NAVODAYA INSTITUTE OF TECHNOLOGY, RAICHUR

DEPARMENT OF COMPUTER SCIENCE & ENGINEERING

IOT Lab

Program - 02

02 Develop a program to interface a relay with Arduino board

1. **Components Required**

- Arduino Uno (or any Arduino board)
- 1 × Relay Module (5V relay, single-channel)
- 1 × Load (like a small AC bulb or DC motor, for demo you can use an LED with external power supply)
- Jumper wires
- Breadboard

⚠️ **Safety Note**: If you connect an AC appliance, take extreme care — never touch wires when powered. For beginners, test with a DC bulb or motor first.

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2. **Circuit Connections**

If using a **ready-made relay module** (recommended):

- **Relay IN pin** → Arduino Digital Pin 7
- **Relay VCC** → 5V (Arduino)
- **Relay GND** → GND (Arduino)
- **Relay Output (COM, NO, NC terminals)** → Connect external load.
  - COM = Common (input supply for load, e.g., +V of external power)
  - NO (Normally Open) = Load connects when relay is activated.
  - NC (Normally Closed) = Load connects when relay is off.

☞ Example: Connect a **5V bulb** between **NO** and **GND of external supply**, and supply +5V to COM.

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3. **Logic of the Program**

- Set relay pin as **OUTPUT**.
- Write **HIGH** to energize the relay (turn ON load).
- Write **LOW** to de-energize the relay (turn OFF load).
- Add a delay to toggle repeatedly.

4. **Arduino Program (C++)**

```
int relayPin = 7; // Relay module connected to digital pin 7

void setup() {
 pinMode(relayPin, OUTPUT);  // Set relay pin as output
}

void loop() {
 digitalWrite(relayPin, HIGH);  // Turn relay ON
 delay(2000);           // Wait 2 seconds

 digitalWrite(relayPin, LOW);   // Turn relay OFF
 delay(2000);           // Wait 2 seconds
}
```

5. **Upload & Test**

- Upload the sketch to Arduino.
- The relay will **click ON and OFF every 2 seconds**.
- Your connected device (LED bulb/fan/motor) will turn ON and OFF accordingly.