Enrolment/ Roll No.92100588007

Practical No. 6

Aim: Introduction to Basic IoT Components.

Objectives:

1. To learn Arduino UNO basics
2. To interface Seven Segment Display (SSD) with Arduino and write a program to blink SSD.

Theory:

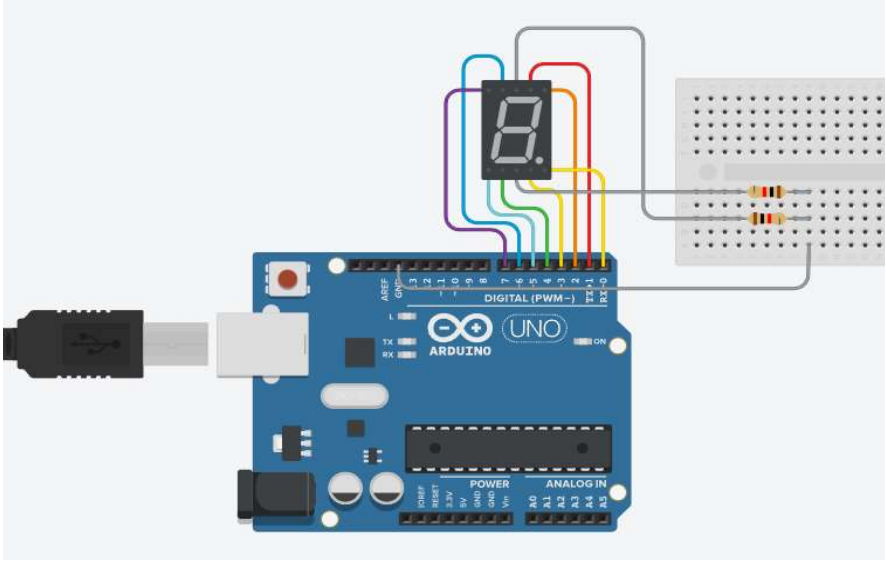
Hardware:

- Arduino board
- Seven segment display
- 220 ohm resistor
- Jumper wires

Function:

- The seven segment display is a device that can be used to display numbers from 0 to 9. It is made up of seven individual segments that can be turned on or off to display different numbers. The Arduino board can be used to control the seven segment display by sending digital signals to the segments.

Circuit Diagram: (Download from tinkercad.com)



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Program:

```
// Define the digital pins connected to the seven-segment display
const int SEG_A = 0;
const int SEG_B = 1;
const int SEG_C = 2;
const int SEG_D = 3;
const int SEG_E = 4;
const int SEG_F = 5;
const int SEG_G = 6;
const int SEG_DP =7;

// Define the state of the seven-segment display
int displayState = 0;

void setup() {
  // Set the digital pins connected to the seven-segment display as output pins
  pinMode(SEG_A, OUTPUT);
  pinMode(SEG_B, OUTPUT);
  pinMode(SEG_C, OUTPUT);
  pinMode(SEG_D, OUTPUT);
  pinMode(SEG_E, OUTPUT);
  pinMode(SEG_F, OUTPUT);
  pinMode(SEG_G, OUTPUT);
  pinMode(SEG_DP, OUTPUT);
}

void loop() {
  // Display the current state of the seven-segment display
  digitalWrite(SEG_A, displayState & 1);
  digitalWrite(SEG_B, displayState & 2);
```

```
  digitalWrite(SEG_C, displayState & 4);
  digitalWrite(SEG_D, displayState & 8);
  digitalWrite(SEG_E, displayState & 16);
  digitalWrite(SEG_F, displayState & 32);
  digitalWrite(SEG_G, displayState & 64);
  digitalWrite(SEG_DP, displayState & 128);

  // Increment the state of the seven-segment display
  displayState++;

  // Delay for 100 milliseconds
  delay(5);
}
```

Output: (Screenshot of LED On)

Conclusion:This is a simple example of how to interface a seven segment display with Arduino and write a program to blink the SSD for Tinkercad. You can use this same basic concept to control other devices, such as motors, servos, or relays