an account.
- The system shall verify email validation and verification.
- The system shall allow login using valid credentials.
- During login, session is created and generates token

2. Ride Request

- Customer shall enter pickup and destination locations.
- System shall calculate fair price.
- System shall display available drivers nearby.

3. Ride Booking

- Customer shall book a ride.
- System shall suggest the nearest available drivers.
- Customer shall receive ride confirmation and driver details.

4. Ride Tracking

- System shall display driver's location in real time.
- In case the trip is accepted, Customer shall view trip phases:
  - *Accepted → Arriving → Picked Up → In Trip → Completed*

5. Payments

- Customer shall pay using:
  - Online payment gateway
  - Cash on completion
- System shall generate a digital receipt.

6. Complaints / Reviews

- Customer shall submit complaints.
- System shall send complaint to support team.
- Customer shall make review by posting a comment or giving stars for the driver (out of 5 stars).

3.2 Driver Functional Requirements

1. Driver Authentication

- Drivers must log in using verified accounts.

2. Ride Request Handling

- System shall send ride requests to drivers.
- Driver can accept or reject a request.

3. Trip Status Update

Driver shall update the trip status.

4. Complaints / Reviews

- Customer shall submit complaints.
- System shall send complaint to support team.
- Driver shall make review by posting a comment or giving stars for the customer (out of 5 stars).

3.3 Admin Functional Requirements

1. User Management

- Admin shall manage customers, drivers, activation, and banning if there are many complaints for specific driver or customer after reviewing the complaints.

2. System Monitoring

- Admin shall view reports on:
  - Ride statistics
  - Transactions
  - Complaints
  - And download them as PDF

3. Complaint Management

- Admin can respond to complaints.

3.4 Payment System Requirements

1. Secure Payment Processing

- System shall process payments using secure protocols.
- Integrate with external payment gateway (Visa/Wallet).

2. Store Payment History

- System logs all payments and attaches them to trip records.

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4. Non-Functional Requirements

4.1 Product Requirements

1. Performance

- System should respond within small seconds for booking actions.

2 Reliability

- High System Availability
  - The system must remain available at least 99% of the time.
- Backup Server Availability
  - If one server fails, the system must automatically switch to a backup server without affecting users.

- Data Integrity Preservation
  - No loss of trip, payment, or user data.

3. Usability

- A user should be able to dealing with the system easily by simple, readable and usable UI/UX with minimization for errors.

4.2 Security Requirements

1. Authentication

- All users must authenticate using secure password hashing (SHA-256).

2. Data Protection

- System must use HTTPS for all communications.

3. Location Privacy

- Driver and customer locations must not be shared with third parties.

4.3 Organizational Requirements

1. System Standards

- Development must follow UML standards.
- Must support MVC architecture.

4.4 External Requirements

1. Legal

- Follow local transportation laws.
- Follow online transaction regulations.

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5. User Requirements

Customers can:

- Register / log in
- Request and book rides
- Track trip status

- Post complaint / review

Drivers can:

- Accept or reject rides
- Update trip status

Admins manage:

- System data (verify drivers, user's accounts)
- Complaints

The system also includes a cash or secure online payment component.

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6. System Requirements

- Systems uses JWT authentication
- System's database is Microsoft SQL Server
- **Automation:** System shall automatically assign the nearest available driver using GPS data.
- **API integrations:** System shall communicate with Stripe Payment Integration
- **Logging**: System shall store trip logs for auditing.

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