



# UNIVERSITY OF SRI JAYAWARDENE PURA

## FACULTY OF TECHNOLOGY

### Digital Control Systems Technology

# Car Parking System - Group 24

## Introduction

This system is designed to enhance security and efficiency in vehicle management within an organization. It accurately identifies corporate vehicles and prevents unauthorized access. Additionally, it monitors the number of vehicles in the yard and Show what parking slot is available using LCD display . Each corporate vehicle is identified using a dedicated identification card (RFID sencer)

## problem

  
**Lack of Security** – A regular parking system cannot prevent unauthorized vehicles from entering. Only automated car parking system ensures that only registered corporate vehicles gain access.

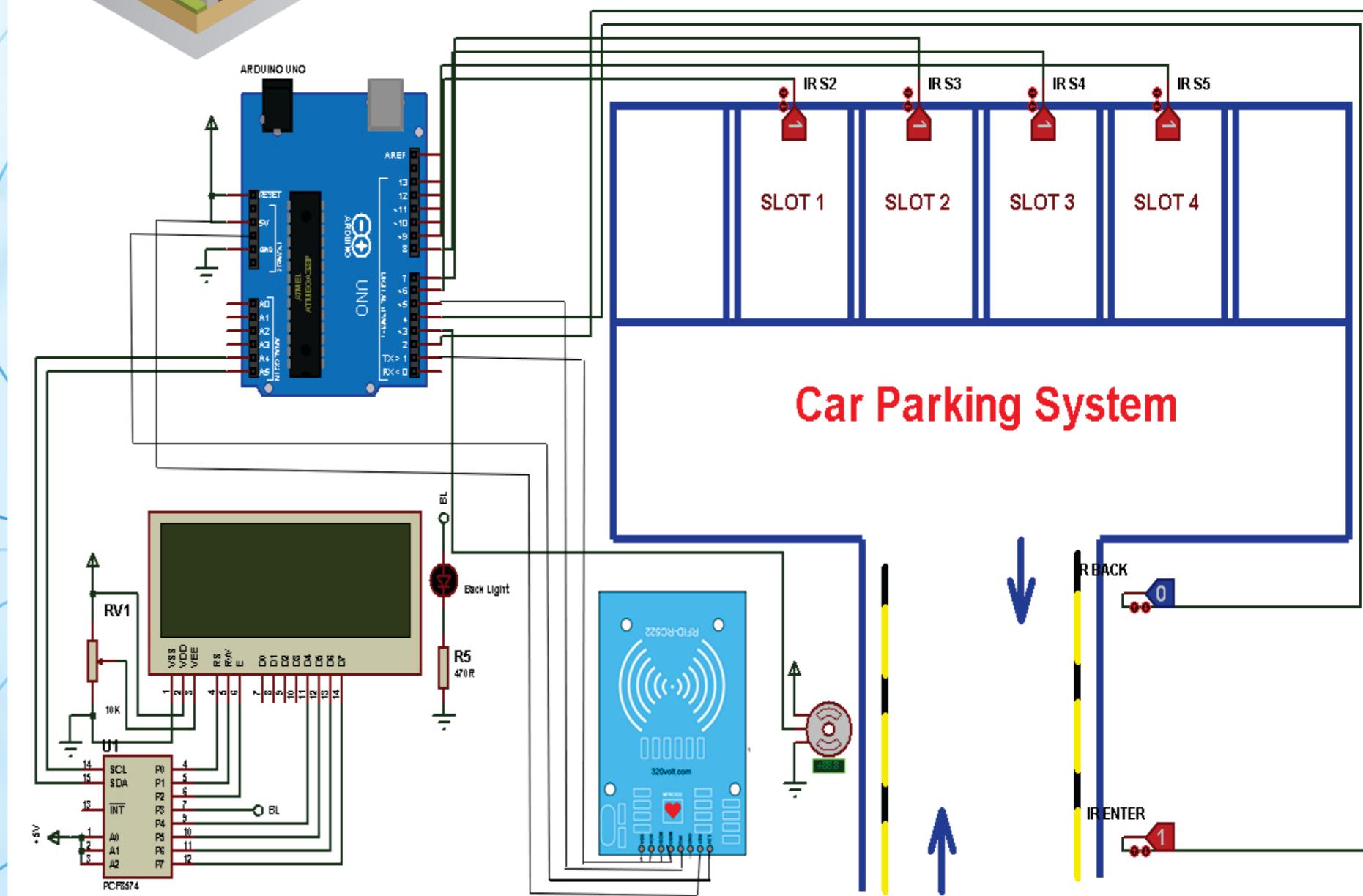
**No Real-Time Monitoring** – A simple system does not track the number of vehicles in the yard or what parking slot are available.

**Energy Waste** – Standard parking systems wasting energy. Because driver need to more time to find the available paring slot.

**No Automated Identification** – Basic systems may rely on manual checks or ticketing It's take time, while this kind of system automatically identifies vehicles using RFID cards, improving efficiency.



## Circuit Diagram



# Tools & Technologies

## 01 Arduino Uno Board

The Arduino Uno board is used as the main microcontroller to automate and control various components.



## 02. IR Sensor

Tracks vehicles in real-time by counting the number of vehicles entering and leaving the parking yard.



## 03. RFID sensor

The RFID sensor is used for vehicle identification and access control. Its main functions are Vehicle Authentication. Reads RFID tags attached to authorized vehicles.



## 04. The servo motor

Servo motor is used for automated gate control in the vehicle identification system. Its main functions include the Opening and Closing the Gate.



## 05. LED Display

This LED display shows which parking slots are available and which are occupied, allowing drivers to easily find a parking spot without wasting time and energy.



# Advantages and Features Explanation

- **Enhanced Security** – Prevents unauthorized vehicles from entering the park.
- **Real-Time Monitoring** – Tracks the number of vehicles in the parking yard, and if the yard is full, no vehicle can enter until a parking spot becomes available.
- **Automated Access Control** – Uses identification cards (RFID card) for authorize vehicle identification.
- **Convenience** – Reduces manual work for security personnel and vehicle owners.
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- **Efficient Space Management** – Helps optimize parking availability by tracking occupied and free spots
- **Faster Entry & Exit** – Eliminates delays caused by manual verification.

## Future Work

- **Vehicle Identification System** – Uses RFID cards to recognize corporate vehicles.
- **Automated Gate Control** – Opens only for authorized vehicles when parking slot is available.
- **Vehicle Counting Mechanism** – Tracks the number of parked vehicles using IR sensor.
- **Monitoring LED Display** – Displays live data for details of parking slot (available or not).

## Group Members

