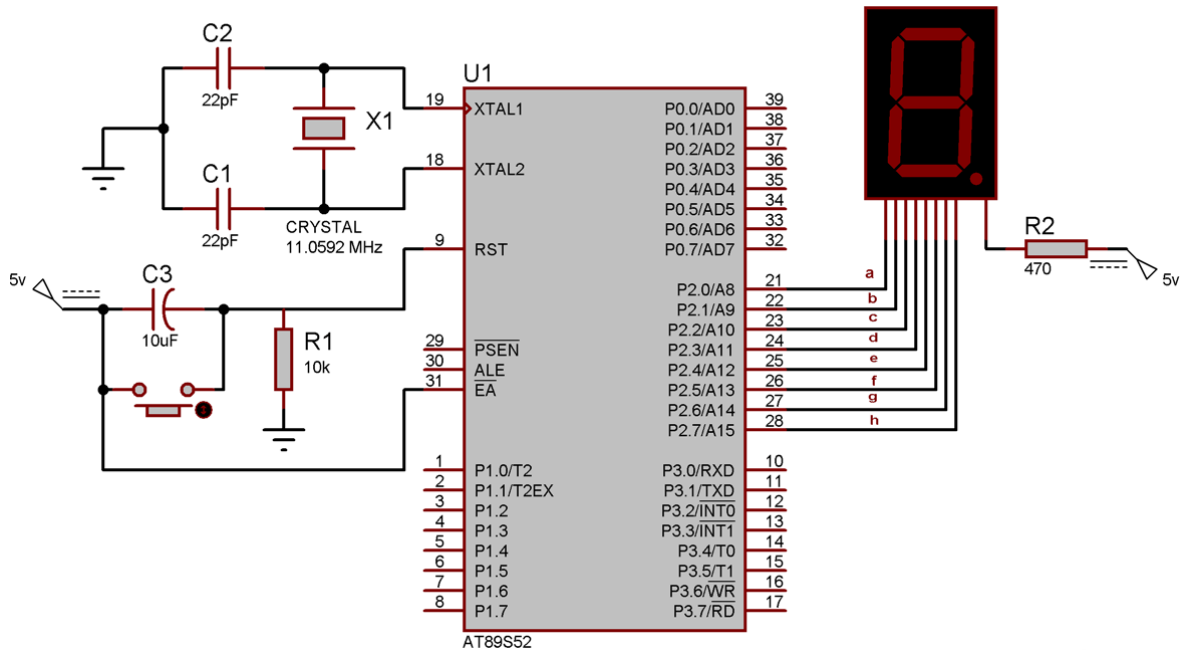


## Seven segment display Interfacing with microcontroller



As shown above the circuit diagram for interfacing 7 segment display with 8051 microcontroller, we have connected a,b,c,d,e,f,g,h to pins 2.0 to 2.7 means we are connecting 7 segment to port 2 of microcontroller. Now suppose we want to display 0, then we need to glow all the LEDs except LED which belongs to line “g” (see diagram above), so pins 2.0 to 2.6 should be at 0 (should be 0 to TURN ON the LED as per negative logic) and pin 2.7 and 2.8 should be at 1 (should be 1 to TURN OFF the LED as per negative logic). So the LEDs connected to pins 2.0 to 2.6 (a,b,c,d,e,f) will be ON and LEDs connected to 2.7 and 2.8 (g and h) will be OFF, that will create a “0” in 7 segment. So we need bit pattern 11000000 (Pin 8 is the highest bit so starting from P2.7 to P2.0), and the HEX code for binary 11000000 is “C0”. Similarly we can calculate for all the digits. Here we should note that we are keeping “dot/h” always OFF, so we need to give LOGIC “1” to it every time. A table has been given below for all the numbers while using Common Anode 7 segment.

Digit to Display	h g f e d c b a	Hex code
0	11000000	C0
1	11111001	F9
2	10100100	A4
3	10110000	B0

4	10011001	99
5	10010010	92
6	10000010	82
7	11111000	F8
8	10000000	80
9	10010000	90

### **Code Explanation**

We have created `ms_delay` function to provide the delay in milliseconds, this delay is usually provided in any microcontroller program so that microcontroller can complete its internal operation.

Then we have created an array of the hex codes for 0 to 9 (see table above), and finally we have sent the hex codes to the port 2, which is connected to common anode 7 segment. So in this way the numbers are shown on the 7 segment display.

Now we have only 4 ports in microcontroller and what if we want to show the data in more than four 7 segments?? To solve this problem, Multiplexing technique comes into picture. We need to multiplex multiple 7 segment units.