NAVODAYA INSTITUTE OF TECHNOLOGY, RAICHUR

DEPARMENT OF COMPUTER SCIENCE & ENGINEERING

IOT Lab

Program - 01

01 Develop a program to blink 5 LEDs back and forth

Steps

1. **Components Required**
   - 1 × Microcontroller (Arduino Uno / any board you have)
   - 5 × LEDs
   - 5 × 220Ω resistors (current limiting)
   - Jumper wires
   - Breadboard
2. **Circuit Connections**
   - Connect each LED's **anode (long leg)** to Arduino digital pins (say pins 2_6).
   - Connect the **cathode (short leg)** of each LED through a resistor to **GND**.
   - Example:
     - LED1 → Pin 2
     - LED2 → Pin 3
     - LED3 → Pin 4
     - LED4 → Pin 5
     - LED5 → Pin 6
3. **Logic of the Program**
   - Turn LEDs **ON one by one from left to right**.
   - When the last LED lights, change direction.
   - Now light them **one by one from right to left**.
   - Keep repeating (back and forth effect).
4. **Upload the Program**
   - Connect Arduino via USB.
   - Open Arduino IDE, paste code, select board/port, and upload.

Arduino Program (C++)

```
int leds[] = {2, 3, 4, 5, 6};  // Pins for LEDs
int numLeds = 5;
int delayTime = 200;           // Delay between steps (ms)

void setup() {
  // Set all pins as OUTPUT
```

```
  for (int i = 0; i < numLeds; i++) {
    pinMode(leds[i], OUTPUT);
  }
}

void loop() {
  // Left to Right
  for (int i = 0; i < numLeds; i++) {
    digitalWrite(leds[i], HIGH);
    delay(delayTime);
    digitalWrite(leds[i], LOW);
  }

  // Right to Left
  for (int i = numLeds - 2; i > 0; i--) {
    digitalWrite(leds[i], HIGH);
    delay(delayTime);
    digitalWrite(leds[i], LOW);
  }
}
```

✨ This will make the 5 LEDs blink like a **"Knight Rider / Larson Scanner" effect** — running left to right, then right to left.