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Implementation of "Secure Parking"

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Abstract - This project is mainly focuses on parking facility of apartments, societies etc. By using this we will ensure that the every flat member will get its own space for parking vehicles and that space will not be consumed by any other person. It helps to reserve the parking space for owner of parking**.** Unauthorized person is not allowed to park vehicles .Provides security to parking space .Helps to reduce manpower. It will help to save money.

***Key Words*:** Arduino, sensors, RFID Cards, Servo Motors

1. INTRODUCTION

The name of our project is Secure Parking. This project is specially designed for apartments which have the parking facility. Each flat member have a particular space to park their own vehicles but it may happen that their parking is being used by other people. So this project is mainly implemented to keep their parking reserved for their vehicles only.

Each flat member is allocated with a particular parking space. When a person comes to park his vehicle, the number of his vehicle is used for validation of vehicle for that parking space. If the number of the vehicle is valid then that person is allowed to park their vehicle. If the number of the vehicle is not valid or any other person who is not from that apartment is trying to park their vehicles then they are not allowed to park. A barrier raises from the floor if the vehicle number found invalid.

This project ensures that the parking space of a particular flat owner is reserved for their parking only. There is no need of parking guard to maintain the specific parking space for the owners.

2. Body of Paper

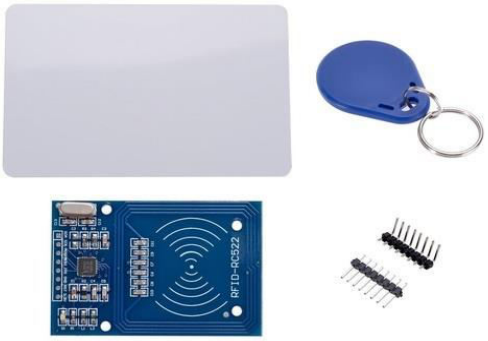
Equipments are used:

i)Arduino:

Arduino is a micro controller board based on the Atmega 328P(datasheet).it has 14 digital input/output pins(of which 6 can be used as PWM outputs) 6 analog inputs , a 16 MHz quartz crystal , a USB connection ,a power jack ,an ICSP header and a reset button.

ii) RFID Cards (RC 522):

RC 522 is highly integrated read write card chip applied to the 13.56 MHz contactless communication . Launched by NXP company, it is low voltage , low cost, and small sized non-contact card chip, a best choice for intelligent instrument and portable hand held device.



iii)Sensors :

Ultrasonic sensors measures distances based on transmitting and receiving ultrasonic signals or waves. they can stably detect transparent. The sensor head emits an ultrasonic wave and receives the wave reflected back from the target. Ultrasonic Sensors measure the distance to the target by measuring the time between the emission and reception.

iv)ServoMotors:

A servo motor is electrical device which can push or rotate an object with great precision. if you want to rotate and object at specific angles or distance ,then you use servo

motor. it is just made up of simple motor which run through servo mechanism.

v)Connectors:

a)Male
b)Female

a) Male : A male connector commonly referred to as a plug and has a solid pin for a center conductor.
b)Female: A female connector is referred to as a jack and has a center conductor with hole in it to accept the male pin.

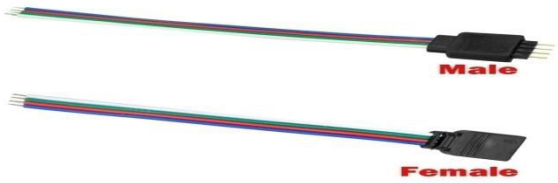
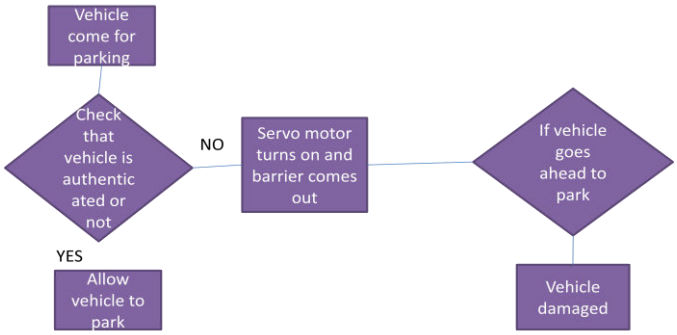


fig: System Architecture:



Literature Review:

Now a day's every flat owner of the apartments are facing problems related to the parking. Their reserved parking is being used by other peoples who are not from that apartment due to which the owners does not get space to park their vehicles. We have found some limitations in traditional parking that it requires lot of manpower and all the work was carried out manually. Our aim is to overcome this problem by using the project of **Secure Parking.**

Scope and Objective

Now a day's every flat owner of the apartments are facing problems related to the parking. Their reserved parking is being used by other peoples. Our aim is to overcome this problem by using the project of **Secure Parking.** It also helps to ensures that the particular space is available for use of that particular flat owner only. It also ensures the security of vehicles. There is no need of parking guard. This project is useful for the apartments, Workplaces etc., which have the parking facility. This project helps to reduce manpower and also it is cost effective. In future this can also be developed with some advance features such as face detection or biometric. It helps to prevent the parking by other persons.

Work to be carried out:

Hardware Project

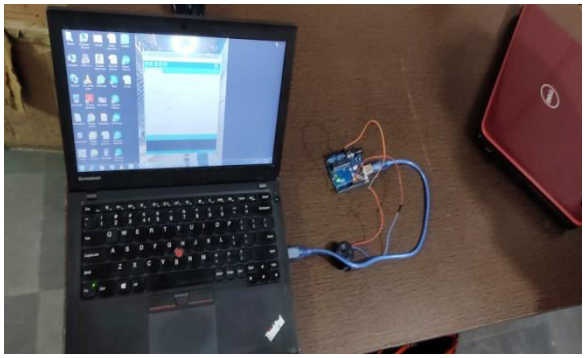
a)Deciding Specification : Arduino is a software and a hardware part which is used to controlling the sensors. RFID card and Sensors which will perform main part of the project. Card is used to reorganize vehicle and the sensor will validate the vehicle. Servo Motor is used to move the rods. Adapter of 9V or 12V or Battery of 9V or 12V.Card sheet for designing parking slot. Connectors (male-male, male-female, female-female) 2, 3 toy cars.

b) Design of part/ assembly: By using arduino software we will assemble the project. Arduino is the editor in which we will do program for all the parts of project.

c) Manufacturing the product: Robo *India* is a retailer and *manufacturer* of robotics, electronics, embedded, development board of AVR, 8051 and *Arduino*. China Professional **Supplier** Offer **RFID manufacturer.** Flamco Combustions Private Limited, is the manufacturer company of Servo Motors. OEM *manufacturers India* provides male-male, male-female, and female-female connectors

d) Testing of the product: We have designed a model of parking using card board, toy car and all above mentioned devices. When power is switched on all devices get activated and performing its own job. We checked that servo motor is working properly or not when unauthorized vehicle comes for parking. In this way we have tested product.

e) Modification If Required: We have implemented this project for single parking slot for single vehicle. In case of any modifications required we can



3. CONCLUSIONS:

To provide particular parking space for particular flat owner. It also helps to ensures that the particular space is available for use of that particular flat owner only. It also ensures the security of vehicles. There is no need of parking guard. This project is useful for the apartments, Workplaces etc., which have the parking facility. This project helps to reduce manpower and also it is cost effective.

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