Expt . No. 2: Interfacing of Multiplexed 7-segment display

TITLE

Interfacing of Multiplexed 7-segment display with 8051

AIM:

Write an Embedded C program for interfacing multiplexed seven segment display and show patterns on seven segment displays.

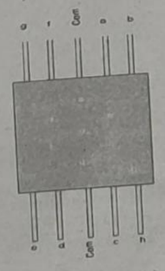
OBJECTIVE:

1. To understand the concept of interfacing of 7 segment display with port of 8051 microcontrollers.
2. To understand concept of multiplexed display.

THEORY:

Seven segment displays are important display units in Electronics and widely used to display numbers from 0 to 9. It can also display some character alphabets like A,B,C,H,F,E etc. In this tutorial, we are going to learn **how to interface a 7 segment display with 8051 microcontroller**. We are using AT89S52 microcontroller from 8051 series.

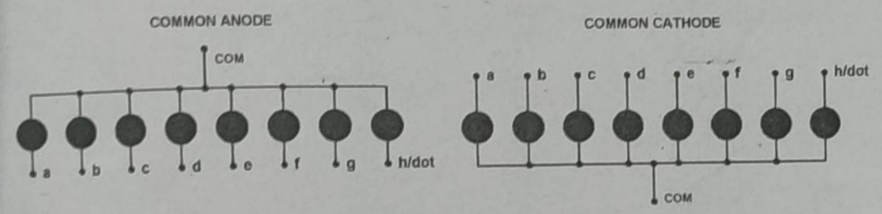
Before interfacing, we should **learn about 7 segment display**. It's the simplest unit to display numbers and characters. It just consists 8 LEDs, each LED used to illuminate one segment of unit and the 8th LED used to illuminate DOT in 7 segment display. We can refer each segment as a LINE, as we can see there are 7 lines in the unit, which are used to display a number/character. We can refer each line/segment "a,b,c,d,e,f,g" and for dot character we will use "h". There are 10 pins, in which 8 pins are used to refer a,b,c,d,e,f,g and h/dp, the two middle pins are common anode/cathode of all he LEDs. These common anode/cathode are internally shorted so we need to connect only one COM pin.



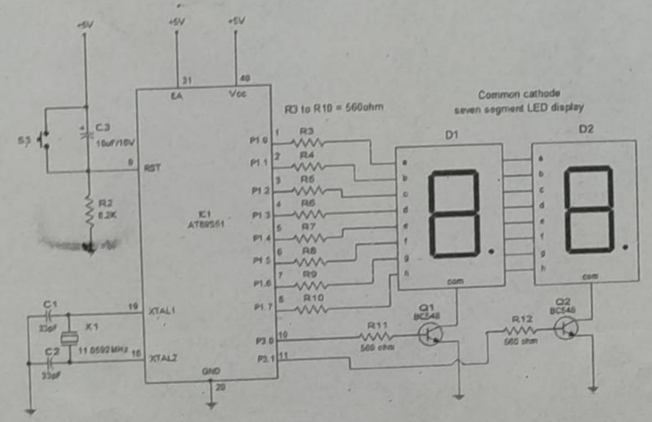
There are two types of 7 segment displays: Common Anode and Common Cathode:

Common Anode: In this all the Negative terminals (cathode) of all the 8 LEDs are connected together (see diagram below), named as COM. And all the positive terminals are left alone.

Common Cathode: In this all the positive terminals (Anodes) of all the 8 LEDs are connected together, named as COM. And all the negative thermals are left alone.



Internal connections of 7 Segment Display



Circuit Diagram: Fig shows the interfacing diagram of multiplexed seven segment displays.. There are different ways of connections common anode or common cathodes.

CONCLUSION: In this practical we have studied about interfacing of multiplexed 7 segment display with 8051

Experiment no: 2

```
// Roll no.304C068
// Name- Sanket Adsule
//Sevan segment display

/HEX Counter on PORT 1
#include<reg51.h>
#define Del 2000

void delay(unsigned int x)                    // delay function
{
        unsigned int i,j;
        for(i=0;i<x;i++)
                for(j=0;j<=100;j++);
}

void main(void)
{
        unsigned char
count[16]={0xc0,0xf9,0xa4,0xb0,0x99,0x92,0x82,0xf8,0x80,0x90,0x88,
0x83,0xc6,0xa1,0x86,0x8e};
        unsigned int x;
        P1=0x00;                                                    //
Make P1 as output port

        while(1)                                                    // do
it continuosly
                {
                        for(x=0;x<16;x++)
                                {
                                        P1=count[x];
                                        delay(Del);
                                }
                }
```