Temperature Controlled Fan using Arduino

Aim:

To design and implement a Temperature-Controlled Fan using Arduino

Hardware Required:

- Arduino
- Usb cable
- LM35 temperature sensor
- 5V single channel Relay
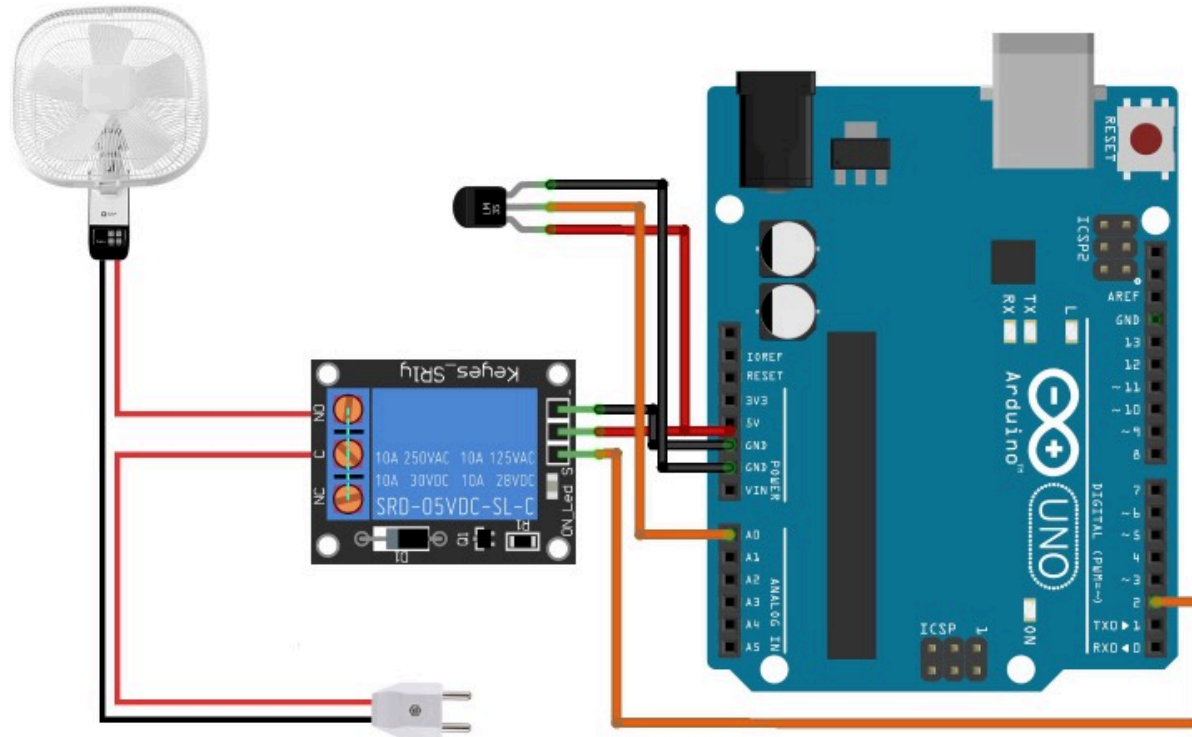- Jumper wires
- Breadboard
- An AC Fan

Software Required

Arduino IDE – For writing and uploading code

DHT Library (if using DHT11/DHT22) – To read temperature data

PWM Control Code – To adjust fan speed based on temperature

Temperature Controlled Fan Circuit Diagram

Working of Automatic Temperature Controlled Fan

In the first scenario, if the temperature reading from the LM35 exceeds the specified threshold (40 degrees Celsius in this case), the Arduino triggers the relay to turn the AC fan "ON." This action provides a cooling mechanism to maintain the temperature within the desired range. In the second scenario, if the temperature remains below the threshold, the Arduino refrains from sending any signal to the relay, thereby keeping the fan "OFF." This automation ensures that the fan operates only when necessary, conserving energy and ensuring the environment remains at a comfortable temperature.

Temperature Controlled Fan using Arduino Code

```
//Temperature Controlled Fan using Arduino and Lm35 Code
//by Circuirdigest
const int lm35_pin = A0;   // LM35 output pin
const int relay_pin = 2;   // Relay control pin (change to the appropriate pin)
void setup() {
  Serial.begin(9600);
  pinMode(relay_pin, OUTPUT);  // Set the relay pin as an output
  digitalWrite(relay_pin, LOW);   // Turn off the relay (fan)
}
void loop() {
  int temp_adc_val;
  float temp_val;
  temp_adc_val = analogRead(lm35_pin);  // Read temperature
  temp_val = (temp_adc_val * 4.88); // Convert ADC value to equivalent voltage
  temp_val = (temp_val / 10);      // LM35 gives an output of 10mV/°C
  Serial.print("Temperature = ");
  Serial.print(temp_val);
  Serial.println(" Degree Celsius");
  if (temp_val < 40) {
    Serial.println("Fan off");
    digitalWrite(relay_pin, LOW);   // Turn off the relay (fan)
  } else {
     Serial.println("Fan on");
    digitalWrite(relay_pin, HIGH);  // Turn on the relay (fan)
  }
}
```

<u>Applications:</u>

- Home and office cooling automation
- Smart greenhouse temperature control
- CPU or electronic component cooling
- Industrial ventilation control

—————————**Thank you**—————————