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## **Automatic Car Parking System Using Arduino**

### **INTRODUCTION:-**

People in densely populated areas are usually facing issue of finding space for parking. Drivers have to personally search for empty parking space in absence of information of the parking status. As such, it takes more than usual time to find parking space by drivers. In this daily evolving technology world, man wants to live a comfortable life which is generally defied by a single moment of trouble due to absence of finding a parking slot. In the metropolitan cities especially car parking has become a big issue. As we move through time, the manual car parking system in commercial complex is causing discomfort which in turn results in a waste of time as well as monetary loss. As such we need a solution that can control this problem. Is a smart car parking system is envisaged which will help in tackling the above mentioned obstacles. The system is fundamentally divided into two parts: the booking mechanism and the parking lot mechanism.

### **Issues with the Traditional car parking system:**

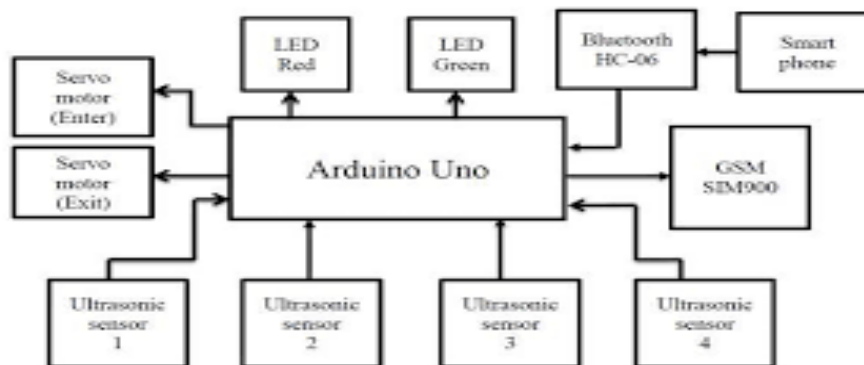
Before Traditional or manual car parking system is being followed at most of the places or in any direction in our country. But as it is figured out in various studies that but this system is full of problems.

We observe traffic jam in front of hospital, where parking lot is allotted for hospital but vehicle of nearby utilities are parked in the same. Also, the parking guard stops the every automobile and make a payment slip, causing traffic jams. 2) It is difficult and time consuming to locate the correct parking slot which results in consumption of extra fuel and waste of time. As well 3) Security of person is the other problem envisaged in manual car parking, where people can enter the parking slot and there is a chance of snatching, robbery, grabbing 4) In manual parking system more guard is required for the entire work resulting in increased cost

### **Motivation and Objectives:**

- Reduce traffic mess caused by an unplanned parking system.
- Optimize available parking space.
- To reduce harmful carbon emissions and save fuel.

- Increase safety of vehicles and vehicle owners.
- Time saving.



#### Working of the system:

- 1) The introduced system consists of two parts: the first part deals with the user and the second part is at the parking lot. The user books a parking spot using the mobile application by providing details like date and time of reservation and tentative time period of booking for which he will be billed. After confirmation the user is provided with an OTP which he has to provide at the time of accessing the parking spot.
- 2) The microcontroller at the parking lot is interfaced with two DC motors controlling the entry and exit gates, a gsm module, RF modules and a keypad. RF Modulus, and radio frequency modulus which is an electronic device that is very small, and is used to transmit or receive radio signals in between two electronic devices. The utilization, RF Modulus helps in to communicate wirelessly with another device.
- 3) Each slot has an RF module which sends pulse to the microcontroller indicating the availability of a particular slot, if it is confirmed that the slot is free during that time period then a message containing the OTP is sent to the user using the GSM module. Which means Global system used for Mobile communication is an architecture used for mobile communication in most of the countries. A GSM-Gs system and computer use this module to establish communication, it consists of a GSM modem and communication interfaces (like RS-232, USB, etc.) and power supply circuit for computer.
- 4) This is an ultra-compact and reliable wireless module which is SIM900A complete Dual-band GSM/GPRS solution in a SMT module which can be applied in the users applications. The SIM900A is a complete a dual band GSM/GPRS 900/1800MHz works for voice, SMS, data and Fax in a small form factor and with low power consumption through which it can fit almost all space requirements in user applications, designed specially for slim and compact devices

### **Ensuring effective accessibility:**

- 1) Use for pre-booking: users that have pre booked by the mobile app, their slot will be messaged to them so that they can directly park in their slot which is automatically guided through the GPS.
- 2) Ensuring reserved parking for differently abled: reserved parking for differently abled which are close to their destination are provided for usual parking price. 3) Utilizing feature of mobile application: People who wish to reserve their slot before they arrive at destination can opt for booking through the mobile app. Using App facilitates to know the availability of slots and also the details of the discount.

<b>Advantages of system:-</b>
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- **Lesser traffic.**
- **Lesser pollution .**
- **Exploring Revenue.**
- **Increased Safety .**

### **Real-Time Data and Trend Insight**

### **REFERENCES :**

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