**Project Title:** Smart Parking

**Abstract:**

Efficient and smart way to automate the management of the parking system that allocates an efficient parking space using internet of things technology. The IoT provides a wireless access to the system and the user can keep a track of the availability of the parking area. With increase in the population of the vehicles in metropolitan cities, road congestion is the major problem that is being faced.

**Problem Statement:**

By using ultrasonic sensors be able to keep a record of the number of cars parked inside of a parking garage. Consequently, once a car enters a parking garage followed by a parking space, a ping ultrasonic sensor will then be able to determine if a car is parked in the space or not.

**Solution Needed:**

Smart parking solutions aim to address the growing urban congestion and parking challenges. These solutions leverage technology to optimize parking space utilization and enhance the overall parking experience. One key element is the use of sensors and cameras to monitor parking spot availability in real-time. When drivers access an app or website, they can instantly find vacant spots, reducing the time spent searching for parking. Additionally, smart parking systems often incorporate mobile payment options, allowing users to pay for their parking digitally, reducing the need for physical payment methods like coins or tickets.

Furthermore, these systems can improve city traffic flow by directing drivers to available parking spaces, reducing the congestion caused by circling vehicles. In the long run, data collected from these systems can also help city planners make informed decisions about parking infrastructure and policies. Overall, smart parking solutions not only simplify the parking process for drivers but also contribute to more efficient and sustainable urban mobility.

**Phase 1: Problem Definition and Design Thinking**

In this part you will need to understand the problem statement and create a document on what have you understood and how will you proceed ahead with solving the problem. Please think on a design and present in form of a document.

**Project Definition:**

The project involves integrating IoT sensors into public transportation vehicles to monitor ridership, track locations, and predict arrival times. The goal is to provide real-time transit information to the public through a public platform, enhancing the efficiency and quality of public transportation services. This project includes defining objectives, designing the IoT sensor system, developing the real-time transit information platform, and integrating them using IoT technology and Python.

**Design Thinking:**

* Project Objectives: Define specific objectives such as real-time parking space monitoring, mobile app integration, and efficient parking guidance.
* IoT Sensor Design: Plan the design and deployment of IoT sensors in parking spaces to detect occupancy and availability.
* Real-Time Transit Information Platform: Design a mobile app interface that displays real-time parking availability to users.
* Integration Approach: Determine how Raspberry Pi will collect data from sensors and update the mobile app.