



NORTH SOUTH UNIVERSITY

Center of Excellence in Higher Education

The first private university in Bangladesh

Project Report

Automated Car Parking System

Group Members

Serial	Name	ID	Course	Section
01	Minhazul Hoque Ashik	141-0667-042	CSE-331L	06
02	Abdullah Mahmood	133-0639-042	CSE-331L	06
03	Shamsun Nahar Safa	141-2017-042	CSE-331L	06

Table of Content

Introduction	2
Description	2
Benefits	3
Working Process	4
Circuit Diagram	5
Circuit Diagram (Cont.)	6
Equipment list and cost	7
Project Pictures	8

Introduction

Parking automobiles in parking spaces, manual procedure is being used, which in most cases is unplanned. Lack of discipline due to this can cause people to park their cars anywhere they want to, leading to a mess as people fail to follow the required cue most of the time. As a result, traffic occurs. While parking in and retrieving cars, they can face small or big accidents due to this mismanagement. Traffic jam is an issue here as it kills our precious time. Due to this chaos in parking our valuable time is wasted. It harms the students, employees and emergency patients to a great extent.

Description

The Automated Car Parking system can be either installed outdoor or underground. In this system the driver will know which and how many parking spaces are empty/filled up on the display which is placed in the entrance. Cars will be allowed to enter the parking unless it's filled. As the parking is full, the entrance barrier will not open for allowing further car entering the parking. On the display it will show "FULL" when there are no more parking spaces available. It will only open when there will be spaces available after any car leaves.

Benefits

The benefits of automated car parking systems are:

1. Reducing traffic jam:

Since the driver already knows whether parking is available or not and which parking space is empty there is no need for the driver to wait and cause useless traffic.

2. Time saving:

In manual parking system, it is too hard to find out the empty space for parking cars, so this system is very much time consuming.

3. Safety in the parking:

Here no people can enter in the parking so there is no chance of snatching, robbery, stealing, sometimes in silent parking space people are being harassed. This system prevents these problems.

4. Operating cost saving:

Over a period of time, the parking charge collecting cost is reduced. There is reduction in the man-hour required as the system does not require any human interaction for the money transaction.

Working Process

- The barrier is regulated by a servo motor. The barrier will open when a car is leaving/entering. No entrance is allowed if there is no space available.
- There are total eight IR sensors. One is just beside the entrance of the parking area and the other is in the servo box barrier. These IR senses the cars for them to enter/exit the parking.
- Remaining six sensors are placed in front of the car park position for counting how many cars are there in the parking area.
- The in and out going IR sensors detect the number of cars entered into the parking which will be recorded in Arduino.
- This will keep a record of how many cars have entered and how many empty spaces are left.
- As soon as the parking is full, the barrier closes and it shows a "FULL" message in the LCD display, indicating that the parking is full.

Circuit Diagram

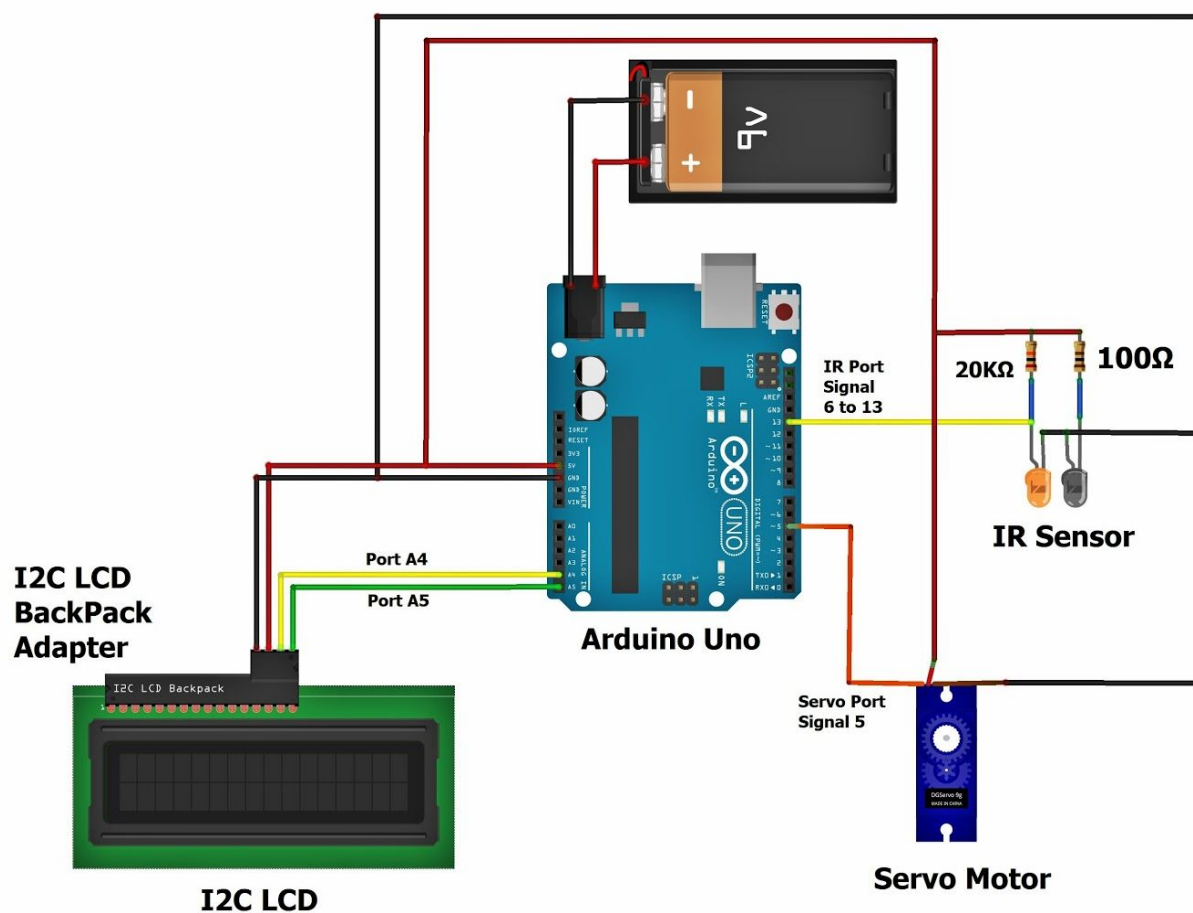


Fig: Circuit Diagram

Circuit Diagram (Cont.)

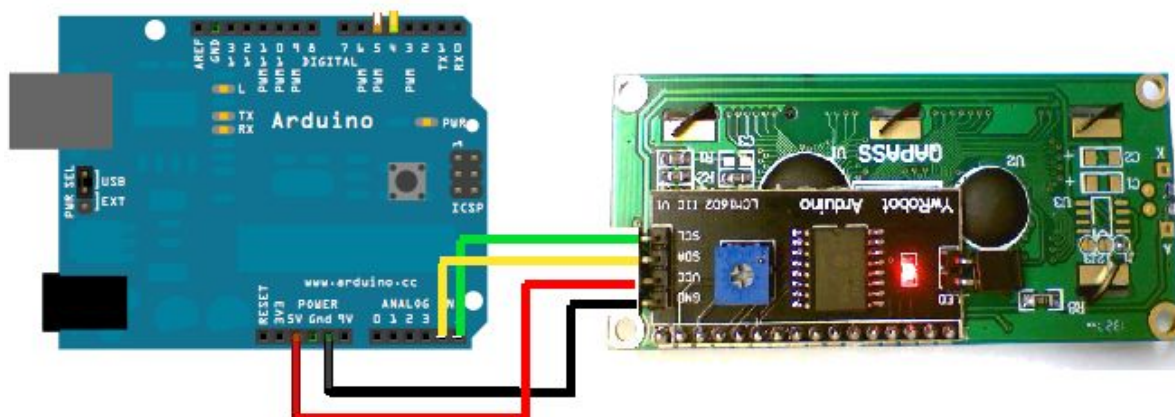
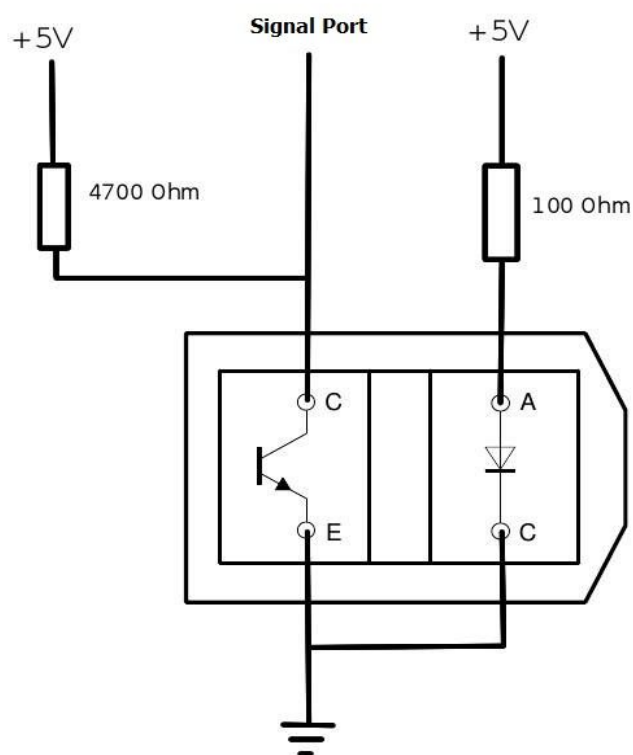


Fig: I2C LCD Circuit Diagram



TCRT5000

Fig: IR Sensor Circuit Diagram

Equipment list and cost

Serial	Components Name	Amount	Each Costs	Total Cost
1.	Arduino Uno	x1	500 BDT	500 BDT
2.	Infrared Sensor	x8	25 BDT	200 BDT
3.	I2C LCD Display	x1	400 BDT	400 BDT
4.	Wires	2 Rolls	100 BDT	200 BDT
5.	Servo Motor SG90	x1	220 BDT	220 BDT
6.	Solder Iron	x1	480 BDT	480 BDT
7.	Glue Gun	x1	250 BDT	250 BDT
8.	Hardboard	x1	300 BDT	300 BDT
9.	PVC Paper	x1	200 BDT	200 BDT
10.	9V Battery	x1	40 BDT	40 BDT
11.	Battery Clip	x1	15 BDT	15 BDT
11.	Channels	x2	80 BDT	160 BDT
12.	Resistors	x20	0.5 BDT	10 BDT
13.	Cutting plus	x1	200 BDT	200 BDT
11.	Miscellaneous	---	---	500 BDT
Total Cost				3675/- BDT

Project Pictures

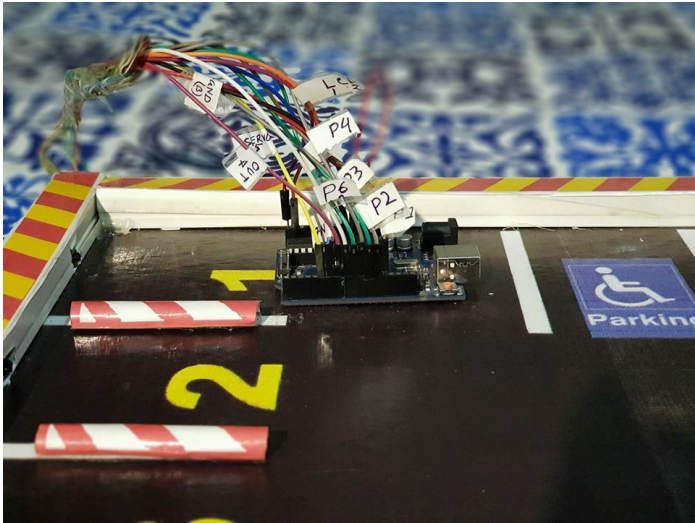


Fig 1: Arduino Pinouts With tags

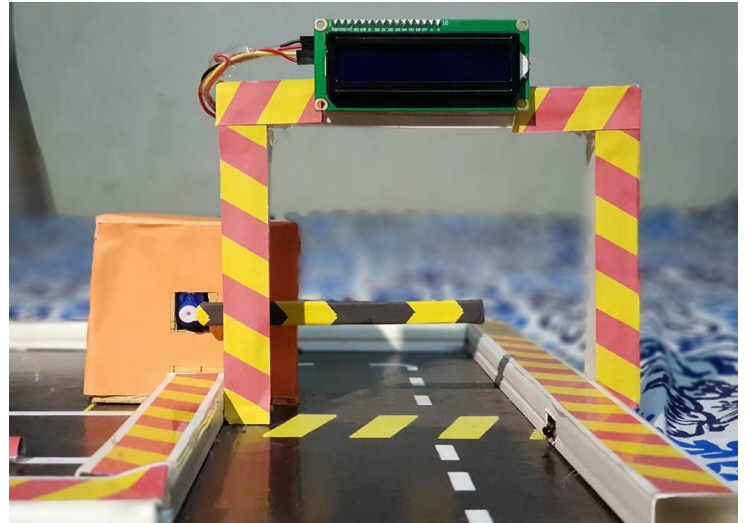


Fig 2: LCD & Servo Motor Barrier



Fig 3: IR Sensor



Fig 4: Full Project