Practical 4

Aim: - To interface Seven Segment Display (SSD) with Arduino and write a program to blink SSD.

Components Required :

Arduino Board, Bread Board, Seven Segment Display, Resistors, Connecting wires.

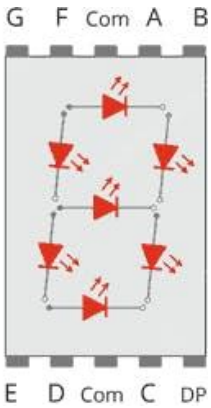
Theory:

A **seven-segment display** is a form of electronic **display device** for displaying **decimal numerals** that is an alternative to the more complex **dot matrix displays.**

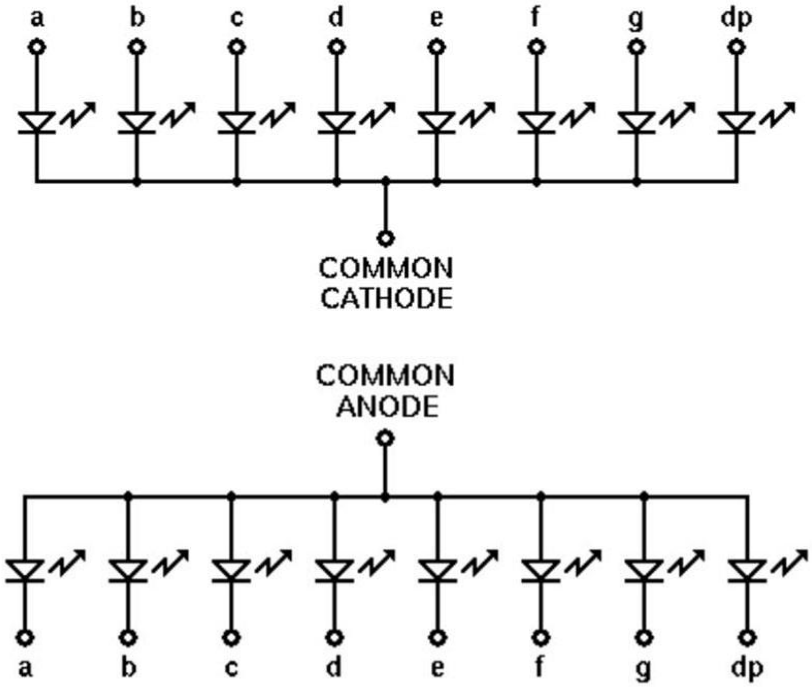
Seven-segment displays are widely used in **digital clocks**, electronic meters, basic calculators, and other electronic devices that display numerical information.

The 7-segment displays are really just seven LEDs lined up in a particular pattern. In this case, the number '8' shape we're all familiar with. Each of the seven LEDs is called a segment because when illuminated the segment forms part of a numerical digit (both Decimal and Hex) to be displayed. An additional 8th LED is sometimes used for indication of a decimal point.

To turn on and off a particular part of the display, you set the appropriate pin HIGH or LOW just like you would with a regular LED



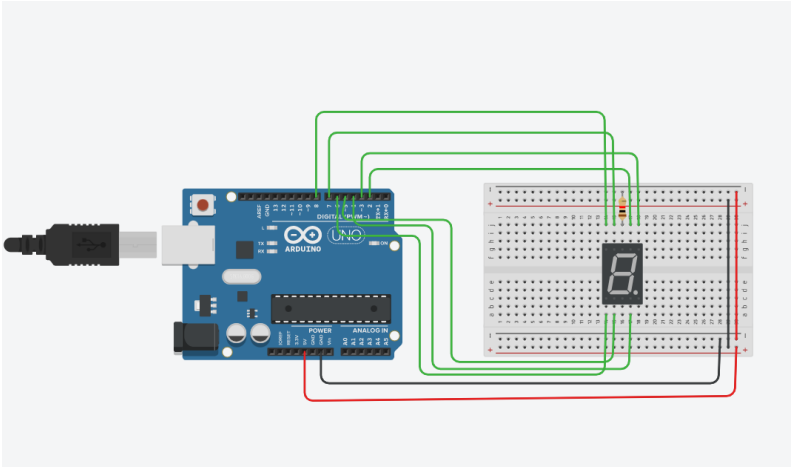
Seven segment displays are of two types: **Common Cathode (CC)** and **Common Anode (CA)**.The Internal structure of both types is nearly the same. The difference is the polarity of the LEDs and common terminal. As their name suggests, the **common cathode** has all the cathodes of the LEDs in a 7-segment connected together and the **common anode** has all the anodes of the LEDs in a 7-segment connected together.



Common anode

Implementation :

Circuit Diagram:



Program:

```
// C++ code
//
void setup()
{
  pinMode(2, OUTPUT);
  pinMode(3, OUTPUT);
  pinMode(4, OUTPUT);
  pinMode(5, OUTPUT);
  pinMode(6, OUTPUT);
  pinMode(7, OUTPUT);
  pinMode(8, OUTPUT);
}

void loop()
{
  digitalWrite(2, HIGH);
  digitalWrite(3, HIGH);
  digitalWrite(4, HIGH);
  digitalWrite(5, HIGH);
  digitalWrite(6, HIGH);
  digitalWrite(7, HIGH);
  digitalWrite(8, LOW);
  delay(1000); // Wait for 1000 millisecond(s)
```

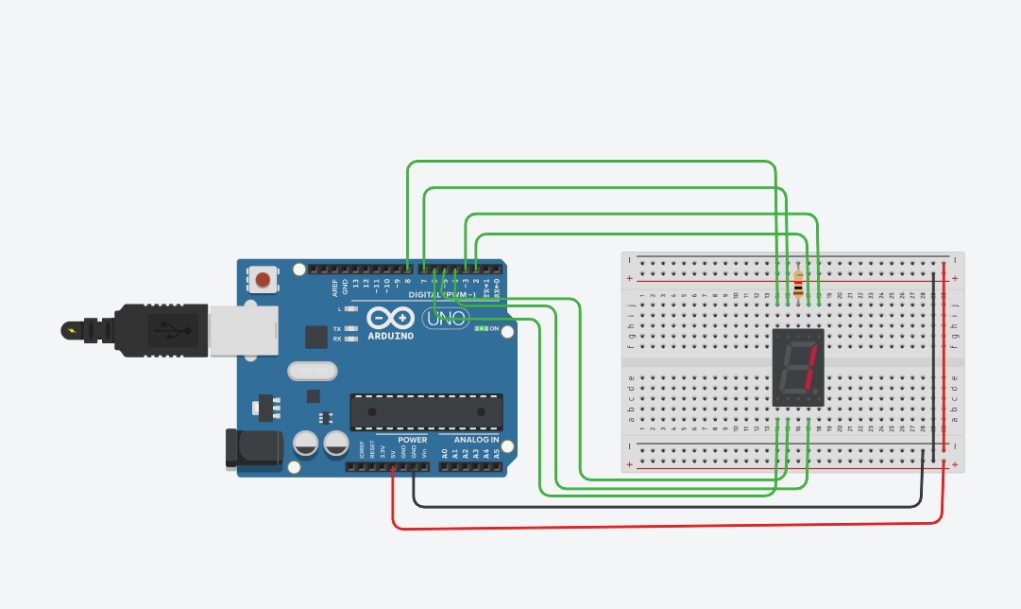
```
digitalWrite(2, LOW);
digitalWrite(3, HIGH);
digitalWrite(4, HIGH);
digitalWrite(5, LOW);
digitalWrite(6, LOW);
digitalWrite(7, LOW);
digitalWrite(8, LOW);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(2, HIGH);
digitalWrite(3, HIGH);
digitalWrite(4, LOW);
digitalWrite(5, HIGH);
digitalWrite(6, HIGH);
digitalWrite(7, LOW);
digitalWrite(8, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(2, HIGH);
digitalWrite(3, HIGH);
digitalWrite(4, HIGH);
digitalWrite(5, HIGH);
digitalWrite(6, LOW);
digitalWrite(7, LOW);
digitalWrite(8, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(2, LOW);
digitalWrite(3, HIGH);
digitalWrite(4, HIGH);
digitalWrite(5, LOW);
digitalWrite(6, LOW);
digitalWrite(7, HIGH);
digitalWrite(8, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(2, HIGH);
digitalWrite(3, LOW);
digitalWrite(4, HIGH);
digitalWrite(5, HIGH);
digitalWrite(6, LOW);
digitalWrite(7, HIGH);
digitalWrite(8, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
```

```
digitalWrite(2, HIGH);
digitalWrite(3, LOW);
digitalWrite(4, HIGH);
digitalWrite(5, HIGH);
digitalWrite(6, HIGH);
digitalWrite(7, HIGH);
digitalWrite(8, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(2, HIGH);
digitalWrite(3, LOW);
digitalWrite(4, HIGH);
digitalWrite(5, HIGH);
digitalWrite(6, HIGH);
digitalWrite(7, HIGH);
digitalWrite(8, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(2, HIGH);
digitalWrite(3, HIGH);
digitalWrite(4, HIGH);
digitalWrite(5, LOW);
digitalWrite(6, LOW);
digitalWrite(7, LOW);
digitalWrite(8, LOW);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(2, HIGH);
digitalWrite(3, HIGH);
digitalWrite(4, HIGH);
digitalWrite(5, HIGH);
digitalWrite(6, HIGH);
digitalWrite(7, HIGH);
digitalWrite(8, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(2, HIGH);
digitalWrite(3, HIGH);
digitalWrite(4, HIGH);
digitalWrite(5, HIGH);
digitalWrite(6, LOW);
digitalWrite(7, HIGH);
digitalWrite(8, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
```

```
digitalWrite(2, HIGH);
digitalWrite(3, HIGH);
digitalWrite(4, HIGH);
digitalWrite(5, LOW);
digitalWrite(6, HIGH);
digitalWrite(7, HIGH);
digitalWrite(8, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(2, LOW);
digitalWrite(3, LOW);
digitalWrite(4, HIGH);
digitalWrite(5, HIGH);
digitalWrite(6, HIGH);
digitalWrite(7, HIGH);
digitalWrite(8, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(2, HIGH);
digitalWrite(3, LOW);
digitalWrite(4, LOW);
digitalWrite(5, HIGH);
digitalWrite(6, HIGH);
digitalWrite(7, HIGH);
digitalWrite(8, LOW);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(2, LOW);
digitalWrite(3, HIGH);
digitalWrite(4, HIGH);
digitalWrite(5, HIGH);
digitalWrite(6, HIGH);
digitalWrite(7, LOW);
digitalWrite(8, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(2, HIGH);
digitalWrite(3, LOW);
digitalWrite(4, LOW);
digitalWrite(5, HIGH);
digitalWrite(6, HIGH);
digitalWrite(7, HIGH);
digitalWrite(8, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
```

```
  digitalWrite(2, HIGH);
  digitalWrite(3, LOW);
  digitalWrite(4, LOW);
  digitalWrite(5, LOW);
  digitalWrite(6, HIGH);
  digitalWrite(7, HIGH);
  digitalWrite(8, HIGH);
  delay(1000); // Wait for 1000 millisecond(s)
}
```

Output:



Conclusion: Thus we studied the interfacing of Seven Segment Display and how to display different digits on the display.