EXPERIMENT NO. 3

Aim : To Interface Seven Segment Display (SSD) with Arduino board and to display 0-9 on it.

Apparatus Required : Arduino Uno, SSD, USB cable, Male to Female jumper wires, 330 Ω Resistors.

Theory :

A 7-segment display is commonly used in electronic display devices for decimal numbers from 0 to 9 and in some cases, basic characters. The use of light-emitting diodes (LEDs) in seven-segment displays made it more popular, whereas of late liquid crystal displays (LCD) have also come into use.

Electronic devices like microwave ovens, calculators, washing machines, radios, digital clocks, etc. to display numeric information are the most common applications. Let's take a look at the seven-display pinout to have a better understanding.

A seven-segment display is made of seven different illuminating segments. These are arranged in a way to form numbers and characters by displaying different combinations of segments.

Common Cathode (CC) 7 Segment Display

The common cathode display is commonly called CC display. In this type the common pin on the 7-segment display is connected to all the eight Cathode pins of the LEDs. So In order to make this type of seven segment display to work we should connect he Com pin to the Ground pin and power the other pins with Vcc (+5V typically).

Common Cathode

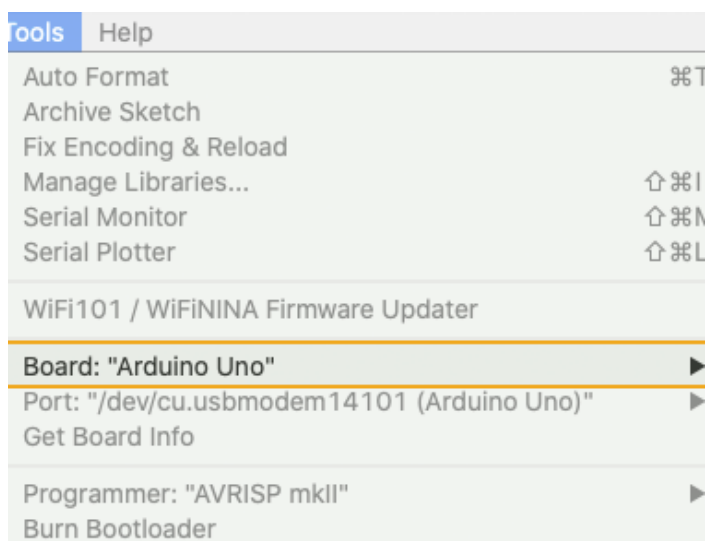COMMON CATHODE(CC)
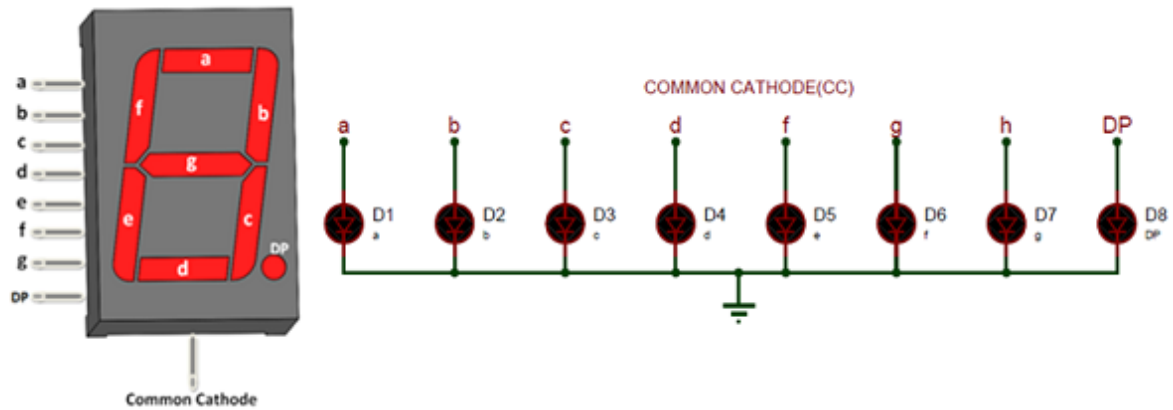
Common Anode (CA) 7 Segment Display

The common anode display is commonly called CA display. In this type the common pin on the **7-**segment display is connected to all the eight Anode pins of the LEDs. So In order to make this type of seven segment display to work we should connect he Com pin to the Vcc (+5V typically) and ground the required segment pin to turn it on.
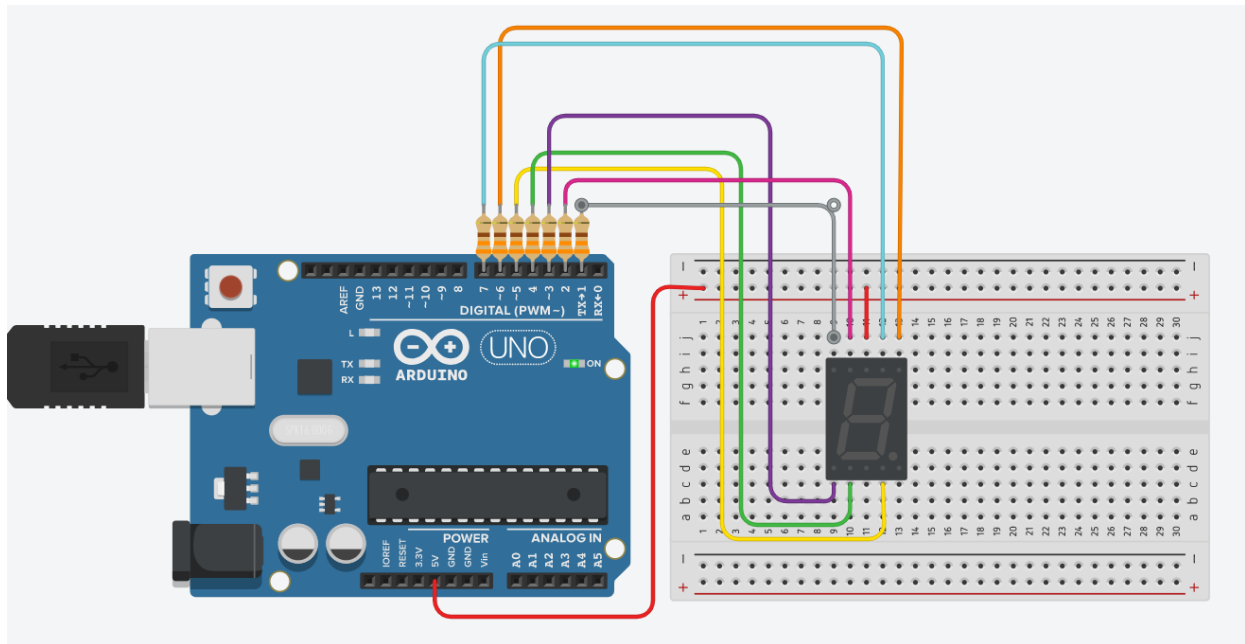

Common Anode

COMMON ANODE (CA)

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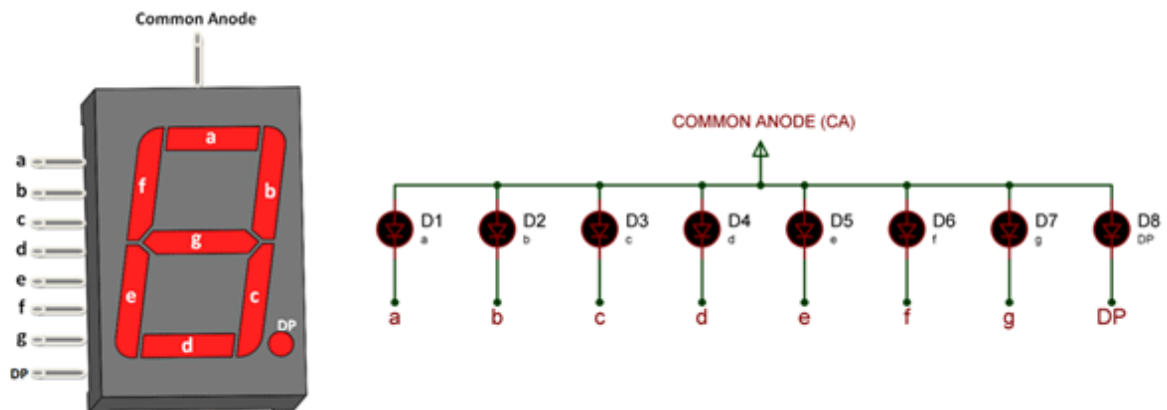
Uploading Code to Arduino :
1. Install Arduino IDE on your PC. You can download the latest version of Arduino software.
2. Connect the Arduino board to your PC using a USB cable and wait for Windows to begin the USB driver installation process.
3. If the Windows installer does not start automatically, open the Windows Device Manager from Start→ Control Panel option and find the Arduino under the Ports (COM&LPT) list.

4. If Arduino is not found, go to Other Devices and select the Unknown Device option. Then update the driver.

5. Select the Browse my computer for driver software option and go to the Arduino software download location and select Arduino.inf/Arduino uno.inf (depending on your software version) to install the driver.

6. After successful installation of the driver, from the Arduino IDE select the Tools/Board option. From here select your Arduino board among those listed, such as Arduino Uno, Arduino Mega 2560, Arduino Leonardo, etc.

7. Choose the correct serial COM port for your board. The COM port number will be visible under the Device Manager.

8. Open the source code/sketch, compile it and upload the code to the Arduino board by clicking the Upload button. If you do not have the sketch ready, the easiest way to start with the Arduino programming is to use the 'Blink' sketch from the Examples in Arduino. You can access Blink source code from the File→Examples→Basics option.

Tools	Help	
Auto Format		⌘T
Archive Sketch		
Fix Encoding & Reload		
Manage Libraries...		⇧⌘I
Serial Monitor		⇧⌘M
Serial Plotter		⇧⌘L
WiFi101 / WiFiNINA Firmware Updater		
Board: "Arduino Uno"		▶
Port: "/dev/cu.usbmodem14101 (Arduino Uno)"		▶
Get Board Info		
Programmer: "AVRISP mkII"		▶
Burn Bootloader		

Circuit Diagram :

Code :

```
#define a 8
#define b 7
#define c 6
#define d 5
#define e 4
#define f 3
#define g 2

void Print(int r){
  PORTD = r;
}
int arr[10] =
{B11111110,B00100100,B00001100,B10011000,B10011000,B01001000,B01000000,B000111
10,B00000000,B00001000};
//                0       1       2       3       4       5
6       7       8       9
void setup() {
  // put your setup code here, to run once:
  pinMode(a,OUTPUT);
  pinMode(b,OUTPUT);
  pinMode(c,OUTPUT);
  pinMode(d,OUTPUT);
  pinMode(e,OUTPUT);
  pinMode(f,OUTPUT);
  pinMode(g,OUTPUT);
}

void loop() {
  // put your main code here, to run repeatedly:
  for(int i=0;i<=10;i++){
    Print(arr[i]);
    delay(1000);
  }
}
```

Result : Hence, We Interfaced Seven Segment Display (SSD) with Arduino board and to display 0-9 on it..