

Name: Arduino Parking System

Subtitle: An Automatic Car Parking Management System

Level: level 1, IoT Project

Description:

The Arduino-based car parking system is a smart project designed to automate the parking process. It integrates sensors, servos, and a microcontroller to efficiently manage parking spaces. This project uses IR sensors to detect vehicles, a servo motor for controlling a barrier gate, and an LCD to display the number of available parking slots. The system is programmed to automatically update parking slot availability in real time, ensuring an organized and user-friendly parking experience.

The hardware includes an Arduino microcontroller as the core processing unit, IR sensors for vehicle detection, and a servo motor to control the barrier gate. It also uses an LCD screen to display parking slot availability dynamically. This project demonstrates an ideal beginner-level automation solution and offers insight into integrating basic hardware and IoT concepts for practical applications.

Outcomes of the Parking System:

- Understand the use of IR sensors for vehicle detection.
- Experiment with servo motor control to automate gate movement.
- Learn to interface an LCD display with Arduino for real-time data visualization.
- Develop coding skills for managing parking slot counts and automating responses.
- Explore practical applications of IoT in parking systems.

Features of the Parking System:

1. Real-time detection of vehicles using IR sensors.
2. Automated gate control with a servo motor.
3. Live display of parking slot availability on an LCD.
4. Compact and easy-to-build design, ideal for beginners.
5. Energy-efficient operation using low-power Arduino components.

Components Required:

- Arduino Uno board
- IR sensors

- Servo motor
- 16x2 LCD display module
- Breadboard and jumper wires
- Power source (USB or battery)

Applications:

- Ideal for small-scale parking lots or as a learning project for IoT and automation enthusiasts.
- Can be scaled up for larger parking systems with additional sensors and wireless connectivity for remote monitoring.

References:

1. [IoT based smart parking model using Arduino UNO with FCFS priority scheduling](#)
2. [Arduino software](#)