

## **IDEA**

Finding parking space has become a problem that too during the peak times. Sometimes, it kills a lot of time to find a parking space.

The main idea is to create smart parking, where available parking places could be displayed on a web application.

### **Requirements Specification:**

#### **Hardware Requirements:**

##### **1. NodeMCU:**

NodeMCU is an open-source Lua based firmware and development board specially targeted for IoT based Applications and is built around a system-on-a-chip called ESP8266.

##### **IR sensor:**

Infra-red sensor is used to detect an object at the parking space. to detect an object at the parking space.

##### **Servo motor:**

A servo motor is a rotary actuator that allows for precise control of angular or linear position, velocity and acceleration. This is used to open the entry and exit gates in this system.

##### **OLED Display:**

It is used to display the information about the vacant parking spaces.

#### **Software Requirements:**

##### **1. Arduino IDE:**

The Arduino IDE is a software to write and upload the program into the NodeMCU for communication between microcontroller and cloud or a system.

##### **2. MIT app inventor:**

MIT App inventor is an open source web application. It allows users to create an android application replacing the complex language of text-based coding into a visual drag and drops building blocks.

#### **How the prototype is built:**

1. IR sensors are placed at each parking space to detect if the parking space is vacant or not.
2. A servo motor is placed to open the entry and exit gates when a car arrives at the gate.
3. Based on the sensors data, total number of vacant parking spaces are calculated and displayed on the display board.

**4. The vacant parking spaces information like space number and other information will be updated in the mobile application every time a car enters and occupies a space or every time a car exits and leaves a space.**

**Conclusion:**

**Smart parking is developed to create a platform where user can know various parking area and choose the space from available plot. The main benefits is to save fuel and time.**