

TALLINN UNIVERSITY OF TECHNOLOGY
School of Information Technologies



ICD0024 Homework

Vladimir Puz 212342IADB

Smart Parking System

Supervisor: Andres Käver

Tallinn 2024

Author's declaration of originality.

I hereby certify that I am the sole author of this report. All the used materials, references to the literature and the work of others have been referred to.

Author: Vladimir Puz 25.02.2024

Author's declaration of originality.	2
1. Introduction	4
2. System Description	5
3. Database Schema Overview	6
4. User Roles and Functionalities	7
5. Conclusion	8

1. Introduction

Urban areas are facing increasing challenges in managing parking spaces efficiently. The Smart Parking System (SPS) is designed to address this issue by optimizing the use of parking spaces, improving the experience for drivers, and reducing congestion. This proposal outlines the SPS's architecture and the functionalities it offers to different user roles.

2. System Description

The Smart Parking System is an integrated information system for urban mobility and smart city solutions. It leverages real-time data to facilitate the management of parking lots, ensuring optimal utilization of parking spaces. The system includes features such as spot detection, driver guidance, payment processing, and parking analytics.

3. Database Schema Overview

The system's backbone is a robust database with the following entities:

ParkingLot: Manages details of parking lots.

ParkingSpot: Tracks individual spots within lots.

Reservation: Handles booking of parking spaces.

Vehicle: Stores information about user vehicles.

Payment: Processes payments for parking services.

ParkingAnalytics: Analyzes parking data for insights.

4. User Roles and Functionalities

- a. Parking Administrator
 - Oversee parking lot registrations and setup.
 - Monitor real-time availability of parking spots.
 - Access parking analytics for decision-making.
 - Adjust parking rates and policies based on data.
- b. Driver (Registered User)
 - View available parking spots in real-time.
 - Reserve parking spots in advance.
 - Manage vehicle information.
 - Make payments and view payment history.
 - Receive guidance to the reserved parking spot.
- c. Guest User
 - View available parking spots without registering.
 - Obtain directions to parking lots.
 - Access general information about parking facilities.
- d. Traffic Analyst
 - Access parking analytics data.
 - Analyze peak and low occupancy times.
 - Generate reports on parking usage and trends.
 - Provide recommendations for traffic management.

5. Conclusion

The Smart Parking System is designed to be a comprehensive solution for urban parking challenges. By enabling efficient parking spot utilization, offering easy reservation and payment options, and providing valuable analytics, the SPS aims to enhance urban mobility and contribute to the smart city ecosystem.

Smart Parking System Proposal ERD

