# OOP II Project Report

on

## Development of Car Rental System

Prepared by


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# 1. Introduction

## 1.1 Background

The car rental market is expanding with the increasing need for temporary transportation solutions. This project aims to develop a system that simplifies the process of renting and returning cars.

## 1.2 Objective

- Develop a user-friendly platform for renting and returning cars.
- Ensure accurate tracking of car availability.
- Provide clear pricing information.

## 1.3 Motivation

To meet the growing demand for convenient car rental services and provide a seamless user experience.

## 1.4 Related Works/Review

Existing platforms like Hertz, Enterprise, and Avis offer comprehensive car rental services. This project aims to integrate similar features while enhancing user experience.

## 1.5 Gap Analysis

Despite the availability of various car rental applications, improvements can be made in user interface design and real-time car availability tracking. This project addresses these gaps.

# 2. System Architecture

## 2.1 System Overview

The system comprises a Python-based application that connects users with available cars, allowing for seamless renting and returning processes.

### 2.2 System Components

- Frontend: Console-based interface for interaction.
- Backend: Python for logic and data handling.
- Database: In-memory storage for car data (extendable to SQL databases).

## 2.3 Architecture Diagram

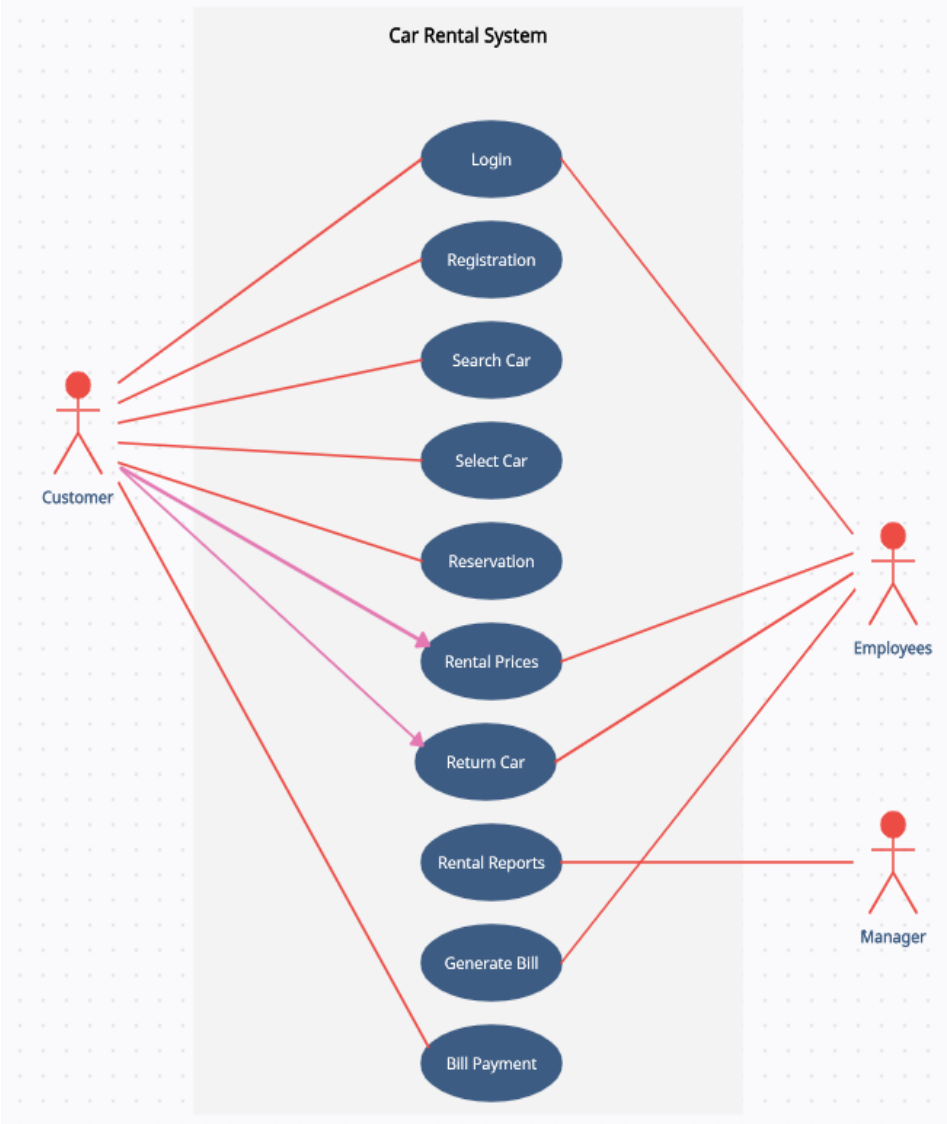


Figure 1: Architecture of Car Rental System

# 3. Project Features and Interface

## 3.1 List of Features

- Display available cars
- Display car rental prices
- Rent a car
- Return a car

### 3.2 User Interfaces

❖ **Main Menu:**

1. Display Available Cars

2. Car Rental Price

3. Rent a Car

4. Return a Car

5. Exit

❖ **Car Rental Price List:**

Ford Focus 2018 300tk per hour

Honda Civic 2019 400tk per hour

Toyota Corolla 2020 500tk per hour

### 3.3 Input Output Demo

- **Input:** User choices, car details (company, model, year).
- **Output:** Car availability status, rental confirmation, return confirmation.

## 4. System Implementation

### 4.1 Development Tools & Technologies

- **Language:** Python
- **Tools:** Git, PyCharm

### 4.2 Implementation Plan

i. Requirement analysis and design
ii. Backend development
iii. Integration and testing
iv. Deployment and maintenance

### 4.3 Testing and Validation

- **Unit Testing:** Individual functions (rent, return)
- **Integration Testing:** Combined functionalities
- **System Testing:** Complete system functionality
- **User Acceptance Testing (UAT):** Ensures system meets user requirements.

# 5. Future Scope and Limitation

## 5.1 Limitation

- The current version lacks a graphical user interface.
- Requires expansion to support more complex rental scenarios.
- Continuous updates and maintenance are necessary.

## 5.2 Future Scope

- ✓ Development of a web or mobile application interface.
- ✓ Integration with a database for persistent storage.
- ✓ Advanced features like GPS tracking and personalized recommendations.

## 5.3 Conclusion

This project aims to create an efficient and user-friendly car rental system, addressing current market gaps and enhancing user experience for both customers and rental service providers.

# 6. References

"Programming Python," O'Reilly Media, 2020.

"Learning Python," Mark Lutz, O'Reilly Media, 2013.

Hertz, Enterprise, Avis websites for feature analysis.