GURUNANAK INSTITUTE OF TECHNOLOGY

RAILWAY LEVEL CROSSING GATE CONTROL BY ANDROID APPLICATION

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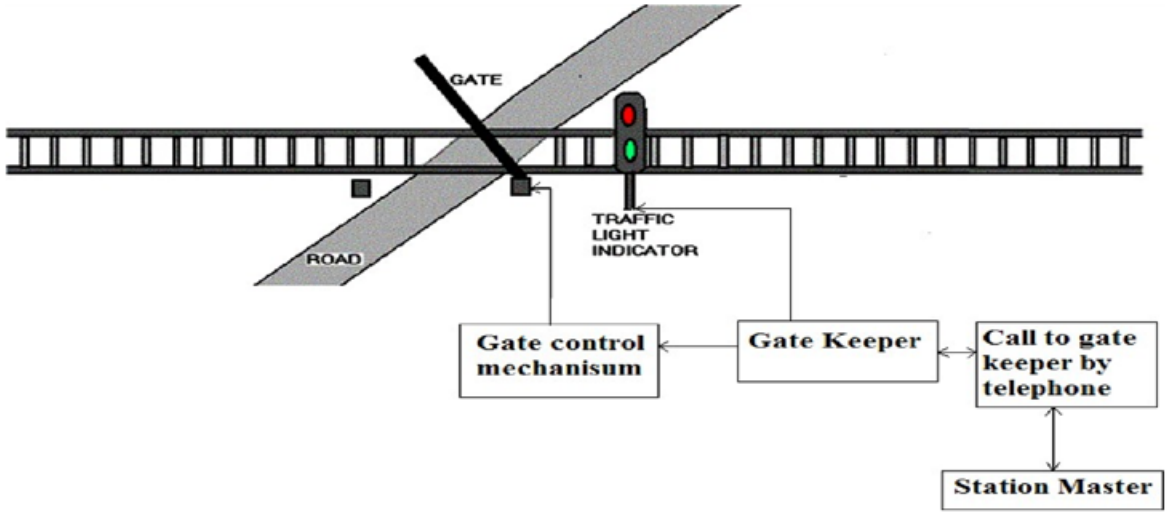
ABSTRACT:

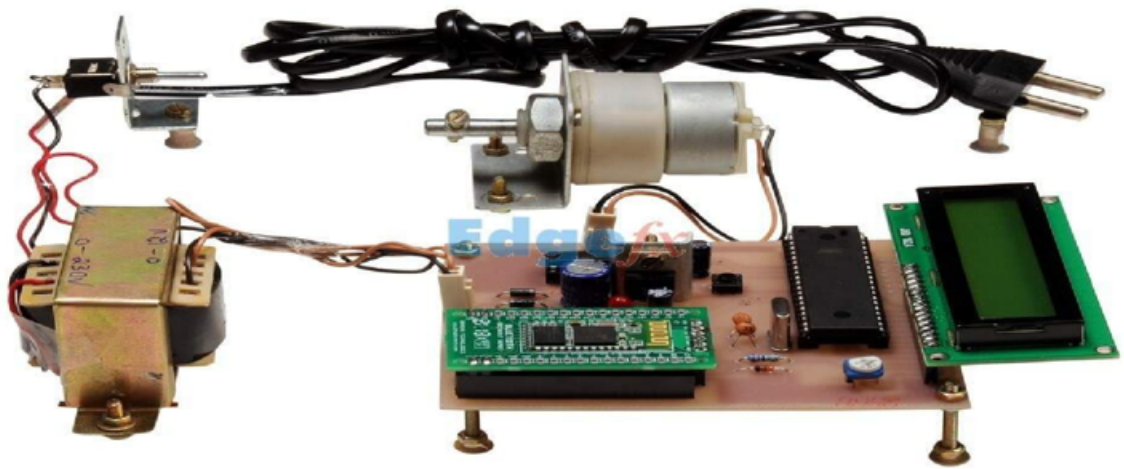
- The Project is designed to achieve control over the railway level crossing gate through Android Application by the station master. Opening and closing of railway level crossing gate involves manpower, which could be often erroneous leading to accidents. The proposed system rules out the need of any human involvement at the railway level crossing. This system involves opening and closing of the level crossing gate with help of an Android Application Device.

THE PRESENT SCENARIO:



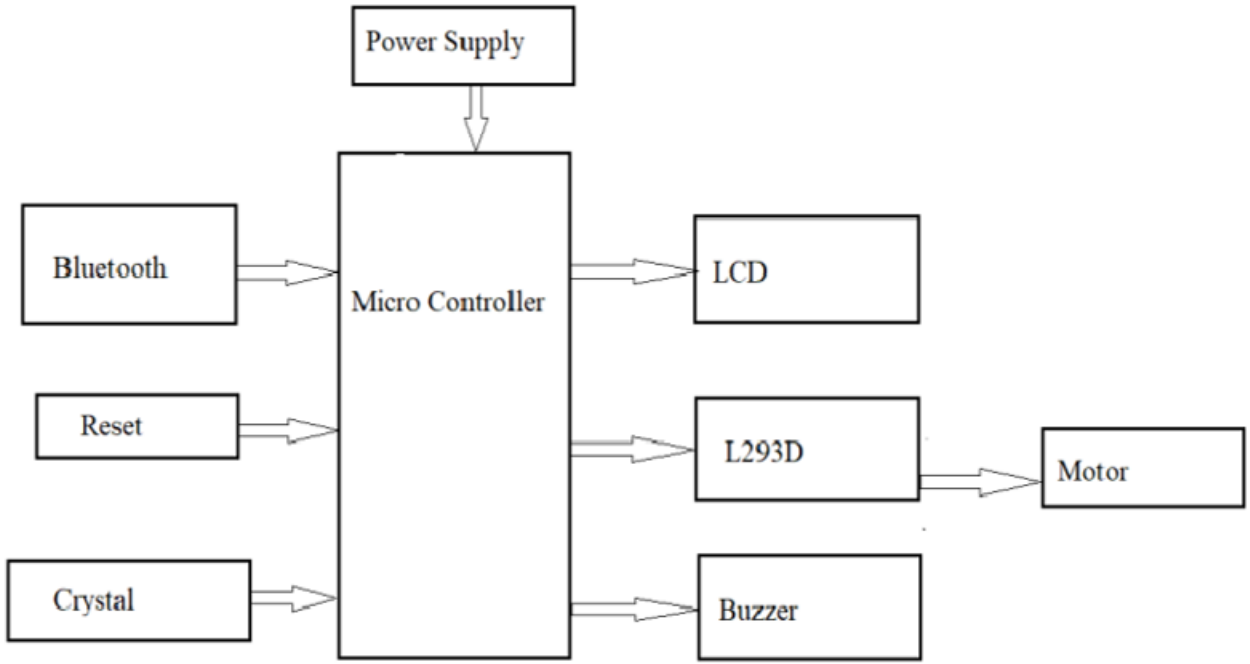
- The opening and closing of railway gate is traditionally operated through manual lever pulling method.
- Rail road related accidents are more dangerous than other transportation accidents in terms of severity and death rate.

PROPOSED SYSTEM:



- In this project a smartphone mobile is used which contain Android app connect to railway. This Bluetooth module sends data to microcontroller. This signal goes to DC motor. It works according to microcontroller. Whenever pin is set gate remains close and when pin reset becomes active, gate remains open.

BLOCK DIAGRAM:



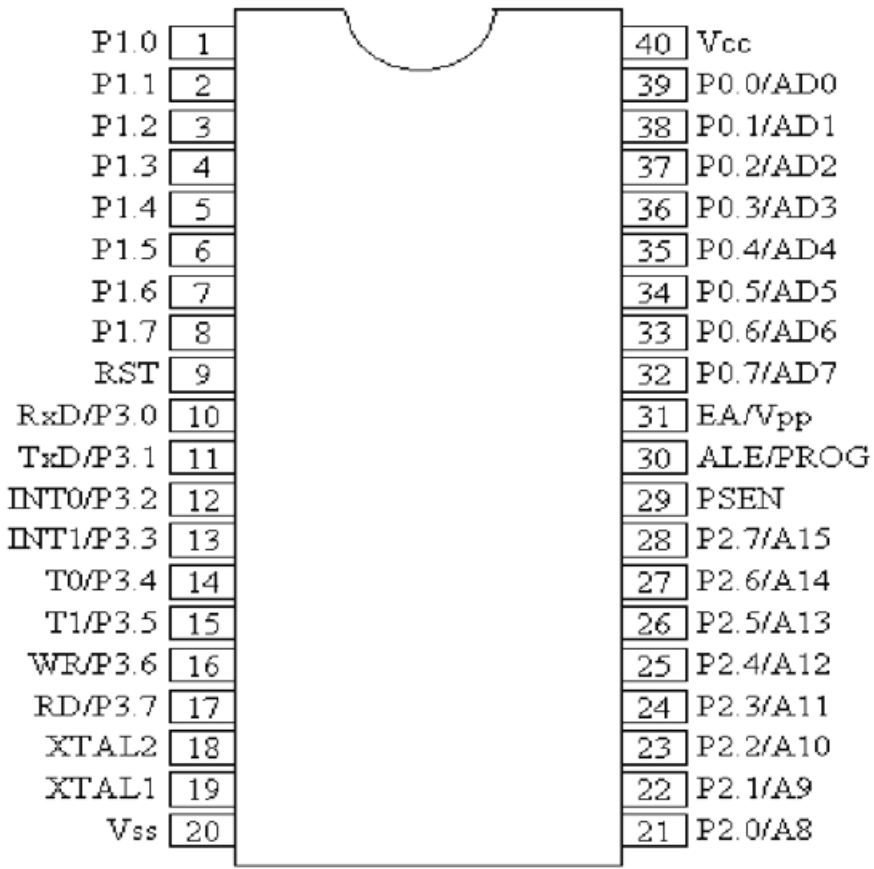
HARDWARE COMPONENTS:

- AT89S52 Microcontroller
- Bluetooth (HC-05)
- Transformer (12V)
- Voltage Regulator (7805 IC)
- 16X2 LCD (HD44780)
- Driver Circuit (L293D)
- DC Motor(12v,0.60amp,100rpm)
- Buzzer

AT89S52 MICROCONTROLLER:

- The Atmel AT89S52 is an 8052 based Full Static CMOS controller with Three-Level Program Memory Lock, 3 Timers/Counters, 8 Interrupts Sources, Watchdog Timer, 2 DPTRs,256 Bytes On-chip RAM.

PIN DIAGRAM OF 8052:

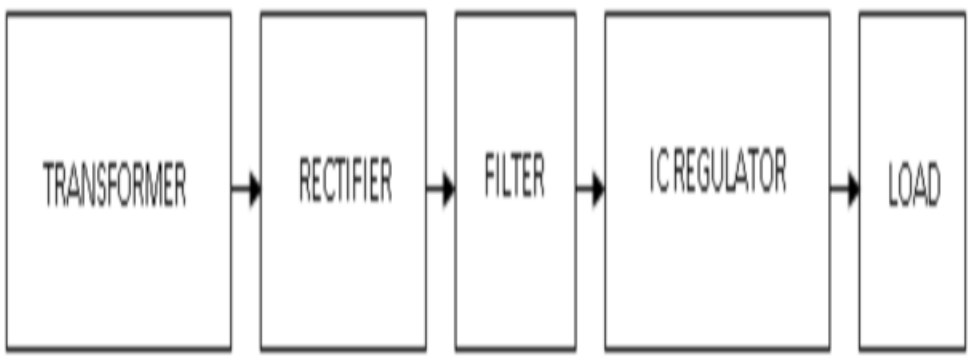


BLUETOOTH HC-05:

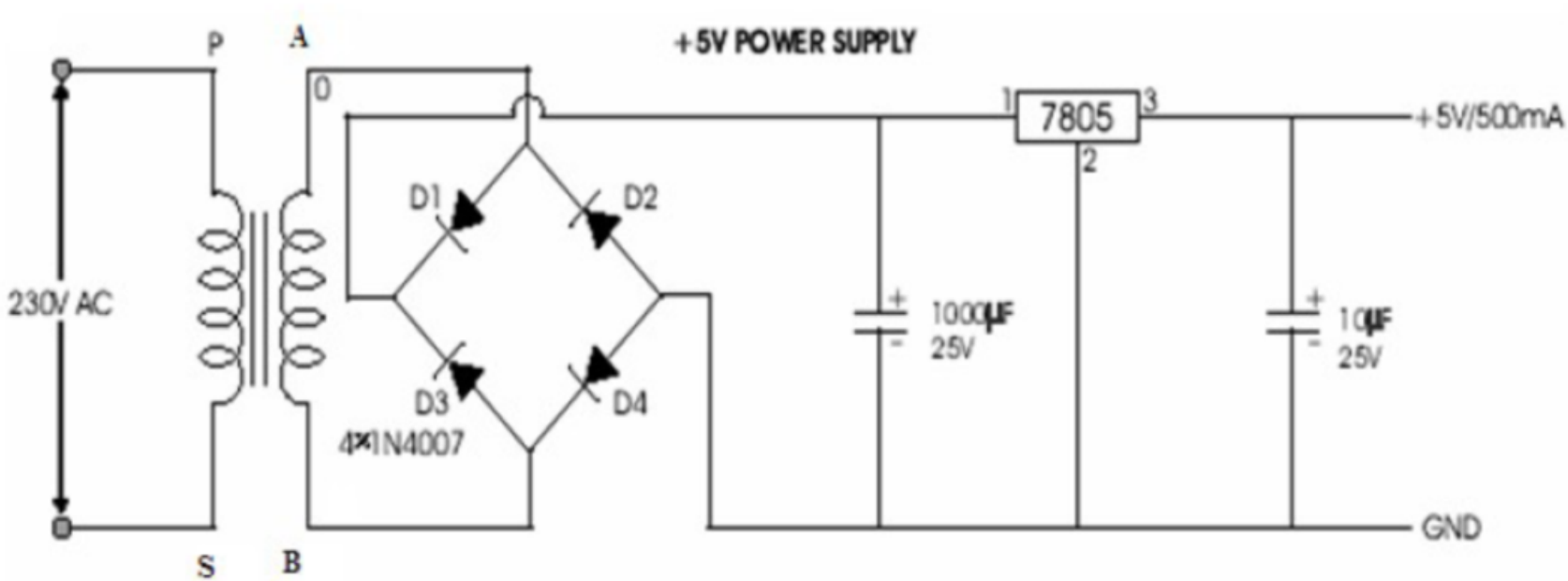
- Bluetooth is a wireless technology standard for exchanging data over short distances from fixed and mobile devices and building personal area networks.

POWER SUPPLY:

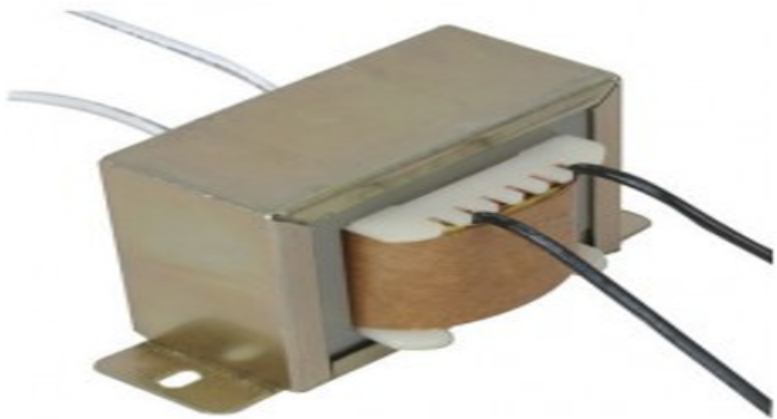
- The power supply section is the section which provide +5V for the components to work. IC LM7805 is used for providing a constant power of +5V.
- A diode rectifier that provides a full-wave rectified voltage that is initially filtered by a simple capacitor filter to produce a dc voltage.



CIRCUIT DIAGRAM OF POWER SUPPLY:

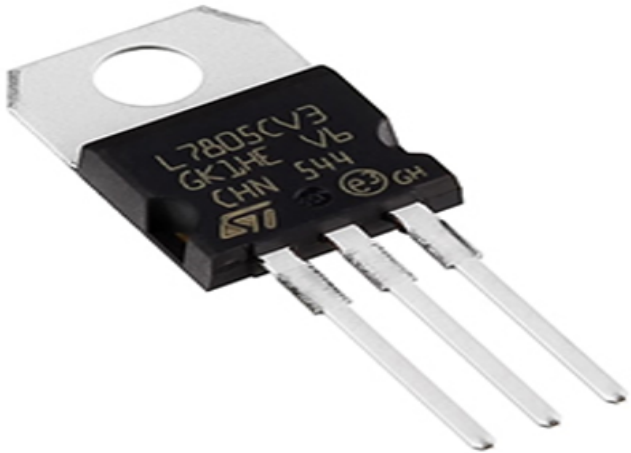


TRANSFORMER:



- Transformers convert AC electricity from one voltage to another with little loss of power. Transformers work only with AC and this is one of the reasons which means electricity is AC.

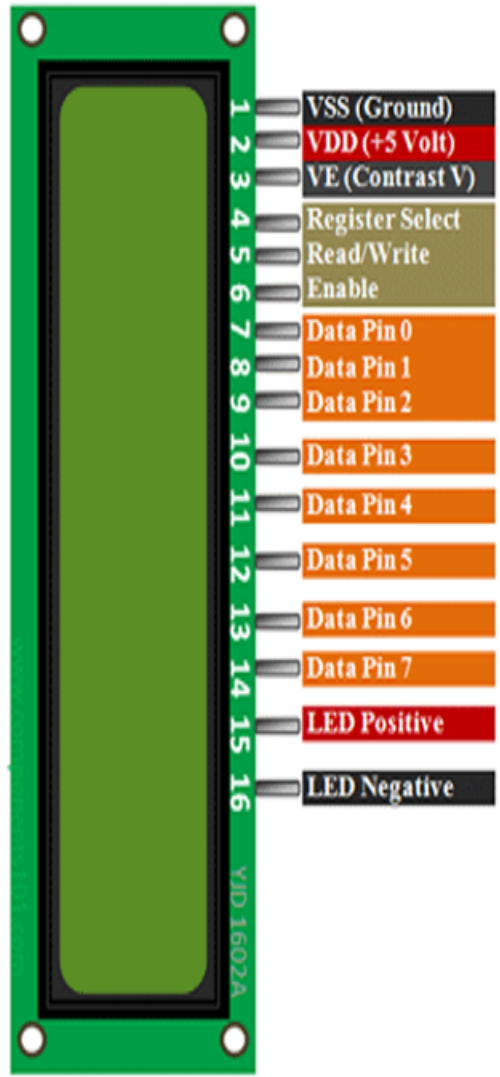
VOLTAGE REGULATOR (7805 IC):



- 7805 is a three terminal linear voltage regulator IC with a fixed output voltage of 5V which is useful in a wide range of applications.

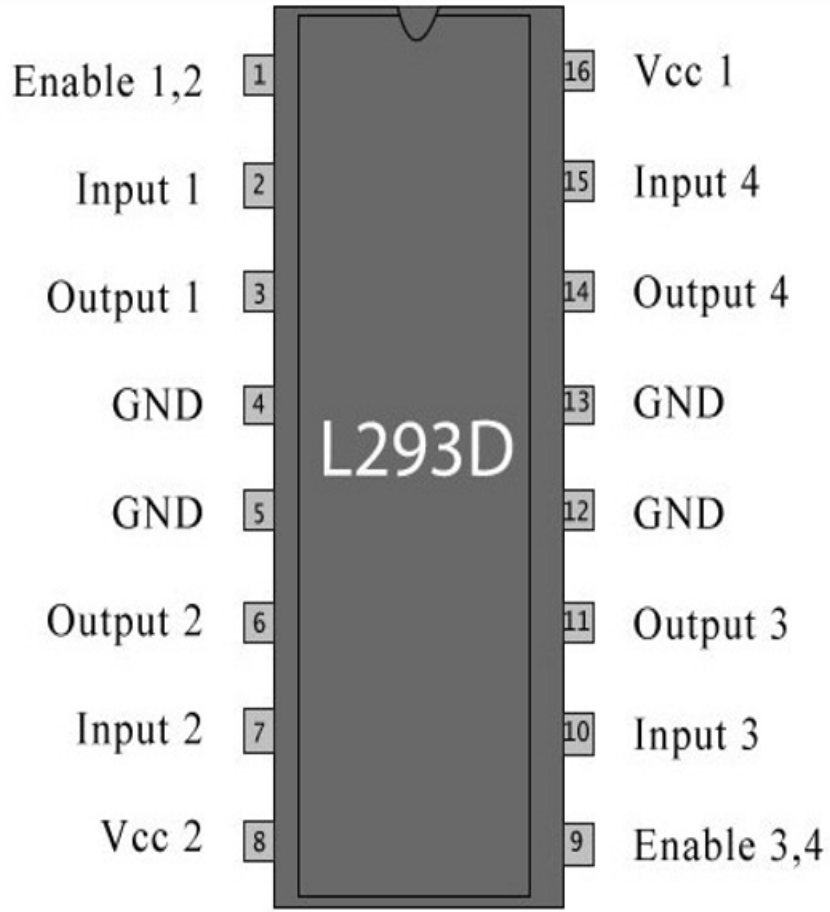
LIQUID CRYSTAL DISPLAY:

- LCD screen is an electronic display module and find a wide range of applications
- A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits.



DRIVER CIRCUIT (L293D):

- L293D IC generally comes as a standard 16-pin DIP (dual-in line package). This motor driver IC can simultaneously control two small motors in either direction; forward and reverse with just 4 microcontroller pins.



DC MOTOR(12v,0.60amp,100rpm):

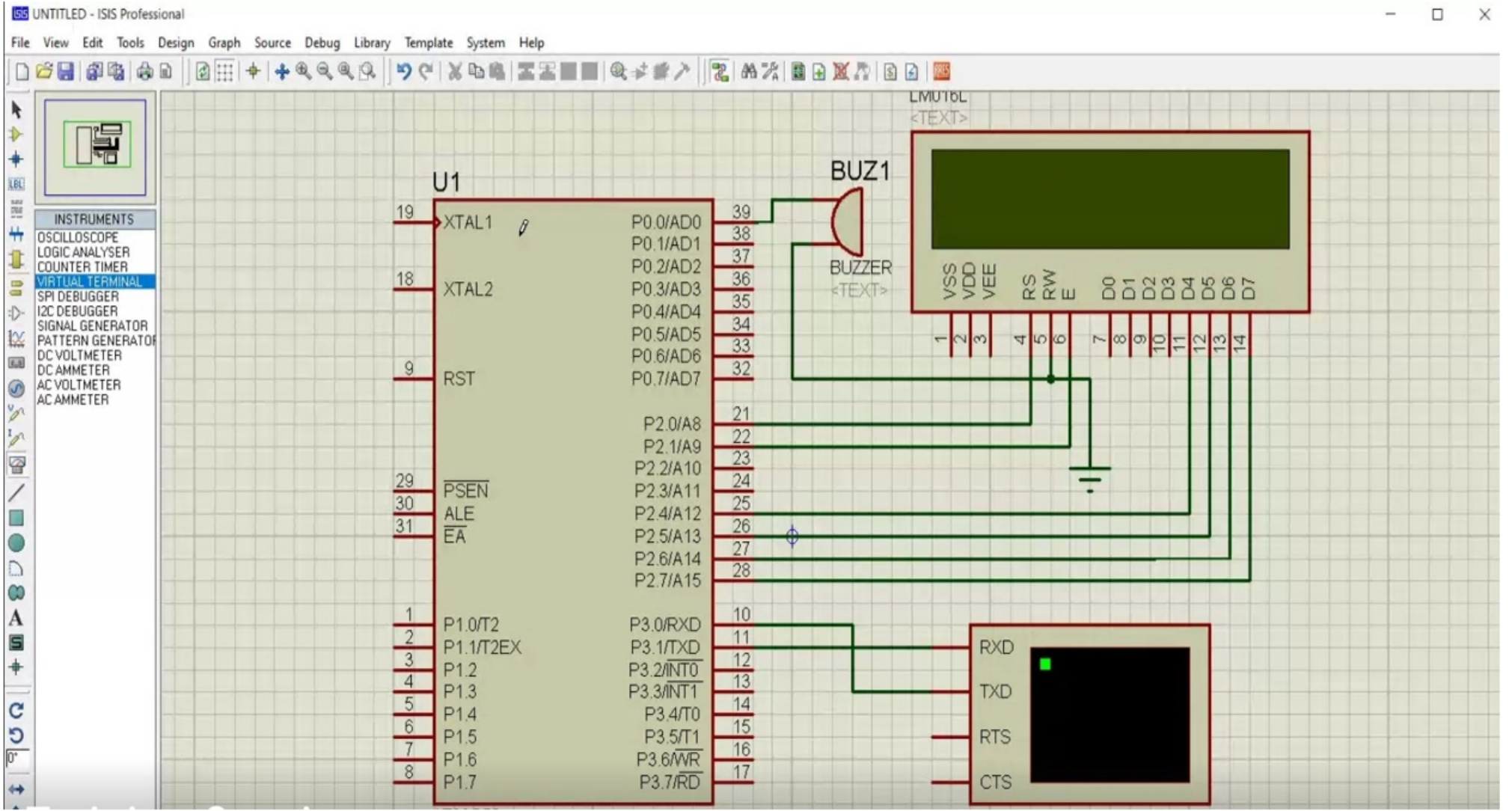
- A DC motor consists of two parts, a "Stator" which is the stationary part and a "Rotor" which is the rotating part.

BUZZER:

- A buzzer or beeper is a signaling device, usually electronic, typically used in automobiles, house hold appliances such as a microwave oven, or game shows.

SOFTWARE COMPONENTS:

- Keil Compiler
- Embedded C


UNTITLED - ISIS Professional
File View Edit Tools Design Graph Source Debug Library Template System Help
INSTRUMENTS
OSCILLOSCOPE
LOGIC ANALYSER
COUNTER TIMER
VIRTUAL TERMINAL
SPI DEBUGGER
I2C DEBUGGER
SIGNAL GENERATOR
PATTERN GENERATOR
DC VOLTMETER
DC AMMETER
AC VOLTMETER
AC AMMETER
U1
XTAL1
XTAL2
RST
PSEN
ALE
EA
P1.0/T2
P1.1/T2EX
P1.2
P1.3
P1.4
P1.5
P1.6
P1.7
P0.0/AD0
P0.1/AD1
P0.2/AD2
P0.3/AD3
P0.4/AD4
P0.5/AD5
P0.6/AD6
P0.7/AD7
P2.0/A8
P2.1/A9
P2.2/A10
P2.3/A11
P2.4/A12
P2.5/A13
P2.6/A14
P2.7/A15
P3.0/RXD
P3.1/TXD
P3.2/INT0
P3.3/INT1
P3.4/T0
P3.5/T1
P3.6/WR
P3.7/RD
BUZ1
BUZZER
<TEXT>
LMU16L
<TEXT>
VSS VDD VEE RS RW E D0 D1 D2 D3 D4 D5 D6 D7
RXD
TXD
RTS
CTS

CONCLUSION:

- Avoid manual errors and provides ultimate safety to road users.
- Gatekeepers are not necessary and Automatic operation of the gate through the motor.
- The mechanism works on a simple principle.

Thank you