RFID Scanned Online Parking System Using IOT

There has been a tremendous growth in the number of vehicles on road in past few years. But unfortunately the road networks and road widths have not grown in proportion to vehicle numbers. This has created in huge parking crisis especially in urban areas. At such times smart online parking systems are the need of the hour.

This system aims at replacing the conventional parking system with an IoT-based smart parking system by using RFID (radio-frequency identification). The users will be provided an entry card for getting access to the parking slot. The users will also be provided with an android based mobile application, using which they can know about the availability of the parking slot on their mobile phones. The users will need to maintain a minimum amount of balance in their entry card for getting access through the parking system, otherwise, the system will deny the access to enter. In this way, this smart parking system will help reduce human effort & time by using automation technology.

This IOT smart parking system provides the following advantages:

- Automatic Parking System with Zero Human Intervention
- RFID Scan for Access Verification
- Automatic Gate Barriers for Entry Exit
- Parking Slot Sensors for Empty Slot Detection
- Online Parking Slot availability on Phone
- Easy to Use System

The system makes use of multiple technologies to achieve the smart parking capability. This includes RFID scanner, wifi module motors, IR sensors, Microcontroller and electronics components to develop this system. The microcontroller is used to operate the entire system in order to achieve the desired operation.

The user first checks the availability of parking slots online. The microcontroller reads the sensor values of parking slots and then transfers this information online over IOT through wifi. The iot gecko server is used to translate this information and map it over into a graphical format.

The rfid scanner is used to scan for user card and transmit the data to microcontroller, the microcontroller transmits the data over iot server to check if the card is valid and if it holds sufficient balance. If the card is invalid or doesn’t hold sufficient balance, the entry to the vehicle is denied. If the card holds sufficient balance it is provided entry and then the sensor which is blocked by the car parking indicates which slot the car is parked in.

Components:

- Atmega Microcontroller
- DC Motor
- LCD Display
- RFID Sanner
- Wifi Module
- IR Sensors
- Resistors
- Capacitors
- Buttons & Switches
- Electrical & Wirings
- PCB Board
- Diodes Transistors
- Connectors
- Screws and Fittings

Applications:

- Residential Parking
- Public Parking Spaces
- Airport/Railway Parking
- Mall Parking. etc

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Disadvantages:

- User needs RFID Card for verification
- Users need to be trained on using the system