SMART PARKING

ABSTRACT:-

In recent times the concept of smart cities has gained grate popularity. Thanks to the evolution of Internet of things the idea of smart city now seems to be achievable. Consistent efforts are being made in the field of IoT in order to maximize the productivity and reliability of urban infrastructure. Problems such as, traffic congestion, limited car parking facilities and road safety are being addressed by IoT. In this paper, we present an IoT based cloud integrated smart parking system. The proposed Smart Parking system consists of an on-site deployment of an IoT module that is used to monitor and signalize the state of availability of each single parking space. A mobile application is also provided that allows an end user to check the availability of parking space and book a parking slot accordingly. The paper also describes a high-level view of the system architecture. Towards the end, the paper discusses the working of the system in form of a use case that proves the correctness of the proposed model.

MODULE:-

**Sensor Technology**: Smart parking modules often use sensors (e.g., ultrasonic or infrared sensors) to detect the presence of vehicles in parking spaces. This data helps monitor occupancy and availability.

Data Collection: The module collects data on parking space availability and sends it to a central server or an app. This information can be used by drivers to find available parking spots

.**Mobile Apps:** Many smart parking solutions come with mobile apps that allow users to check real-time parking availability, reserve spots, and pay for parking digitally.

Payment Systems: Smart parking modules can integrate with payment systems, enabling users to pay for parking using credit cards, mobile wallets, or other digital payment methods.

**Analytics:** Data collected from these modules can be analyzed to gain insights into parking patterns, helping cities and businesses optimize parking resources.

**LED Displays:** In some cases, LED displays are installed in parking lots to indicate the availability of parking spaces. Green for available spots, red for occupied spots, for example.

**Security:** Smart parking systems may include surveillance cameras or security features to enhance safety in parking areas.

**Integration:** They can be integrated into smart city infrastructure, allowing for better traffic management and reducing congestion.

**Environmental Benefits:** By reducing the time spent searching for parking, these modules can help reduce traffic congestion and emissions.

**Reservations:** Some smart parking modules allow users to reserve parking spaces in advance, ensuring they have a spot waiting for them.Overall, smart parking modules aim to improve the efficiency and convenience of parking for both drivers and parking lot operators while contributing to smarter and more sustainable urban environments.