NAAN MUDHALVAN PROJECT

PHASE 1

SMART PARKING

Creating a Smart Parking project for ESP32 on the Wokwi platform involves using the ESP32 microcontroller to detect and manage parking spaces, and then visualizing the data on a virtual interface provided by Wokwi.

What is an IOT-based parking system?

An IOT-based parking system is a centralized management that enable drivers to search for and reserve a parking spot remotely through their smartphones. It offer a convient arrangement for driven to park their cars when they are lokking to avoid potential traffic congestion.

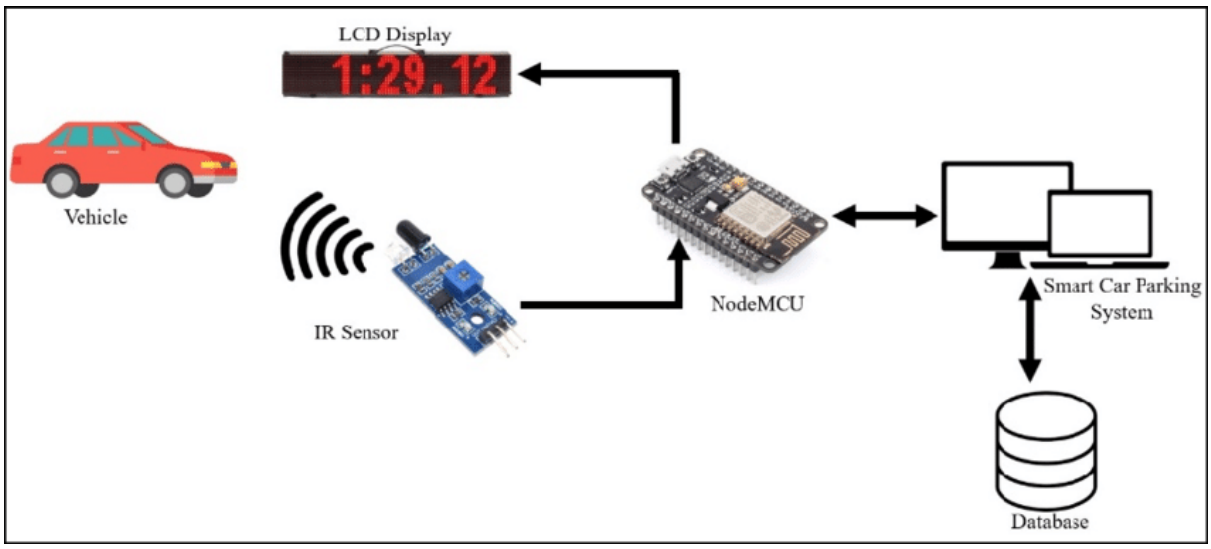
The system hardware sensor detct available slot and communication the information to the drivens in that area in real-time. IOT technology ensure that they do not have to worry about finding an available space again-allowing them to travel conviently.

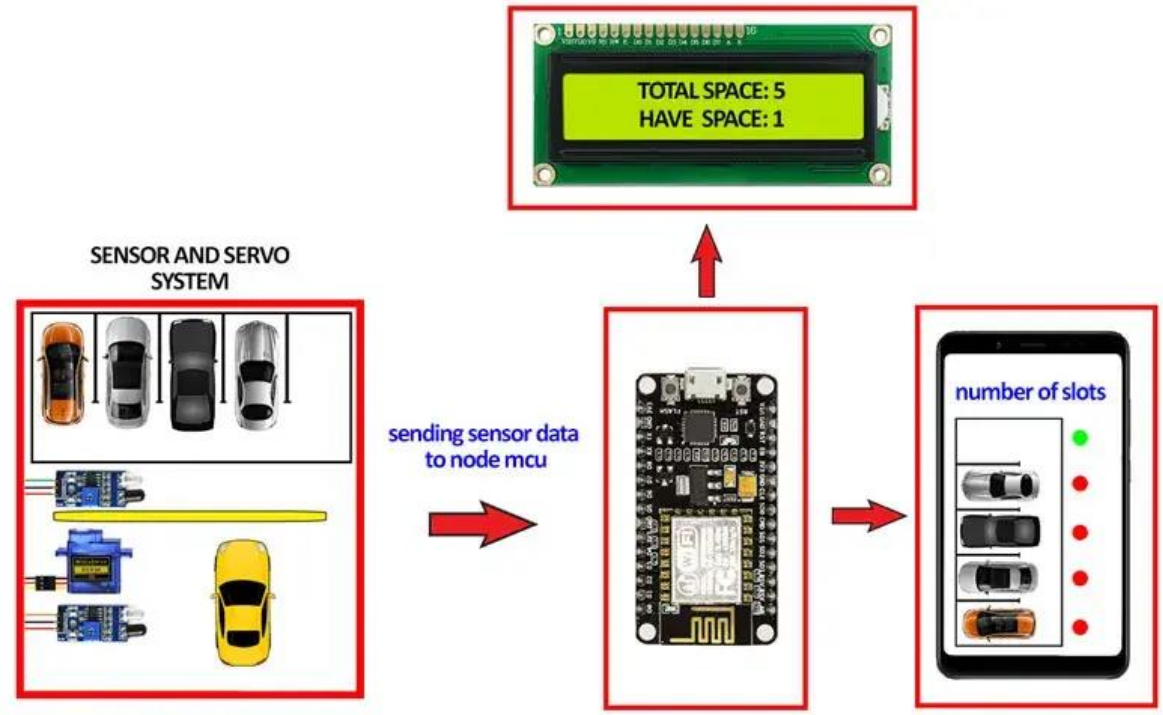
Beside the connected devise snds alert about peak times and

Charges. No one wants to struggle to find a parking slot or pay

More at any given point.

Using smart parking technology will help maximum the consumption of exciting parking space, increase the effectiveness of parking operatios and facilities easier traffic flow with just a few taps on a mobile app.





IOT-based sensing device commonly used for smart parking system included:

Ultrasonic sensor measure the distance of a target object by eliminating ultrasonic sound waves and convert the reflected sound into an electrical signal.

Electromagnetic Field detection is helpful to detect metals as they pick up minute changes in the magnetic firld.

Infrared sensor can detect motion and gauge temperature changes in the immediately surrondings.

Components Needed:

1. ESP32 development board
2. Ultrasonic distance sensors (HC-SR04) for each parking space
3. Breadboard and jumper wires
4. Wokwi virtual simulator .

Hardware Setup:

I. Connect the HC-SR04 ultrasonic sensors to your ESP32 board. You will need one sensor per parking space.

II. Wire the HC-SR04 sensors as follows:

- VCC to 5V on ESP32
- GND to GND on ESP32
- Trig to a digital GPIO pin on ESP32 (e.g., GPIO2)
- Echo to another digital GPIO pin on ESP32 (e.g., GPIO4)

III. Connect all the sensors in the same way, one for each parking space you want to monitor.