**Phase 1 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**

**Abstract:**

Smart parking using IoT and a mobile application revolutionizes urban mobility. By employing sensors in parking spaces, this system provides real-time data on available spots. Users can access this information through a mobile app, allowing them to locate and reserve parking spaces effortlessly. Additionally, the app can offer navigation assistance to the selected spot. This technology not only saves time and reduces stress for drivers but also contributes to a more efficient and sustainable urban environment by minimizing unnecessary circling in search of parking.

**Understanding the problem:**

A smart parking system using IoT and a mobile app aims to address the challenges of urban parking. It involves sensors placed in parking spaces that can detect the presence or absence of a vehicle. These sensors communicate with a central system via the internet. The mobile app connects to this system, providing users with real-time information about available parking spaces, allowing them to locate and reserve a spot.

**Design Thinking:**

Through user feedback, the design is refined, and the integration of IoT sensors is developed to provide real-time parking data. This data is seamlessly connected to the mobile app, allowing users to access live availability information, make reservations, and receive navigation guidance. Thorough testing ensures a smooth interaction between the app and IoT system. After deployment, ongoing iteration based on user feedback and technological advancements ensures the solution evolves to meet evolving needs effectively.

**Future Use:**

**Analysis Objective:**

The analysis objectives for implementing a smart parking system using IoT and a mobile application are to enhance urban mobility and convenience. By leveraging real-time data on parking space availability, this technology aims to reduce traffic congestion and emissions, making cities more environmentally sustainable. It also seeks to improve the overall user experience by providing drivers with timely information about available spots, ultimately saving time and reducing frustration. Additionally, the system can generate valuable insights for parking facility owners, allowing them to optimize space utilization, implement dynamic pricing strategies, and enhance security measures. This holistic approach aims to create a more efficient, user-friendly, and economically viable parking solution for urban environments.

**Data collection:**

In a smart parking system utilizing IoT and a mobile application, data collection is a critical component. Various sensors installed in parking spaces continuously monitor their occupancy status. These sensors relay real-time information to a central server, which processes and analyzes the data. Additionally, the mobile application collects user-generated data, such as parking duration and location preferences. This combined dataset forms the basis for crucial insights, including parking occupancy patterns, peak usage times, and user behavior. Such comprehensive data enables the system to provide accurate and timely information to drivers, optimize parking space allocation, and facilitate dynamic pricing strategies. It also empowers operators to make informed decisions for maintenance, security, and future expansion of the smart parking system.

**Requirements:**

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

**Block Diagram:**

**Flow chart:**

