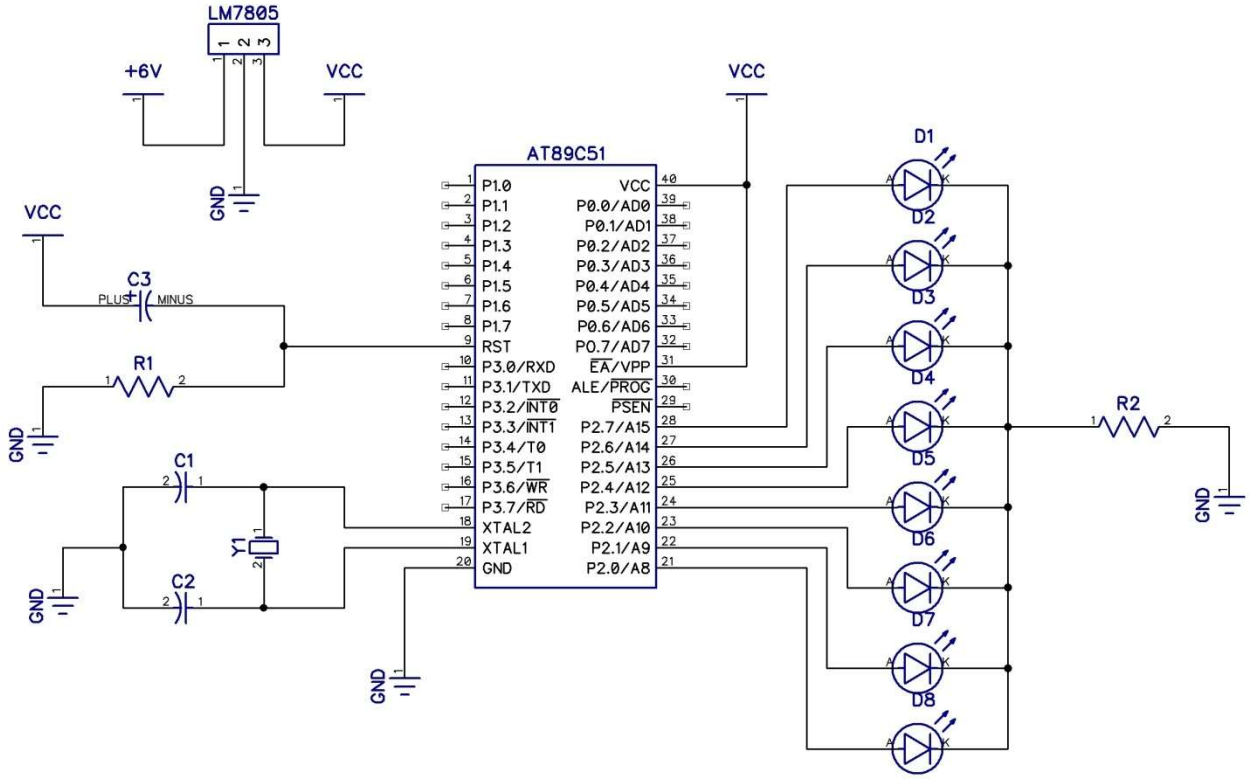
Lab Practical 01:

Write a program in MicroC for microcontroller, AT89C51 (or AT89S52) to send values to a port (as output). Use LEDs for display.

Components:

One Microcontroller, AT89C51 or AT89S52
One Crystal Oscillator, 11.05920MHz
One LM7805
Two Resistors 8.2k, 1k Ohm
Three Capacitors, C1, C2,33PF (2), C3 10uF (1)
One Breadboard, Eight LEDs
Some Connecting wires (Single Stranded), One Wire Cutter

Circuit Diagram:



RESET is an active High input. When RESET is set to High, 8051 goes back to the power-on state. The 8051 is reset by holding the **RST** high for at least **two machine cycles** and then returning it low. After a reset, the **program counter is loaded with 0000H** but the content of on-chip RAM is not affected.

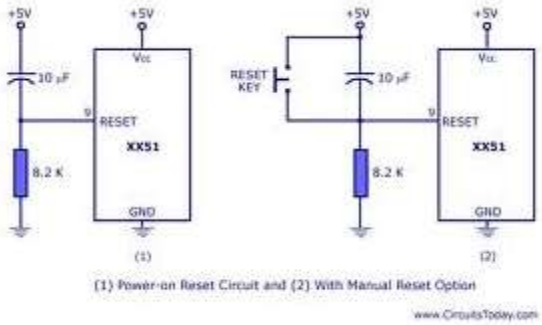
T**here are two method of reset circuit:**

1. **Power On Reset. (used here)**

Initially charging of capacitor makes RST High
When capacitor charges fully it blocks DC and RST goes low.

2. **Manual Reset**

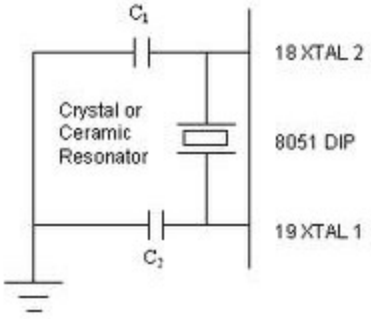
Closing the switch momentarily will make RST High.



Register	Content
Program counter	0000h
Accumulator	00h
B register	00h
PSW	00h
SP	07h
DPTR	0000h
All ports	FFh

The 8051 uses the crystal oscillator to synchronize its operation. Effectively, the 8051 operates using what are called **"machine cycles."** A single machine cycle is the minimum amount of time in which a single 8051 instruction can be executed. Many instructions take multiple cycles. 8051 has an on-chip oscillator. It needs an external crystal that decides the operating frequency of the 8051.

The **crystal** is connected to pins 18 and 19 with stabilizing capacitors. 12 MHz (11.059MHz) crystal is often used and the capacitance ranges from 20pF to 40pF.



Program:

```
void main()
{
    unsigned char i;
    p2=0x00;

    while(1)
    {
        p2=0x55;
        delay_ms(500);

        p2=0xAA;
        delay_ms(500);

    }

}
```