ParkEase – Smart Parking Spot Finder

1. Problem Statement

In urban and semi-urban areas, the increasing number of vehicles has created difficulty in finding available parking spaces. Drivers spend significant time searching for parking slots, leading to traffic congestion, fuel wastage, environmental pollution, and user frustration. Existing parking systems lack real-time monitoring and digital guidance, resulting in inefficient parking space utilization. ParkEase aims to provide a smart solution to efficiently locate and manage parking spaces.

2. Scope of the Project

- Real-time detection of parking slot availability.
- Display available and occupied slots through a web/mobile platform.
- Reduce parking search time and congestion.
- Provide admin monitoring and data management.
- Implementation within a specific parking facility (mall/campus/apartment).

3. Existing System

- Manual parking allocation by security personnel.
- No real-time digital updates of slot availability.
- Drivers manually search for parking slots.
- High chances of congestion and human errors.

4. Proposed System – ParkEase

- Smart system to monitor slot availability in real time.
- User-friendly interface for checking slot status.
- Admin dashboard for monitoring occupancy and updates.
- Improved parking utilization and reduced congestion.

5. Modules in the Project

- User Module – View available slots and parking status.
- Admin Module – Manage parking slots and monitor occupancy.
- Parking Slot Management Module – Track slot updates.
- Data Management Module – Store user and parking data.
- Notification Module (Optional) – Alerts for availability.

6. Technology Stack

- Frontend – HTML, CSS, JavaScript (Optional: React.js)
- Backend – Node.js, Express.js
- Database – MongoDB
- Optional – IoT Sensors, Firebase, Google Maps API

7. Objectives

- Reduce parking search time.
- Minimize traffic congestion.
- Improve parking efficiency.
- Provide a smart and user-friendly parking solution.