

Report: 11-12

Instructor Name: Dr Usman Abbasi

Student Name: Muhammad Sherjeel Akhtar

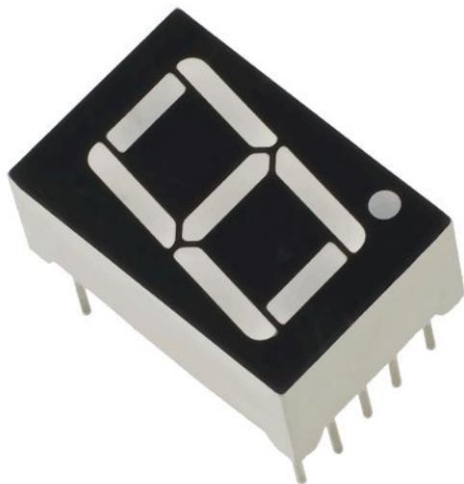
Roll no: 20P-0101

Department: BS(CS)

Section:3D

7-Segment Display Interfacing with AVR ATmega16/ATmega32

Introduction:

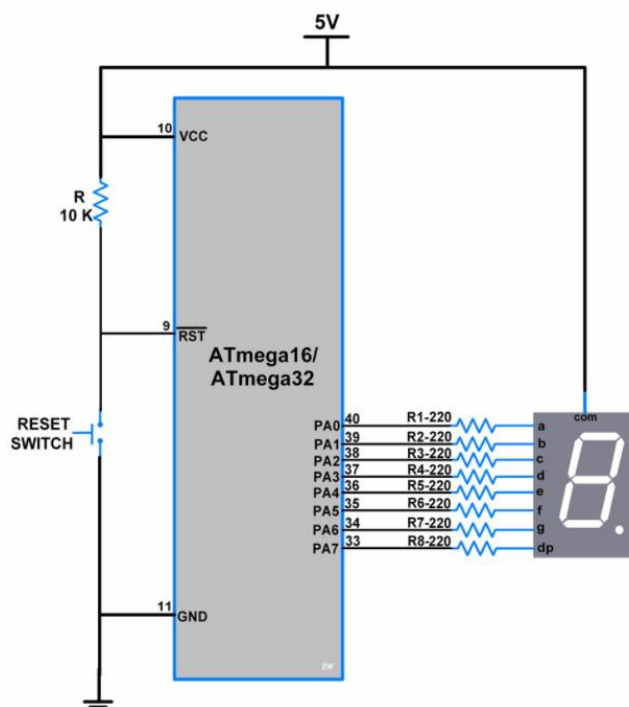


7-Segment LED Display

1. *7-segment displays are made up of 8 LED segments. 7 of these LED segments are in the shape of a line, whereas 1 segment is circular.*
2. *The 7 line-shaped LED segments are used for displaying numbers 0 to 9 and a few letters like A, c, d, e, F, H, L, O, P, U, etc. The circular segment is used for displaying a decimal point.*

3. Each of the 8 elements has a pin associated with it which can be driven **HIGH** or **LOW** according to the type of display and the number or alphabet to be displayed.
4. The common anode and common cathode types are available in a 7-segment display. Depending on which type is used, the control signal required to light up a segment in the display changes. Common anode requires a **LOW** signal whereas common cathode requires a **HIGH** signal to light up a segment.

Circuit Diagram:



Program:

```
.INCLUDE "m328pDEF.INC"
```

```
.ORG 0
```

```
LDI R16,HIGH(REMEND)
```

```
OUT SPH,R16
```

```
LDI R16,LOW(REMEND)
```

```
OUT SPL,R16
```

```
LDI R19,0XFF
```

OUT DDRB,R19

START:

LDI R20,0b010000000

OUT PORTB,R20

RECALL DELAY

LDI R20,0b01111001

OUT PORTB,R20

RECALL DELAY

LDI R21,0b0100100

OUT PORTB,R21

RECALL DELAY

LDI R21,0b0110000

OUT PORTB,R21

RECALL DELAY

LDI R21,0b0011001

OUT PORTB,R21

RECALL DELAY

LDI R21,0b0010010

OUT PORTB,R21

RECALL DELAY

LDI R21,0b0100010

OUT PORTB,R21

RECALL DELAY

LDI R21,0b0011001

OUT PORTB,R21

RECALL DELAY

LDI R21,0b0010010

OUT PORTB,R21

RECALL DELAY

```
LDI R21,0b0000010
OUT PORTB,R21
RECALL DELAY
LDI R21,0b1111000
OUT PORTB,R21
RECALL DELAY
LDI R21,0b0000000
OUT PORTB,R21
RECALL DELAY
LDI R21,0b010000
OUT PORTB,R21
RECALL DELAY
JMP START
```

DELAY:

```
LDI R16,0XFF
AGAIN3:LDI R17,0XFF
AGAIN2:LDI R18,0X5
AGAIN1:DEC R18
BRNE AGAIN1
DEC R17
BRNE AGAIN2
```

..... The End.....