**Phase 2 project**

**Project Title: SMART PARKING**

**Project ID:**  proj\_223739\_Team\_5

**College Code:** 6208

**College:** Gnanamani College of Technology

**Branch:** B.Tech-Information Technology

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**SMART PARKING**

**Definition:**

An IoT-based parking system is a centralized management that enables drivers to search for and reserve a parking spot remotely through their smartphones. It offers a convenient arrangement for drivers to park their cars when they are looking to avoid potential traffic congestion.

The system’s hardware sensors detect available slots and communicate the information to the drivers in that area in real-time. IoT technology ensures that they do not have to worry about finding an available space again – allowing them to travel conveniently.

**Components Required:**

* Arduino UNO
* Arduino Cable
* LCD Display
* Servo Motor
* IR Sensor
* Bread Board
* Jumpers
* USB Cables

**Additional Implementation:**

* The IoT-based parking system is to set up the sensors. Connect IR sensors to the Arduino using jumpers and a breadboard. These sensors will be responsible for detecting whether parking spaces are occupied or vacant. Next, integrate an LCD display with the Arduino.
* This display will provide real-time parking space availability information to users. Program the Arduino to read data from the sensors and display parking space status on the LCD screen. As cars enter or leave parking spaces, the display will update accordingly. This basic setup lays the foundation for the system's functionality, allowing users to easily find available parking spots.

**PHASE 2**

**1: Sensor Integration with Arduino**

This module involves integrating the IR sensor with the Arduino to detect the presence or absence of cars in parking spaces.

IR Sensor Data Processing Algorithm (Module 1):Simple threshold-based algorithm to detect the presence or absence of cars based on sensor readings.Display Logic

**2:Display Interface with Arduino:**

This module focuses on setting up the LCD display with the Arduino to provide real-time parking space information to users.

Servo Motor Control Algorithm/ Display control algorithms :Code to update the LCD display with real-time parking space information, which could involve basic text rendering and update routines.

**3: Servo Motor Control with Arduino**

This module involves using the servo motor with the Arduino to physically indicate the status of a parking space (occupied or vacant).

PWM (Pulse Width Modulation) control for servo motor.

**4: Data Processing and Storage with Raspberry Pi**:

This module focuses on processing and storing data about parking space availability using the Raspberry Pi.

Data processing algorithms and data storage :Algorithms for processing and storing data about parking space availability. You could use database systems like MySQL, or NoSQL databases like MongoDB, and write code for data retrieval and storage.User Interface (Mobile App/Web App) Development

**5: User Interface (Mobile App/Web App) Development:**

This module involves developing a mobile app or web app that displays parking space availability information to users.

UI/UX design algorithms, data retrieval and display logic, possibly API integration for communication with the central server or cloud platform.

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