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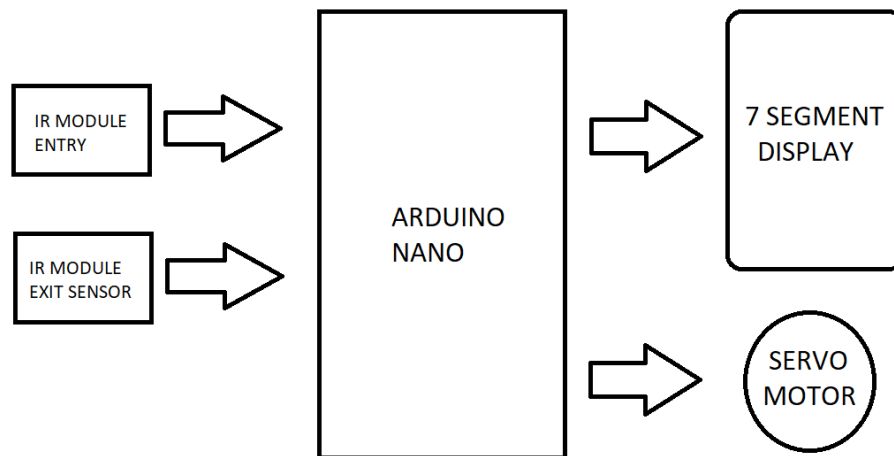
**SYNOPSIS FOR
PARKING LOT GATE CONTROLLER WITH CAPACITY COUNTER
USING 7 SEGMENT DISPLAY / SLOT BASED PARKING LOT**

INTRODUCTION:

A parking lot gate controller using Arduino, a 7-segment display, and a servo motor can be built to manage the opening and closing of a parking lot gate and display relevant information. The system can include features like a numeric display for parking space availability for the gate closure.

The aim of this project is to design and build a prototype of an automated parking system which will show the number of parking spaces left inside the parking lot. It will have a pre-installed number of maximum cars that can be parked. A conduction sensor will count the entry and exit of each car and open the barricade for the entry and exit. The entry and exit system can however be chosen. A display on the monitor outside the parking lot will show how many cars can still be parking inside the parking lot. In this project, 8 parking spaces have been allotted with only one entry/exit door.

BLOCK DIAGRAM:



COMPONENT LIST:

- Arduino Nano
- IR Module X 2
- 7 Segment Display
- Servo Motor
- Resistor 220 X 8
- LED
- DC Socket
- DC Pin
- 9V Battery
- Female Header 15 Pin X 2
- Female Header 5 Pin X 2
- Female Header 3 Pin X 2
- Male Header 3 Pin X 1
- Male to Female Jumper Wire X 6
- Switch
- PCB

APPLICATIONS:

The parking lot gate controller using Arduino, an IR sensor, a 7-segment display, and a servo motor can be used to automate and manage the entry and exit of vehicles in a parking lot. Here are some of the applications and benefits of such a system:

1. **Vehicle Detection:** The IR sensor detects the presence of a vehicle approaching the gate. This allows for automatic opening and closing of the gate without the need for manual intervention.
2. **Enhanced Security:** By automating the gate control, unauthorized access to the parking lot can be prevented. Only vehicles detected by the IR sensor will be granted entry.
3. **Traffic Management:** The gate controller helps in managing the flow of vehicles, ensuring smooth traffic movement in and out of the parking lot.
4. **Space Availability Display:** The 7-segment display can be utilized to show the number of available parking spaces in real-time. This helps drivers quickly identify vacant spots, reducing the time taken to find parking.
5. **Time and Attendance Tracking:** The gate controller can be integrated with a system to record entry and exit times of vehicles. This information can be used for tracking vehicle movements and managing parking fees.
6. **Improved Efficiency:** By automating gate operations, the parking lot management becomes more efficient, reducing the need for manual labor and streamlining the overall process.
7. **User Convenience:** Drivers can conveniently enter and exit the parking lot without the hassle of manual ticketing or gate opening, enhancing the user experience.
8. **Remote Monitoring and Control:** The gate controller can be connected to a network or cloud-based system, allowing remote monitoring and control of the parking lot gate. This enables centralized management and access control from a control room or mobile device.
9. **Integration with Payment Systems:** The gate controller can be integrated with payment systems, such as RFID or mobile payment, for seamless and cashless transactions.

Overall, the parking lot gate controller using Arduino, an IR sensor, a 7-segment display, and a servo motor offers numerous advantages, including enhanced security, improved efficiency, and a better parking experience for users. It provides a cost-effective solution for managing parking lots effectively while incorporating automation and technology.