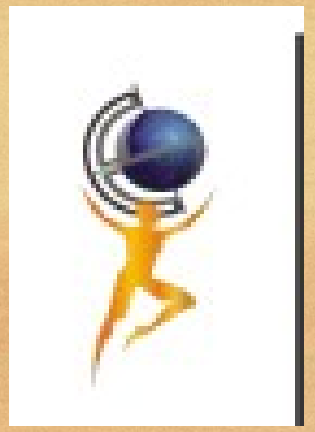

Excelssior Education Society's
K.C. College of Engineering & Management Studies & Research

TRAFFIC SIGNAL CONTROL USING ATMEGA32

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CONTEXT

- INTRODUCTION
- COMPONENT DISCRIPTION
- CIRCUIT DIAGRAM
- CIRCUIT DISCRIPTION
- WORKING
- ADVANTAGES & DISADVANTAGES
- CONCLUSION
- FUTURE SCOPE
- REFERENCE

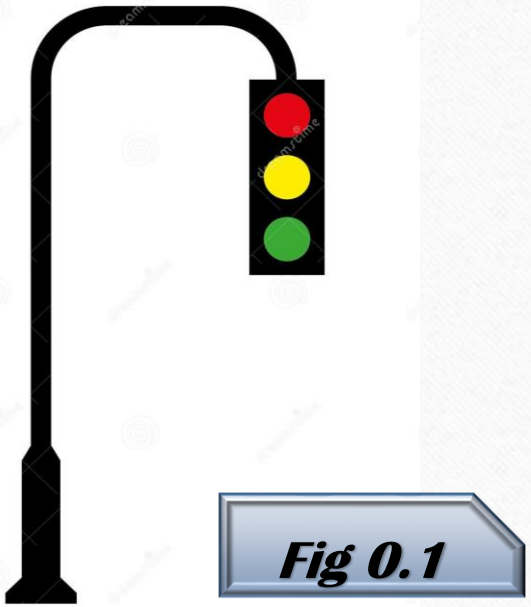


Fig 0.1

INTRODUCTION

- **<u>Problem Statement</u> : The purpose of this project is to develop a series of systems model for traffic passing through a 4-way intersection, controlled by traffic light.**
- Atmega32 Based Traffic Light Project Prototype Using 7 Segment Display(Using Proteus Simulation).
- In this project we are going to make Atmega32 based traffic light project. Here we have taken one 7 segment and 3 LEDs to denote the signals of traffic light.

COMPONENT DISCRIPTION

Fig 2.1

- **Atmega32 Microcontroller** : It is a low power CMOS 8-bit microcontroller based on the AVR enhanced RISC architecture. (fig 2.1)

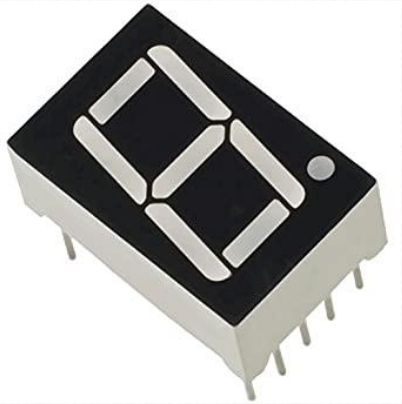


Fig 2.2

- **Seven Segment Display:** For count down of numbers. (fig 2.2)

Continue…

Fig 2.3

- **Three LEDs**: As for making prototype of traffic light we are here using 3 LEDs of different color, red color to stop the vehicle, yellow color for warning and green color to move on. (fig 2.3)

CIRCUIT DIAGRAM

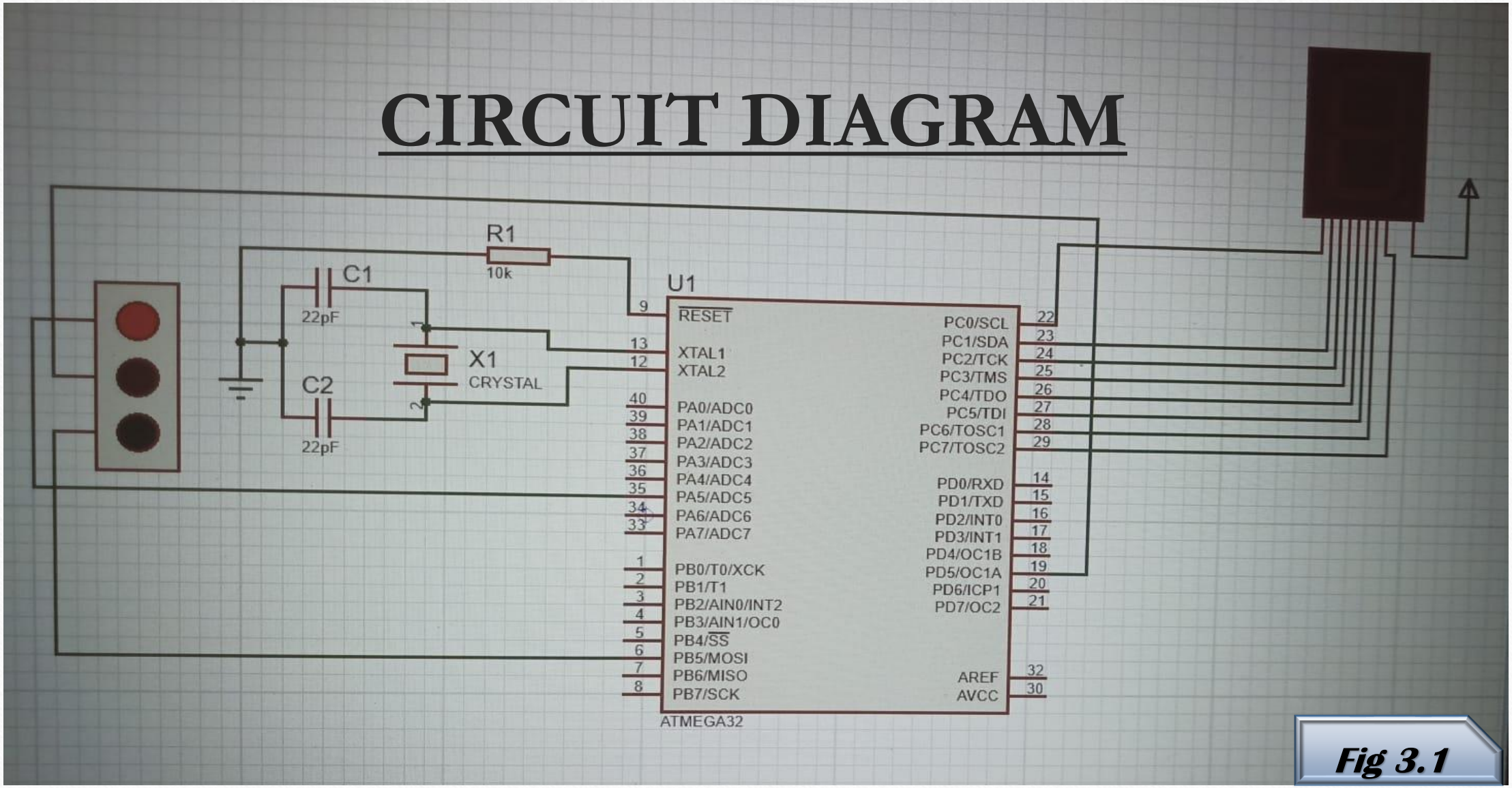


Fig 3.1

CIRCUIT DISCRIPTION

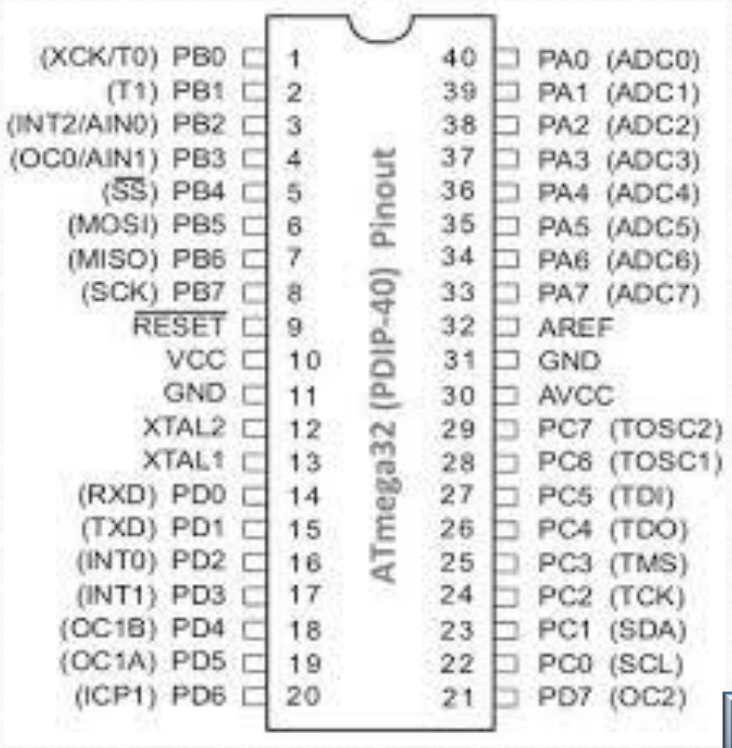


Fig 3.2

- **Quad 8 sets of input/output pins:-** Name as A,B,C and D (Numbered from 1-8,14-20,21-29,33-40)
- **Pair of crystall oscillator pins:-** This pins are connected to the crystal oscillator ,which are pins 12 (XTAL2) and pin 13 (XTAL1).
- Finally, the power supply, i.e VCC and GND pins for the Ic. (Fig 3.2)

For Traffic Light(Leds):

Fig 3.3

- The three Leds of Colour Red, Yellow and Green is been Used or a traffic light circuit is also can be used .(as in fig 3.3).
- In Circuit Diagram (Refer fig 3.1),where Red is assigned to Port A, Yellow to Port D and Green to Port B of the IC
- And its Gets ON and OFF according to the Pins, 0 and 1 state, which is decided within the code.

For Seven Segment Display (Common Anode):

- It has seven segments of Led (from a to h), and its gets on according to the particular pin, which goes high or low(i.e 1 or 0.) (Fig 3.4)
- In circuit Diagram (Refer fig 3.1), the pins are connect to the PORT C (input/output pin) i.e pin 22 → a, pin 23 → b, pin 24 → c,… so on.
- While middle pins i.e VCC and 'h' pin is connected to the power supply.

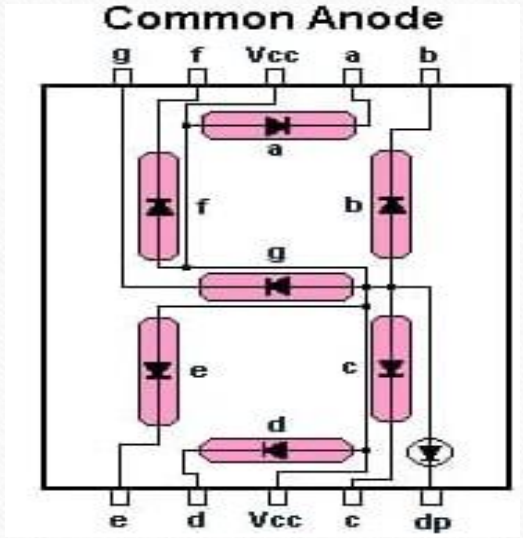


Fig 3.4

WORKING

- **Hex Declaration**:- For the pins ON, OFF conditions…(Fig 4.1), one Hex Digit is assigned to four bits(i.e 4 pins of the IC).
- 2 Hex Digit → 8 Binary Bits
- According to the Hex number the pins of the ports A, B, C and D can be control according to the code.

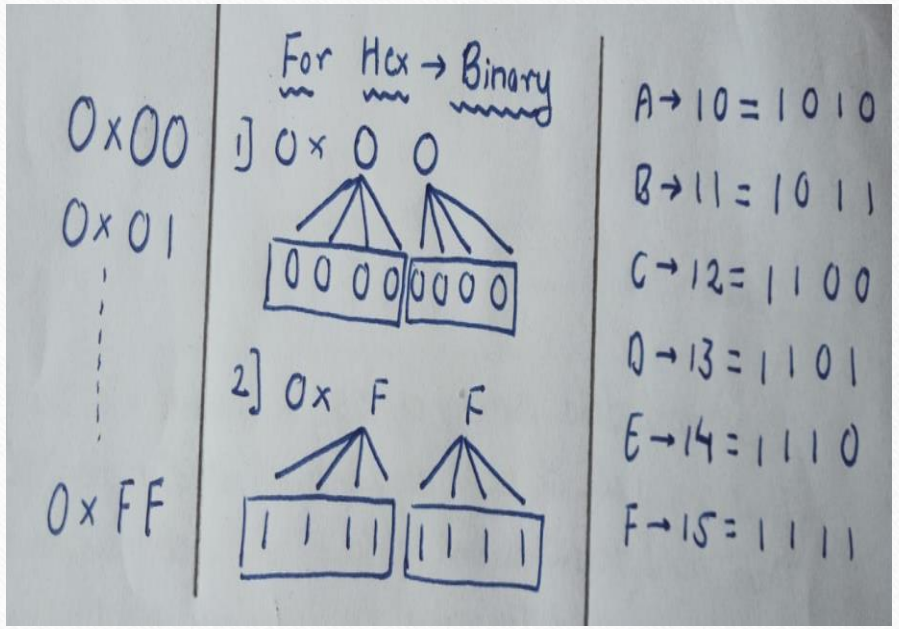
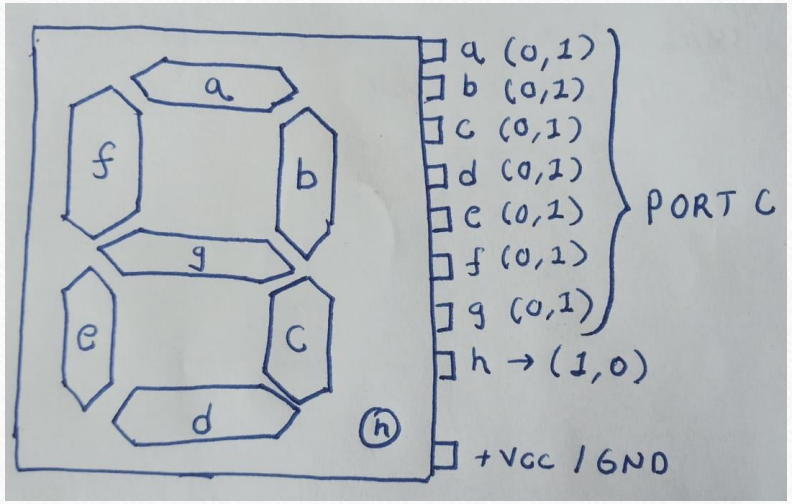


Fig 4.1

❖ Work of Counter or 7 segment Display with Traffic Light LED's:

- The number is Initialized From 9 to 1 in descending order, which is in hex format.(Code)
  `[0x90,0x80,0xf8,0x82,0x92,0x99,0xb0,0xa4,0xf9,0xc0]`
- In fig 4.2, for getting the number , particular pins gets on while some gets off.
- While for the countdown the 'For Loop' is been assigned with 1 sec gap after each count.
- After one Loop of When the counter hits 1 or 0 the Led light Changes.
- And all this process repeats for the Infinite loop, encapsulated in the while loop.(fig 4.3)



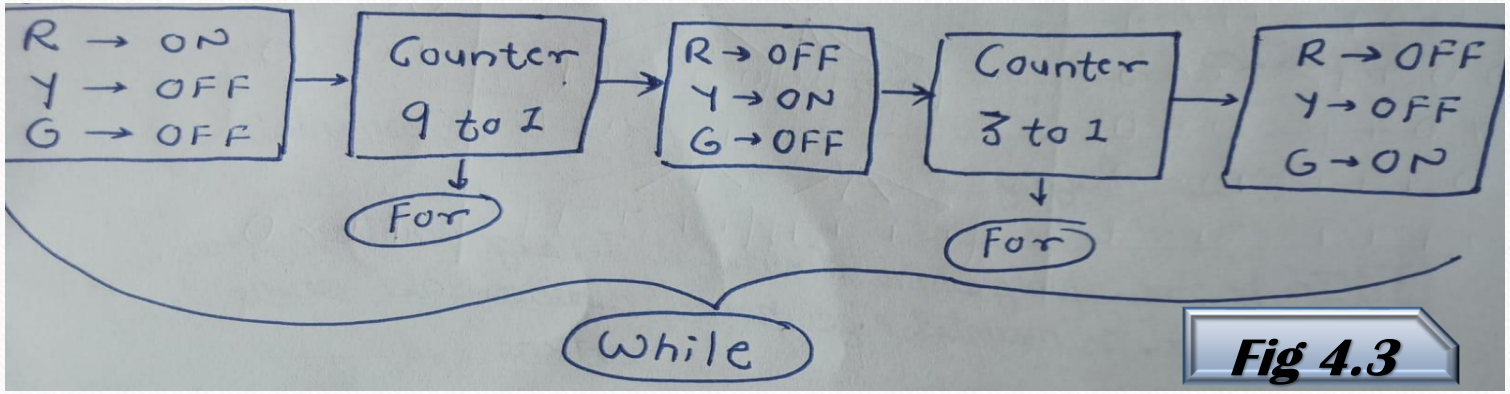


Fig 4.3

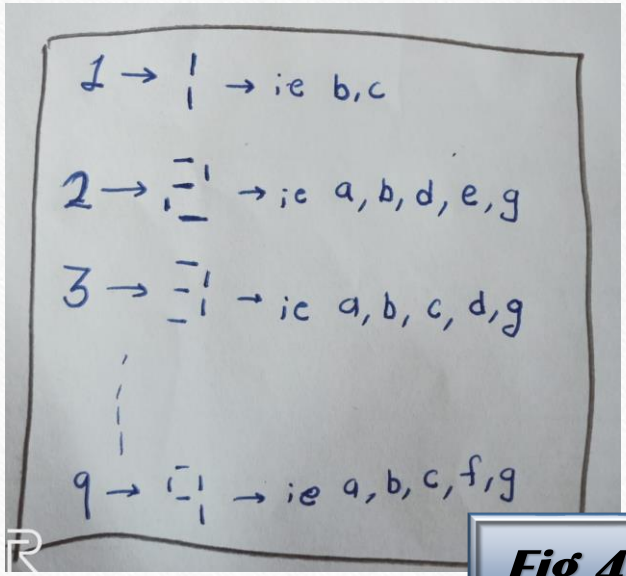
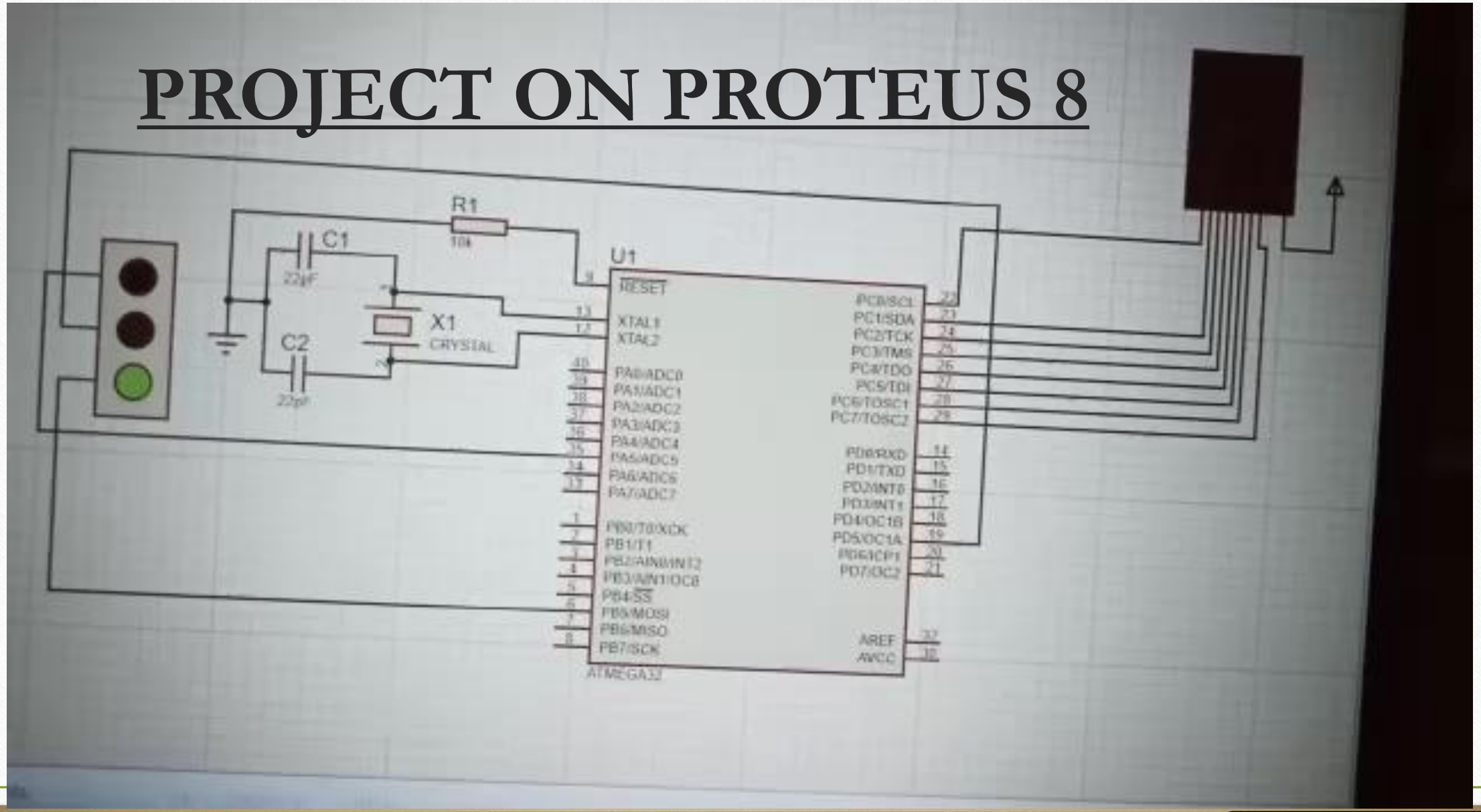


Fig 4.2

PROJECT ON PROTEUS 8



ADVANTAGES

- Traffic control signals provide for an orderly movement of traffic.
- They intercept heavy traffic to allow other traffic to cross the road

  intersection safety.
- They control the speed of vehicles on main as well as on secondary roads.

DISADVANGAGES

- Traffic control signals may result in a re-entrant collision of vehicles.
- They may cause a delay in the quick movement of traffic.

CONCLUSION

- The system works on traffic related problems such as traffic jam; un reas onable latency time of stoppage of vehicle, emergency vehicles ,etc can be solved.
- By using this system configuration we try to reduce the possibilities of traffic jams, caused by traffic lights. .

FUTURE SCOPE

- The Future scope includes Profiling of the traffic by storing the data and managing the traffic lights according to the collected data.
- The Profiling can also be used for Traffic study and the variation in traffic density throughout the day, week, month or a year.
- Further, we can optimize this system for the emergency Vehicles such as Ambulance.
- The Traffic data collected can be used to locate different routes for a specific daily vehicle to avoid the congestion problem

REFERENCE

- https://www.google.com/amp/s/www.instructables.com/Atmega16-Based-Traffic-Light-Project-Prototype-Usi/%3famp_page=true
- Embedded Programming Workshop (held in our college)
- https://www.youtube.com/watch?v=7gzyA83Vi9g

THANK YOU

THAT'S ALL FOLKS...