**SMART PARKING**

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

**Problem Statement: Programming an IOT Device to Solve the parking slot issues in a area**

**Objective: To Design a IOT Device and Sensors to solve the parking chaos in a area and implement it using Microcontrollers/ Arduino/ Raspberry Pi**

**Definition:**

**Smart Parking refers to an Intelligent Parking Management System that uses Advanced Technologies, such as Internet of Things (IoT), Sensors, Data analytics, and Communication Networks, to Optimise arking space utilisation and enhance the overall parking experience for both operators and users. The primary goal is to improve efficiency, reduce congestion, save time, and make parking in urban areas more convenient and sustainable.**

**Need For Smart Parking:**

**Since The Population of the world increases daily, vehicle users also increase. Thus to park the vehicle, we need to manage the available space for them using a “Smart Parking” system.**

**Main Components used:**

**Arduino ESP32, LDR Sensor, Proximity Sensor etc…**

**Designing:**

**The device is designed in TinkerCAD & simulated in WOKWI**

**Advantages:**

* **Efficient Space Utilization**
* **Real-Time Parking Availability Information**
* **Reduced Traffic Congestion and Emissions**
* **Cost Savings and Revenue Generation**
* **Payment Automation and Flexibility**
* **Integration with Smart City Initiatives**

**Disadvantages:**

* **High Initial Costs**
* **Maintenance**
* **Dependency on Technology**
* **Privacy Concerns**

**Applications:**

* **Urban Parking Management**
* **Commercial Parking Facilities**
* **Hospital Parking Management**
* **Office and Corporate Parking**
* **Residential Parking**
* **Transportation Hubs**

**Conclusion:**

**Thus the “Smart Parking” System can be “designed and programmed” from the “knowledge of” the sessions of “phase 1” .**

**Prepared By,**

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