Roll No: 11
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Date: 6/4/22

EXPERIMENT 12

Aim: Interfacing Seven Segment Display

LO: 6

LO STATEMENT: Design interfacing of peripheral devices with 8086 microprocessor.

Software and Hardware Requirements: TASM Software

Theory:

A seven-segment LED is a kind of LED (Light Emitting Diode) consisting of 7 small LEDs it usually comes with the microprocessor's as we commonly need to interface them with microprocessors like 8086.

It can be used to represent numbers from 0 to 8 with a decimal point. We have eight segments in a Seven Segment LED display consisting of 7 segments which include '.' The seven segments are denoted as "a, b, c, d, e, f, g, h" respectively, and "." is represented by "h "

Alphanumeric LED displays are available in three common formats. For displaying only numbers, letters and hexadecimal letters, simple 7 segment displays are used. To display numbers and the entire alphabet 18 segment displays or 5 by 7 dot matrix displays can be used. The 7 segment type is the least expensive, most commonly used and easiest to interface.

Seven segment indicators are of two type's namely common anode type and common cathode type. In a common anode type all the anodes are connected together

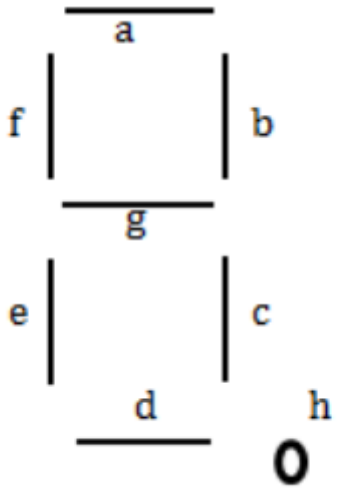

Fig.1 Seven segment indicator

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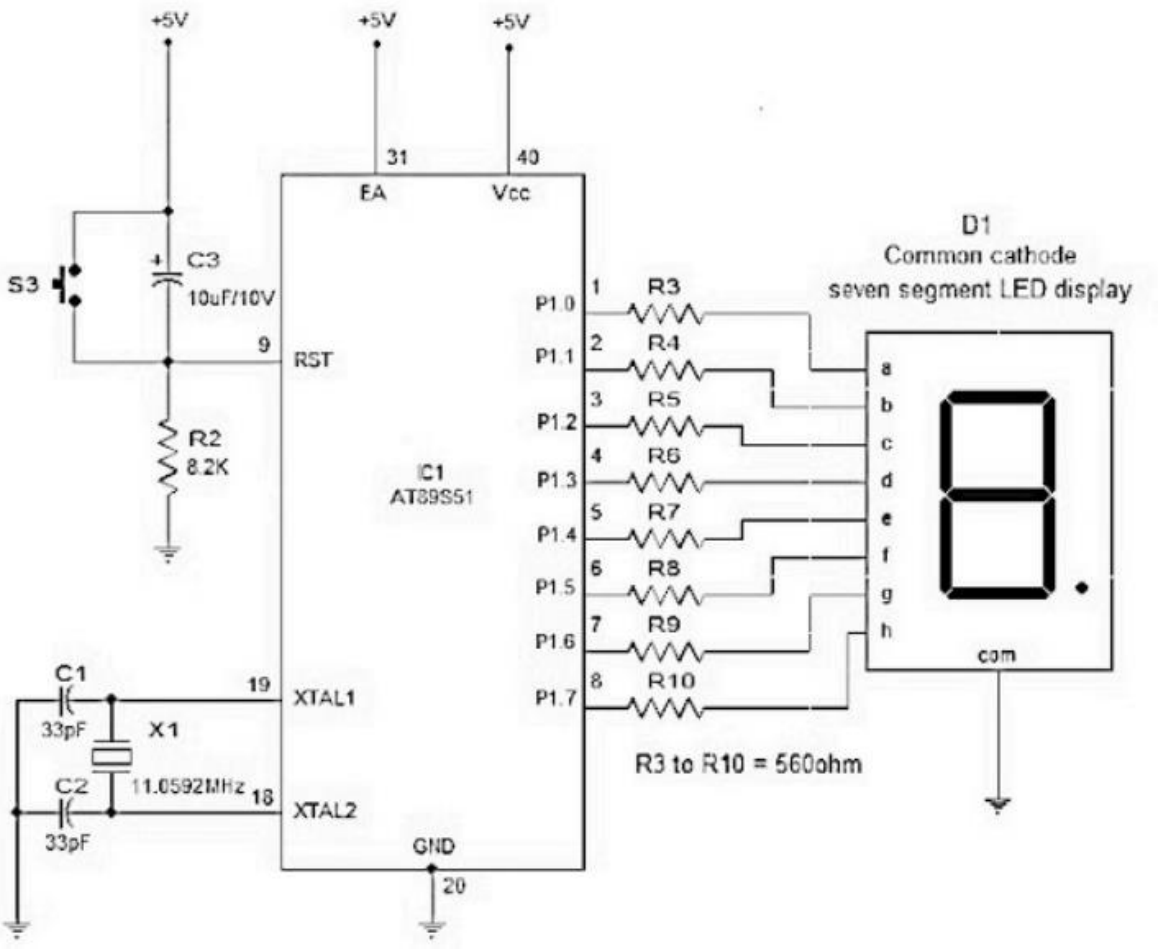
Seven-segment displays may use a liquid crystal display (LCD), a light-emitting diode (LED) for each segment, an electrochromic display, or other light-generating or controlling techniques such as cold cathode gas discharge (Panaplex), vacuum fluorescent (VFD), incandescent filaments (Numitron), and others. For gasoline price totems and other large signs, vane displays made up of electromagnetically flipped light-reflecting segments (or "vanes") are still commonly used. A precursor to the 7-segment display in the 1950s through the 1970s was the cold-cathode, neon-lamp-like nixie tube. Starting in 1970, RCA sold a display device known as the *Numitron* that used incandescent filaments arranged into a seven-segment display. In USSR, the first electronic calculator "Vega", which was produced from 1964, contains 20 decimal digits with seven-segment electroluminescent display.

Each LED segment has one of its pins brought out of the rectangular package. Other pins are connected together to a common terminal. Seven segment displays can only display O to 9 numbers. These seven LEDs indicate seven segments of the numbers and a dot point Seven segment displays are seen associated with a great number of devices such as clocks, digital home appliances, signal boards on roads etc.



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Sample Code:

```
MOV AL,10000000B

OUT PPI_C, AL

STR: MOV AL, 10011001B

OUT PPIA,AL

MOV CX, FFFFH

DEL: NOP

NOP

NOP

LOOP DEL

MOV AL, 11111111B

OUT PPIA, AL

MOV CX, FFFFH

DEL1: NOP

NOP

NOP

LOOP DEL1

JMP STR

HLT
```

Conclusion: From this experiment we have learned about the 7 segment display and how it works with the 8086 microprocessor language.