Microcontroller Based Automatic Car Parking System

By ProEmbSys Technologies, | August 15, 2013   15 Comments

Microcontroller Based Automatic Car Parking System :

Abstract :

Automatic car parking system is very good substitute for managing car parking area. Since in modern world, where space has become a very big problem and in the era of miniaturization it's become a very crucial necessity to avoid the wastage of space in modern, big companies and apartments etc. In space where more than 100 cars need to be parked, it's a very difficult task to do and also to reduce the wastage of area, this system can be used. This Automatic Car Parking enables the parking of vehicles-floor after floor and thus reducing the space used. Here any number of cars can be park according to requirement. These makes the systems modernized and even a space-saving one. Automatic Car Parking System here we work on the thought of display the number of parking available at parking site. In this when you at parking site , you see the number of parking slots and available parking slots at the entry gate. If parking is available, the gate is open for few seconds and that particular slot is marked as unavailable. When you exit from this same process is followed and particular slot is made available for next customer.

Functional Description:

This project can be implemented using the following blocks. For easier understanding of the blocks are mentioned below:

Proximity Sensors: These are placed inside the parking slot to detect the presence of the vehicle in slot, which will be used to process when a new vehicle requests parking slot which also consists of IR diodes and phototransistors.

IR Light Emitter: It consists of a pair of Red IR Lights that continuously emit long distance directed IR lights. This light falls on a pair of LDRs.

IR Light Receiver: It consists of a pair of LDR (Light Dependent Resistance). The LDR consists of special materials whose resistance is dependent on the amount of the light falling on it. This means as long as the IR light is falling on it its resistance is low nearly 1k. As soon as this light is obstructed the resistance of this sensors increases (to nearly 8k) indicating some thing's presence between the emitter receiver pair.

Comparator Block: It consists of a comparator circuit made out of op-amp LM358. Its task is to convert the resistance state of LDR into voltage state understood by microcontroller.
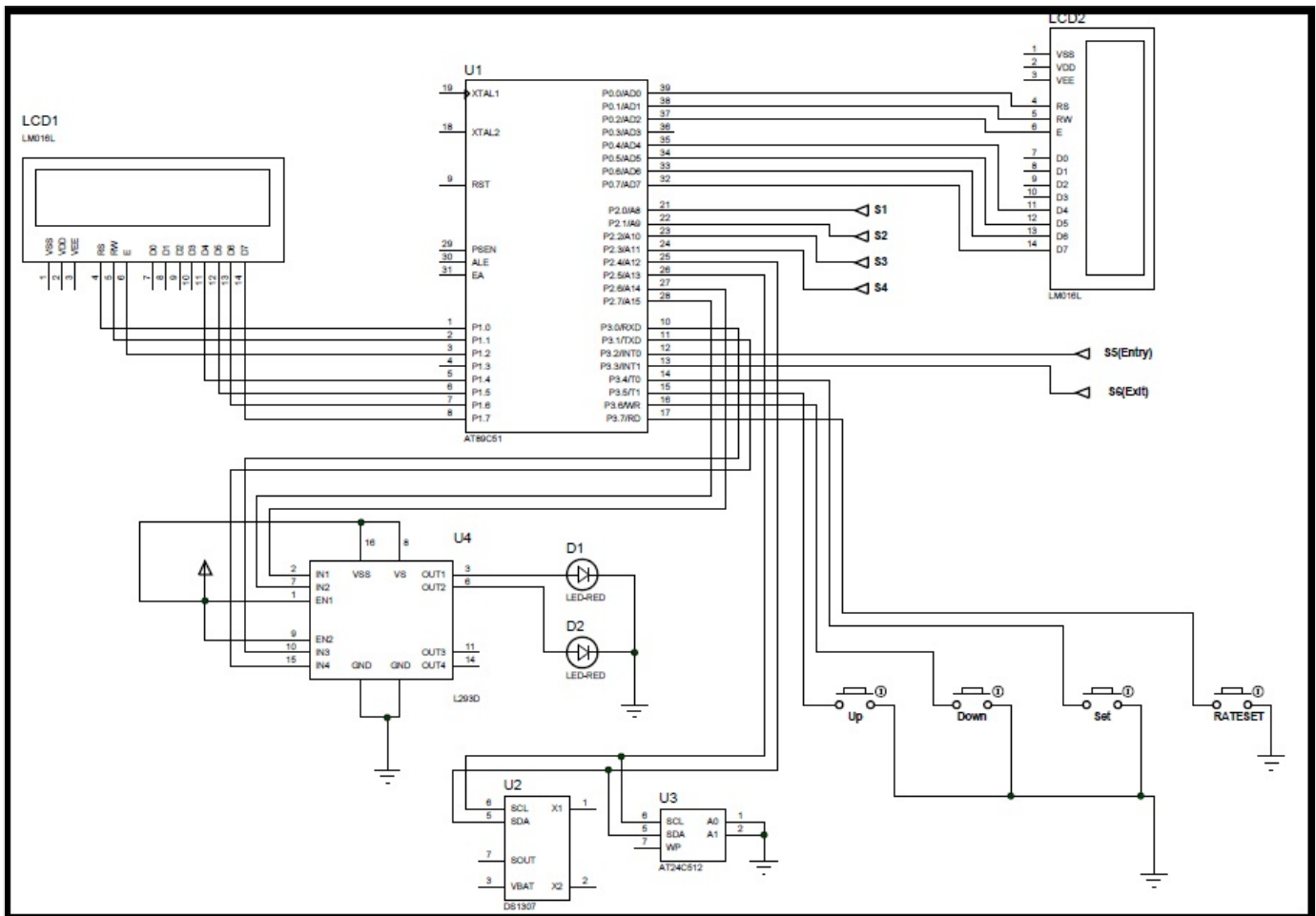
Micro controller Block: Micro-controller takes the data from the comparator block. Based on this data it interprets the number of people that have crossed from one side to the other and vice versa. To build this system we will be using 8051 variant.

Display Unit: It is 16*2 LCD that shows the number of people in the room at any particular instant. It also shows which appliance is being used and at what power they are being used.

Appliances Block: This block consists of outlets for DC motor. DC Motor is ON in one specific direction for 10 sec. and then ON in opposite direction for same 10 sec time interval for open and closed the gate.
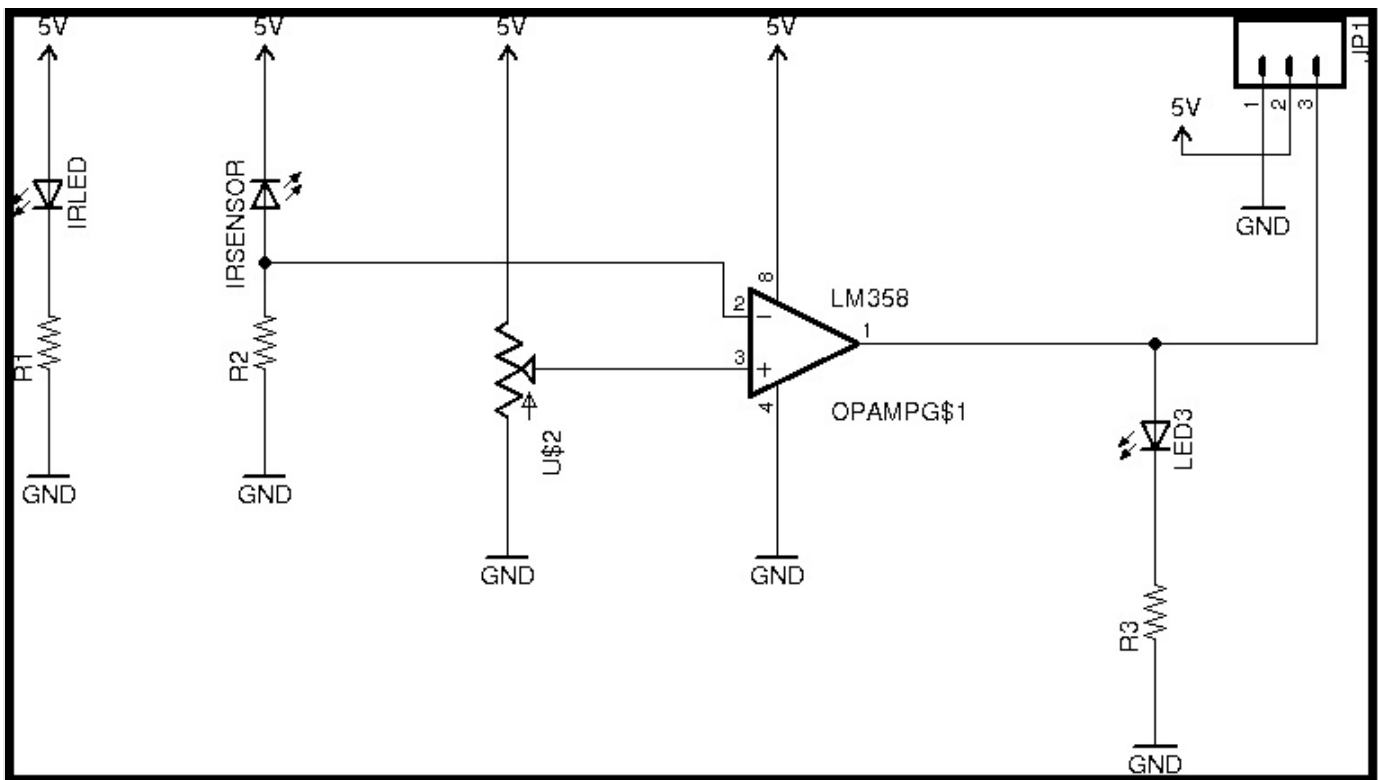
Power Supply Block: This consist a Step down Transformer which converts 220V AC to 15V AC.

Circuit Diagram :

In above Circuit Diagram,S1,S2,S3,S4 are the IR modules which are connected in slots of Car parking System & S4,S5 IR modules are used for Entry and Exit gate.

IR module Transmitter and Receiver Circuit Diagram given below:

If any query regarding this project please comment below.We will revert you back with 24 hours.

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15 thoughts on "Microcontroller Based Automatic Car Parking System"

Arwinder singh
February 7, 2014

please give the program for 8051ucontroller in embedde c language.I will be very thankful to you

swapnil
March 18, 2016

please give the program for 8051ucontroller in embedde c language.I will be very thankful to you.

Mohit
July 26, 2014

Sir

You are requested to send a project synopsys on AUTOMATIC CAR PARKING SYSTEM using PIC16F877A in a well meticulous way....The following devices are used:

1.Stepper motor

2. Two circuits for incoming & outgoing cars(using IR SENSORS & photodiodes)in both the circuits.

3.LCD(for showing incoming & outgoing cars)

4.bUZZER(parking capacity is set to be 6. If more than 6 cars enter then buzzer beeps)

PLEASE send a beautiful PPT on same.....as I've very less time......PLEASE try to understand......I've an INTERNAL internship viva................Send as soon as possible.

Regards
Mohit

ProEmbSys Technologies, [Post author]
October 27, 2014

Mohit,

You can make use of this post to prepare your synopsis. Almost everything is same except micro controller.

karthik

July 26, 2015

Please give the project overview for automatic parking using microcontroller

ProEmbSys Technologies, Post author

July 27, 2015

Hi Karthik,

We have given good amount of information regarding this project,
Do you have specific question?

adiey

December 1, 2015

sir,can you help me. how to programming the stepper motor using assembler pic 16F877A..TQ SIR

KAPIL DEV

January 21, 2016

SIR IF YOU HAVE ANY PROJECTS FOR AGRICULTURE BY BASED ON SMS

ProEmbSys Technologies, Post author

January 23, 2016

Could you please brief your idea ?

LavanyaAB

January 21, 2016

Sir,all above description is about parking slots like how many parking slots are free?and how many or not? but i want to know how can i construct automatic lift to park car?and what are the hardware requirments?

ProEmbSys Technologies, Post author
January 23, 2016

You have to implement multi level parking slots and make a lift and direction mechanism to guide car to desired parking slot.

Thanks

VINAYAKA BC
February 16, 2016

i am looking for car parking management with display, which displays number of vacant slots in parking bay...

ProEmbSys Technologies, Post author
March 16, 2016

You can achieve it by counting empty slots and displaying them.

Ritwik Samanta
February 25, 2016

Please give me all the components name with value which are used in this project.
Thank you

swapnil
March 18, 2016

i am looking for car parking management with display, which displays number of vacant slots in parking bay...so please can you give me circuit diagram?