



Certificate

This is to certify that

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Smart Parking System.

A partial fulfilment of the requirement of the third-year diploma in Computer Engineering affiliated to Maharashtra State Board of Technical Education, Mumbai for the Academic year 2021 - 2022.

Internal Examiner

Project guide

Head of department

Principal

Abstract

- Parking is a problem in many cities. Usually, it is not possible to build new parking lots due to insufficient available areas.
- We will present a miniature model of an automated car parking system that can regulate and manage the number of cars.
- Automated parking is a method of parking and exiting cars using sensing devices.
- The entering to or leaving from the parking lot is commanded by an Android based application.

Introduction

- In the project Car Parking System we have shown the concept of an automatic car parking system.
- As in the modern world everything is going automatic, we have built a system which will display the number of cars in the parking lot and park the car in a vertical manner, so that we can park more cars in less space.
- We will develop a system which is used to allocate parking space for cars and depending upon whether there is a capacity of cars to enter, it either Free space is there or not.
- It is also possible to free space when any car enters in the parking lot or when a car exits from the parking lot.
- If the availability of Parking space is confirmed, the user commands the parking system to park the car in the designated slot.

1. Problem Statement

1. Why is there a need of the selected topic?

In the last one decade, there is a rapid increase in the number of Vehicles. Approximately there is at least one Car in every household. As a result of this there is more cars and less parking space.

2. How is the topic better from existing product / technology?

It is less time consuming as the work is done through mobile application. In most of the vertical parking system it is not easy to access cars that are parked at the top. In our Parking System we will overcome this problem.

3. Who will benefit from the project topic selected?

It will be beneficial for Malls, Society and Residential area.

4. Features / Functionalities of Project

Features of Smart parking	Features of existing parking system
1. It is easy to access the system anytime.	It is not easy to access the system.
2. It saves lots of space.	It saves lots of space.
3. Drivers and passengers are safer not having to walk through parking lots.	Drivers and Passengers are not safer as they have to walk through parking areas.
4. Searching for vehicles slots become very easy.	We have to search for vehicles manually.
5. Smart parking management can be managed by less number of people.	It is more human dependent.

5. Review of Literature

1. An automated Car parking system is a mechanical system designed to minimize the area and/or volume required for parking cars.
2. Like a multi-story parking garage, an APS provides parking for cars on multiple levels stacked vertically to maximize the number of parking spaces while minimizing land usage.
3. The APS, however, utilizes a mechanical system to transport cars to and from parking spaces in order to eliminate much of the space wasted in a multi-story parking garage.
4. While a multi-story parking garage is similar to multiple parking lots stacked vertically, an APS is more similar to an automated storage and retrieval system for cars.

6. Modules / Users / Stakeholders

Module/Features

1. Reserve space for parking.
2. Request for parked Car
3. Balance inquiry
4. View information

Users

1. User will register on app with their details.
2. User can select where they want to park.

Stakeholders

1. Residential areas
2. Malls
3. Theatre Multiplex.

7. Algorithm / ER Diagram / Circuit Diagram

Algorithm: -

Step 1: Start

Step 2: Show available slots

Step 3: Select any one from available slots.

Step 4: If the car is parked show status as “parked” else don’t show status.

Step 5: If car is required, request for car.

Step 6: If the car is ready to take away show status as “ready to take away”, else show status as ”Parked”.

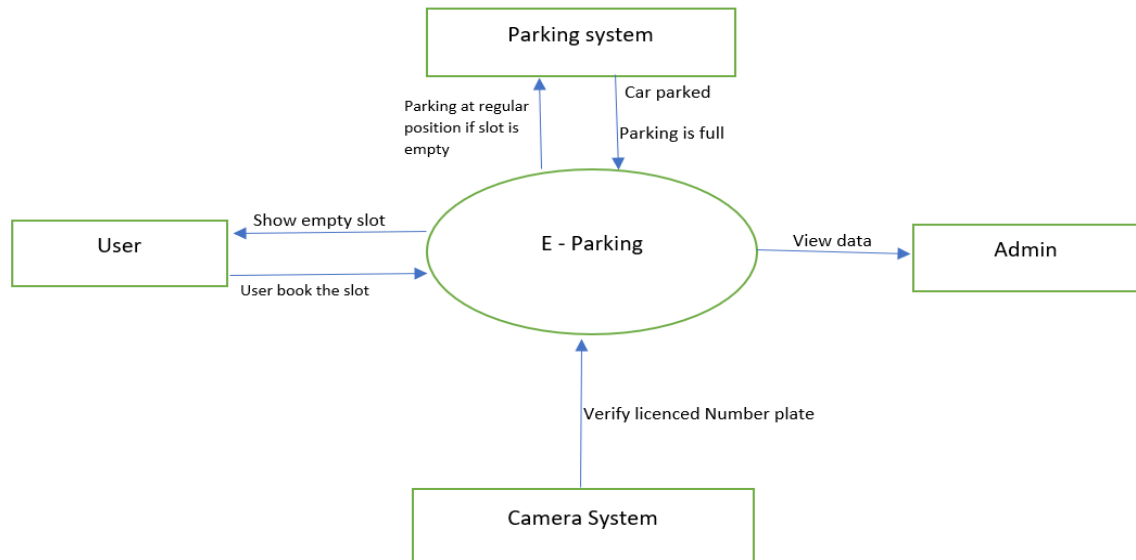
Step 7: If sufficient balance is present in the account else give message “insufficient balance” and it can be paid later and after a duration of a time user will get penalty fine.

Step 8: End

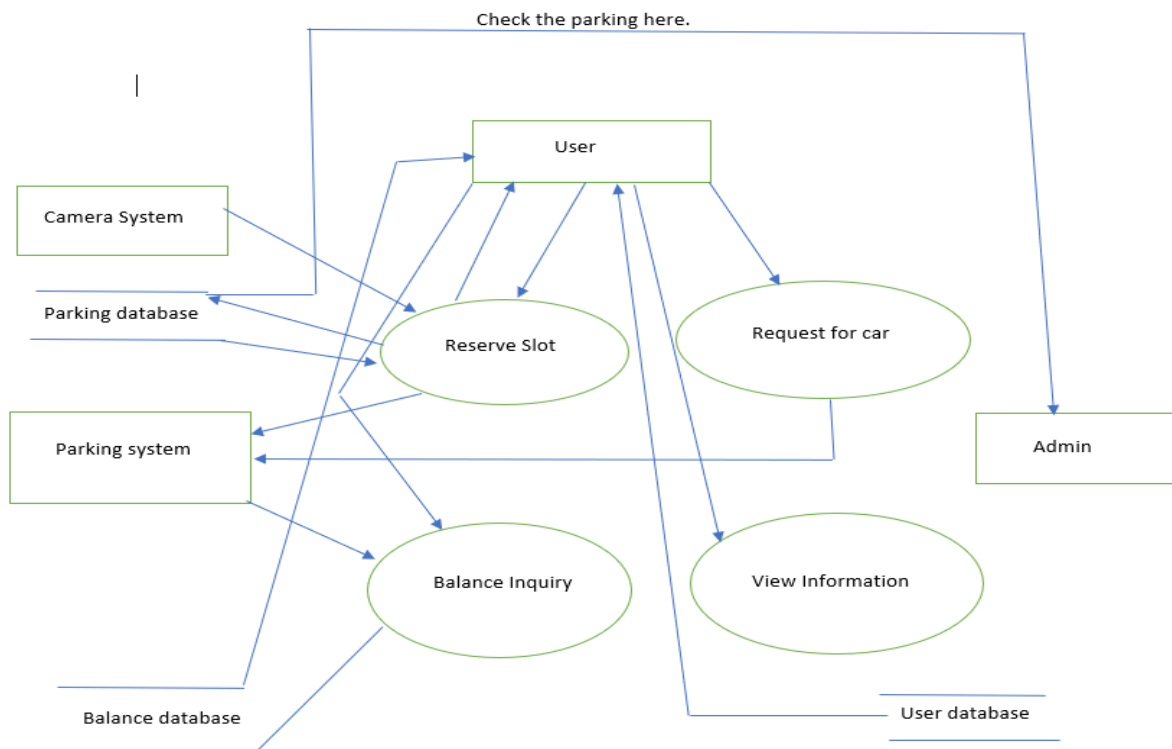
8. Design (DFD & UML Diagrams)

8.1 DFD Diagrams

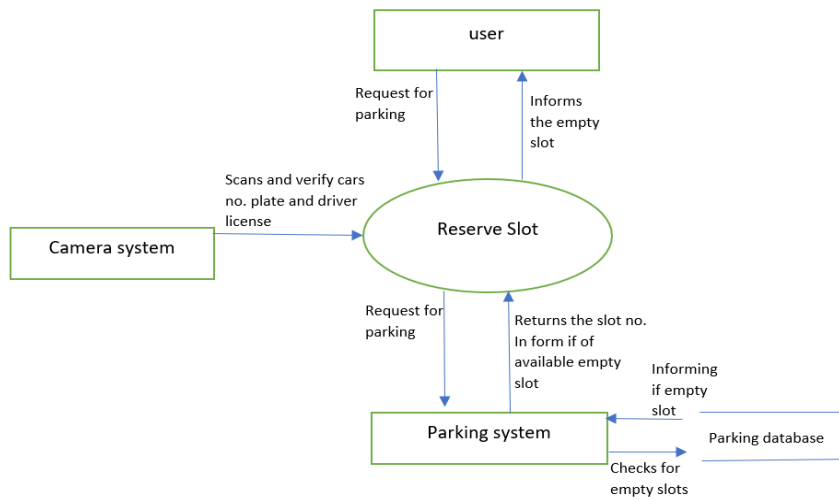
8.1.1 DFD Level 0



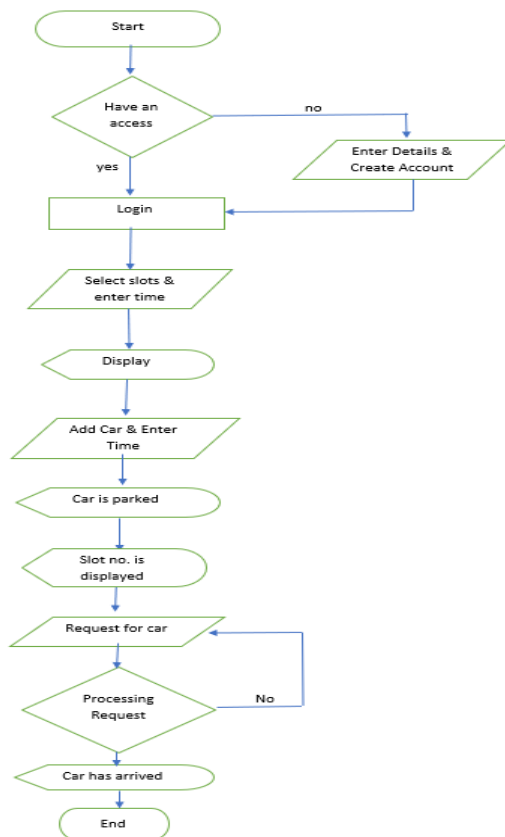
8.1.2 DFD Level 1



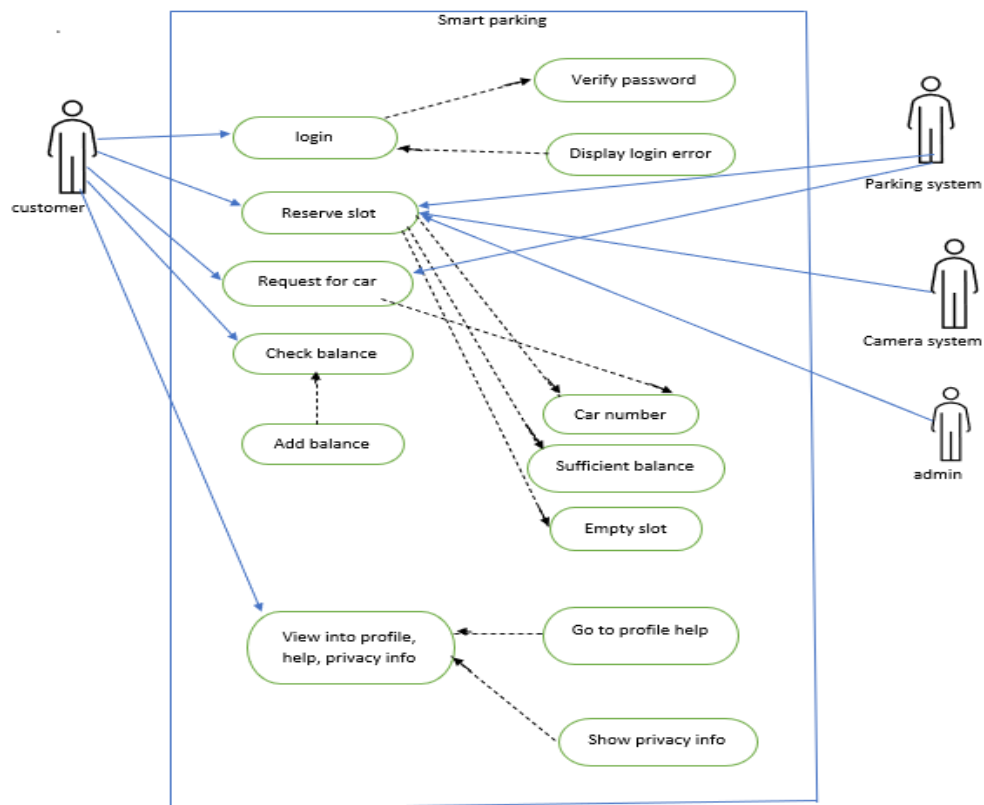
8.1.3 DFD Level 2



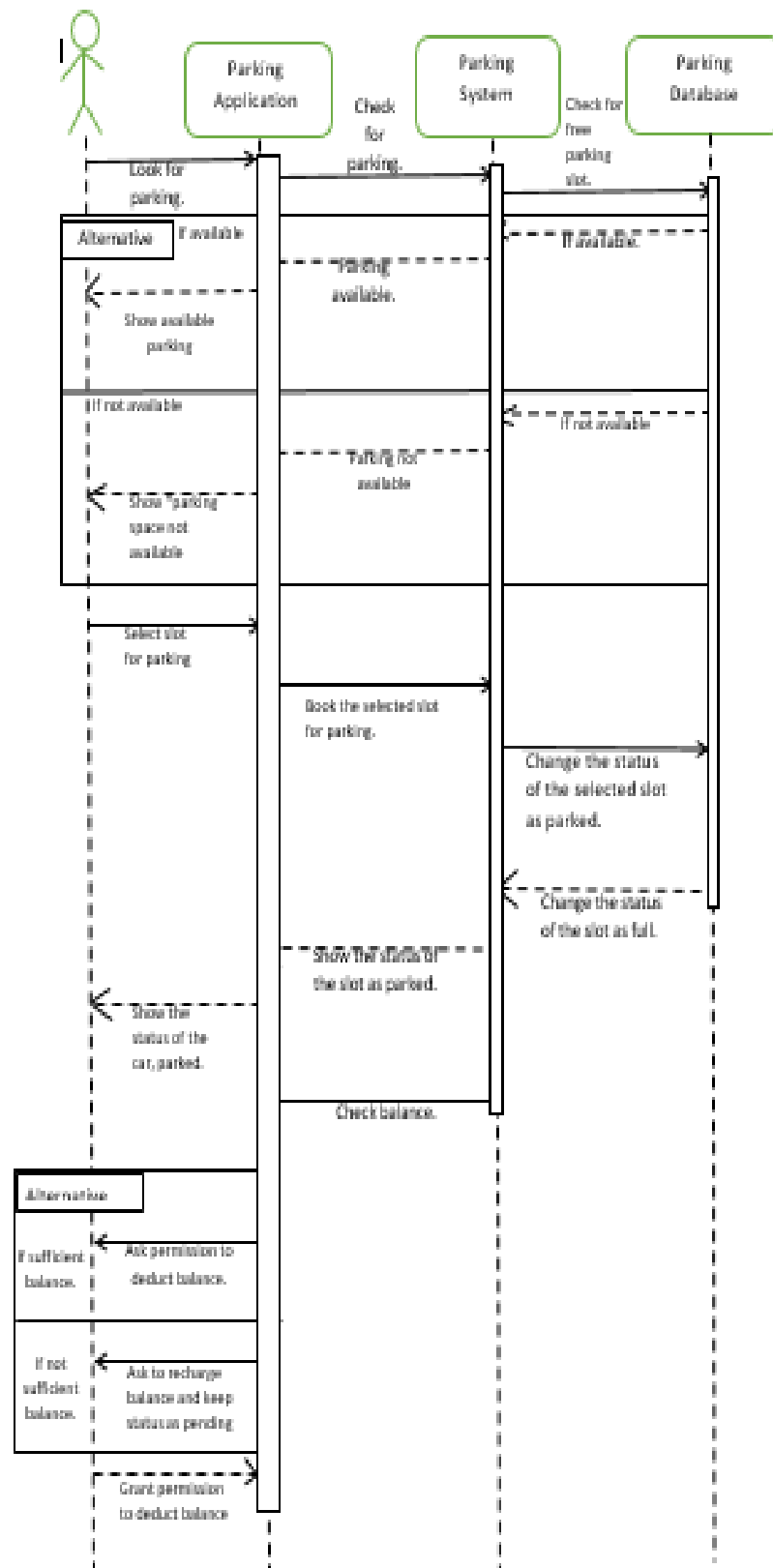
UML Diagram



8.2.2 Use Case Diagram



8.2.3 Sequence Diagram



9. Technology Used

- **Hardware Requirement:** - Arduino, esp8266, Stepping Motor, ESP32 camera
- **Software Requirement:** -
 - Front End: - Flutter/Ionic.
 - Back End: - PhpMyAdmin, Python/Java, Arduino.

10. Pros & Cons

Pros: -

- Efficiency.
- Faster Process.
- Provides information.
- Security.

Cons: -

- High Cost of construction and installation.
- Regular maintenance.

Future Scope

- In mini garage there will be a small car servicing able for trip like 2 to 3 hours
- In washing center there will be a cleaning service available.
- There would be charging points available for electric cars.

- **Applications**

- This Project can be used in Malls, Multiplex.
- It can also be used in Society and Residential areas

- **Conclusion**

Analysis of the model has to be done while developing a life size model. The mechanical model has been designed and the software as well as the control circuit has been implemented successfully. It demonstrates the working of the planned automated smart parking system. The main advantages are space optimization, cost effectiveness and security.

Formatting:

- 1) Font :Times new Roman
- 2) Font Size: content 12,Heading 16, Main Heading 18
- 3) Document should be Justified
- 4) Line spacing :1.15