
HOME AUTOMATION
SYSTEM

PRESENTER

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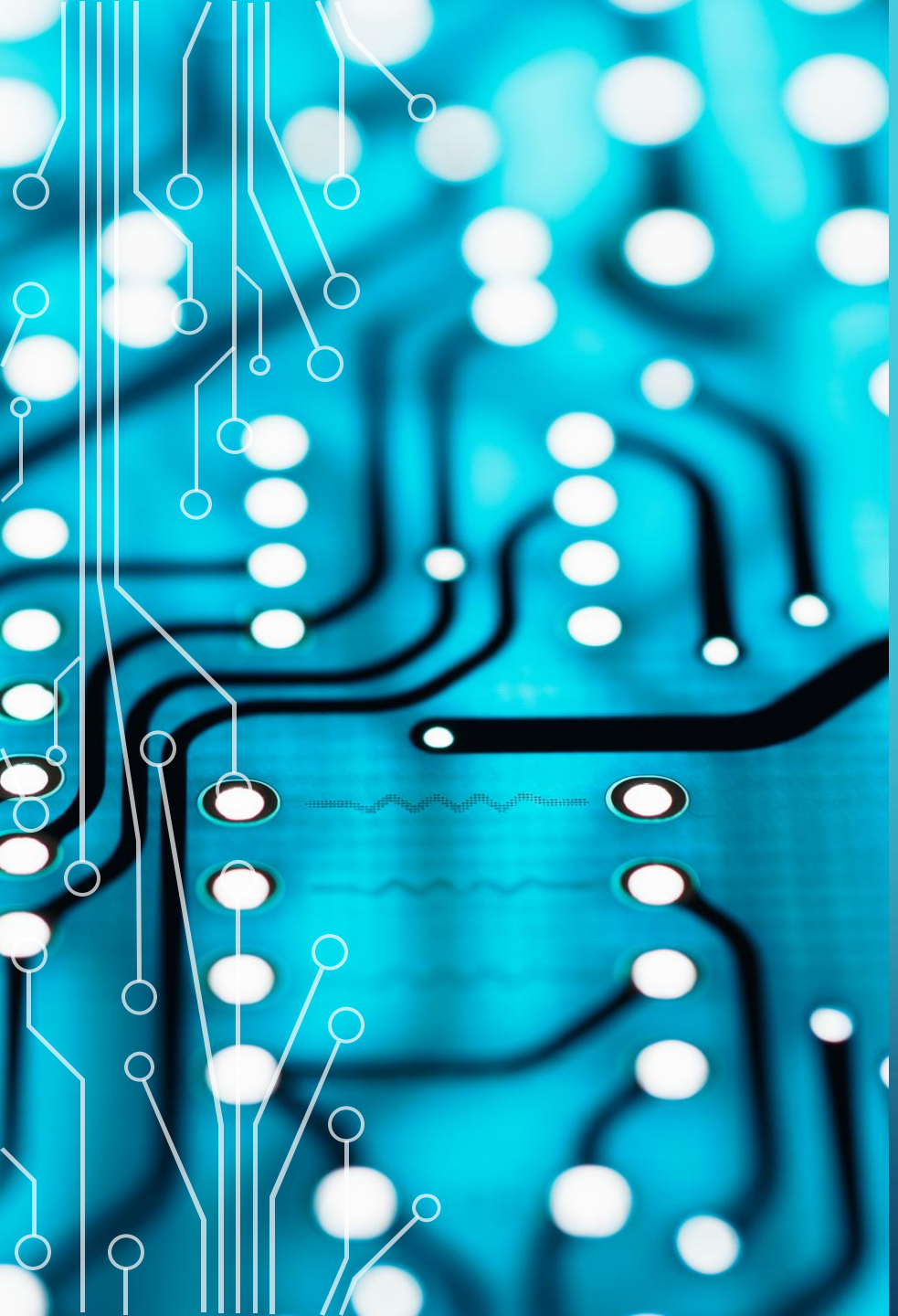
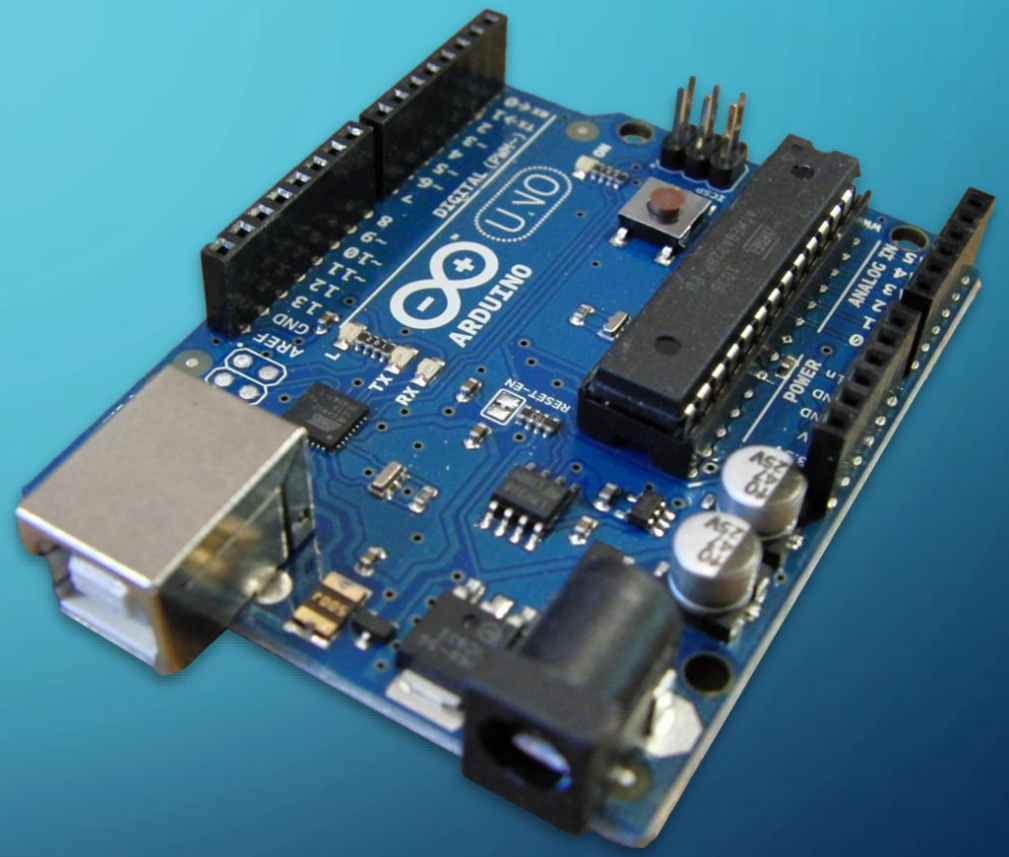


ABSTRACT

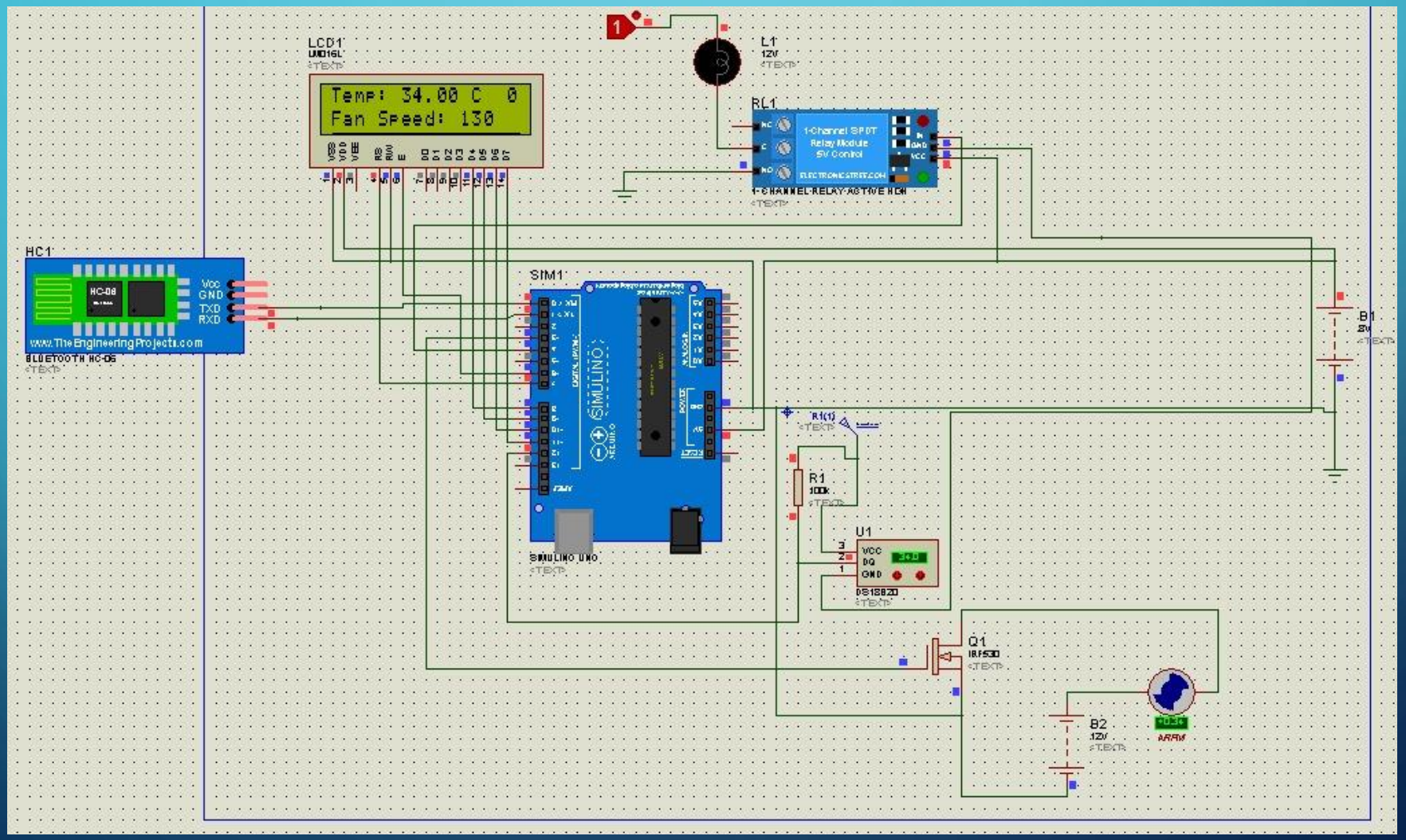
- Home automation system is implemented by using Arduino Technology
- Arduino is integrated with different sensors to made the system automatic
- In this project, the bulb is controlled by Bluetooth and fan speed is controlled with temperature.

COMPONENTS

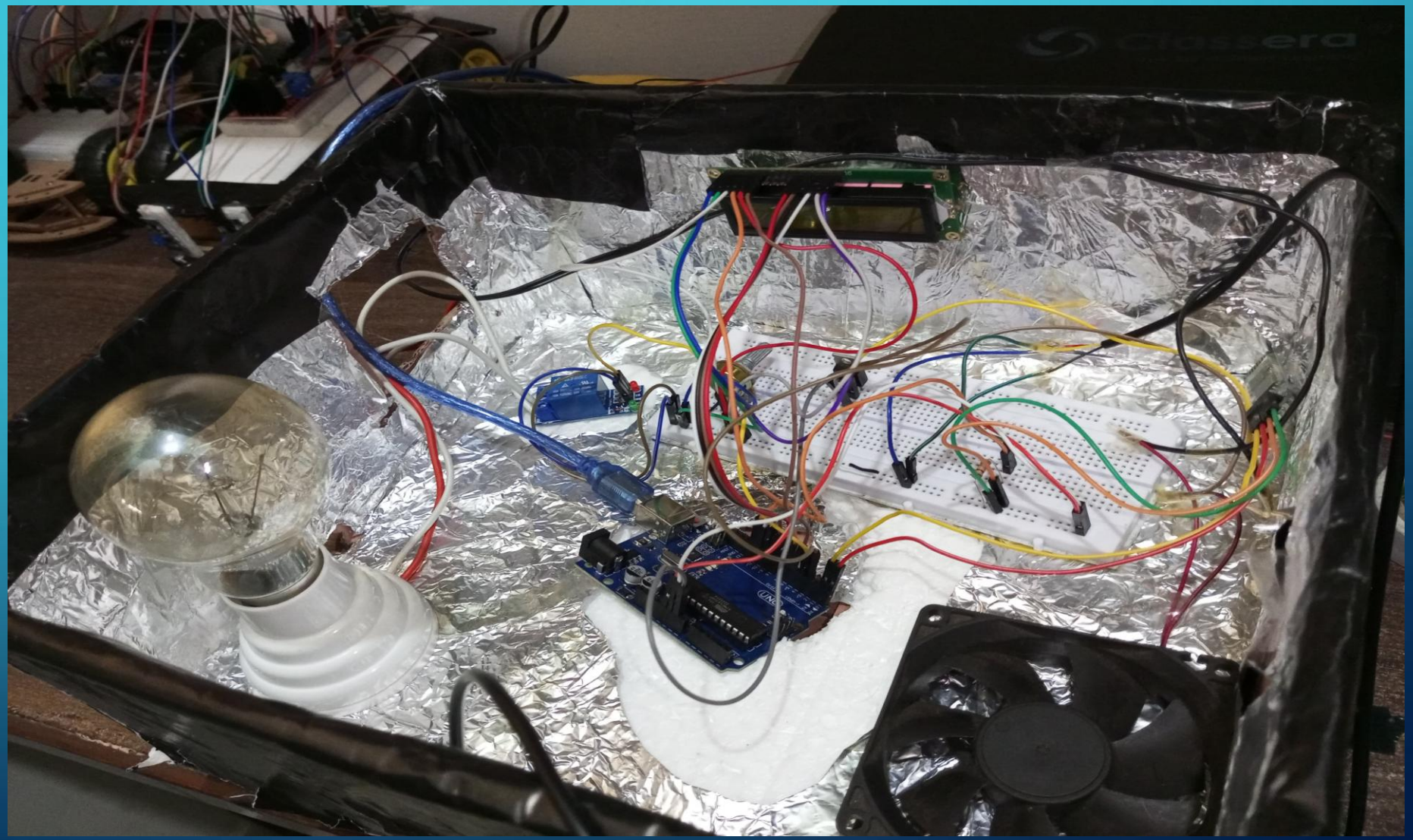
- Arduino Uno
- Bluetooth module (HC-06)
- Relay
- MOSFET
- Temperature sensor
- LCD display 16x2
- Breadboard and wires
- Potentiometer
- DC fan and Bulb

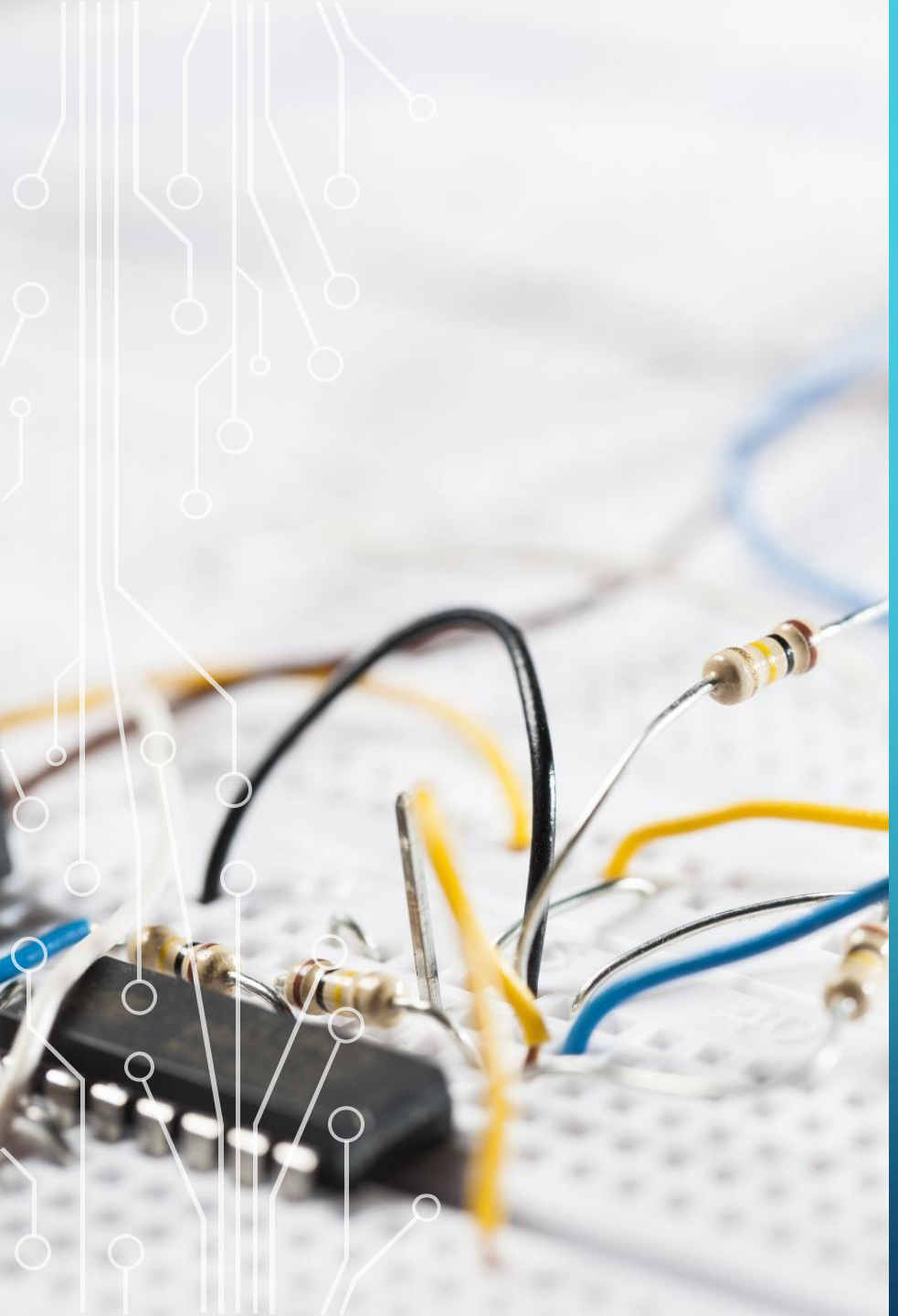


SCHEMATIC DIAGRAM



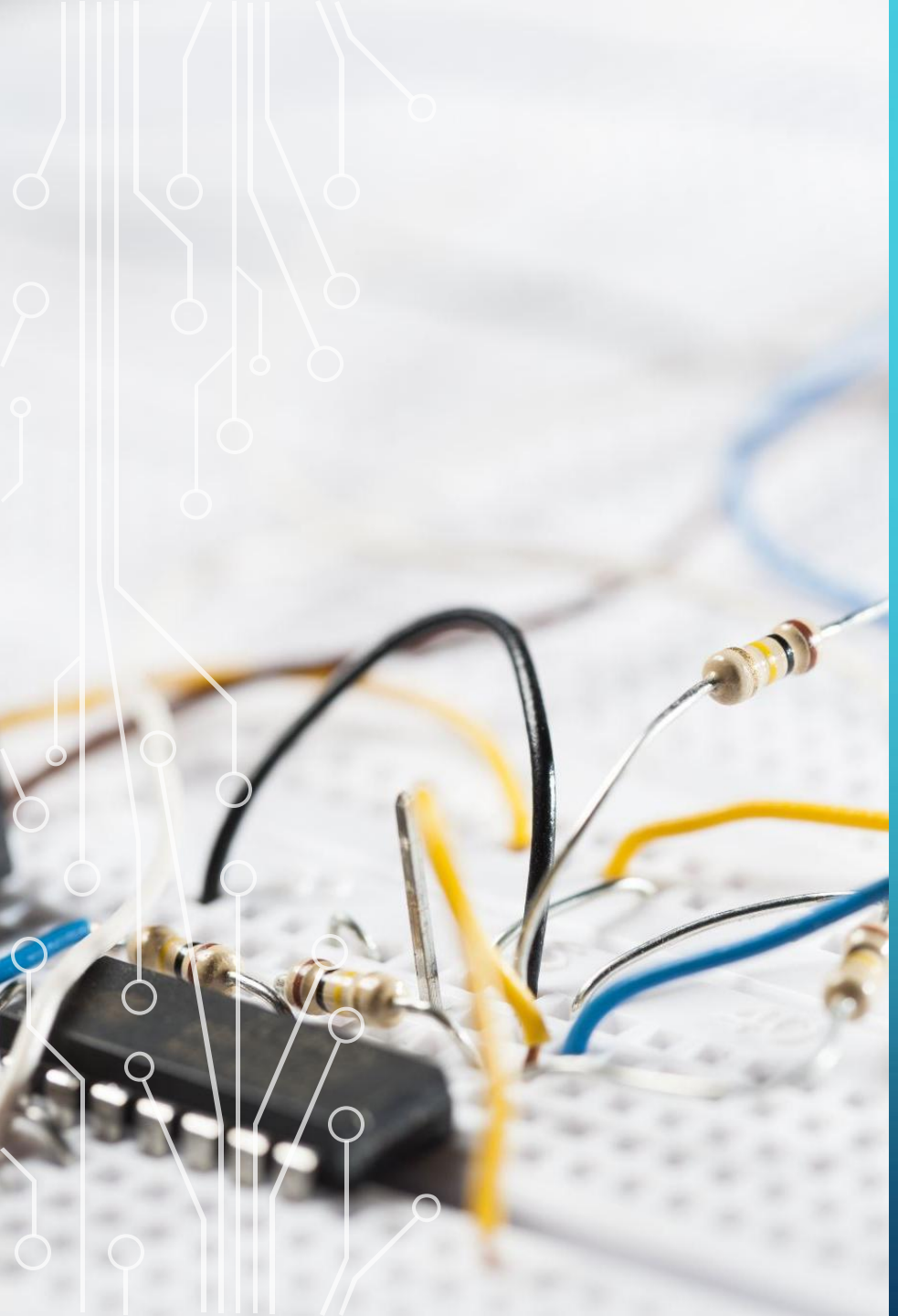
HARDWARE IMPLEMENTATION





WORKING

- When power supply is given to Arduino, then Arduino, Bluetooth module, relay, and temperature sensor start working.
- The fan is given voltage using 12V adopter. As temperature increases, the fan speed increases and vice versa.



WORKING

- Blub connected to relay normally open is controlled by the HC-06.
- When the button pressed on mobile app of Bluetooth controlled Arduino the blub turned on and it become off when button is pressed again.
- This happen due to serial communication between the HC-06 and Arduino.
- In this way our home automation system works.

ARDUINO CODE (FUNCTION FOR BLUETOOTH CONTROL)

```
void bluetooth() {
  if (Serial.available() > 0) {
    data = Serial.read();
    Serial.print(data);
    if (data == '1') {
      digitalWrite(RelayPin, RELAY_ON);
      Serial.println("Bulb is now turned ON.");
    } else if (data == '0') {
      digitalWrite(RelayPin, RELAY_OFF);
      Serial.println("Bulb is now turned OFF.");
    }
```

ARDUINO CODE (FUNCTION FOR TEMPERATURE SENSING)

```
void display_temp() {
  sensors.requestTemperatures();
  tempC = sensors.getTempCByIndex(0);
  if (tempC != DEVICE_DISCONNECTED_C)
  {
    Serial.println("Temperature: ");
    Serial.print(tempC);
    Serial.print(" °C ");
  } else
  {
    Serial.println("Error: Could not read temperature data");
  }
```

ARDUINO CODE (FUNCTION FOR FAN SPEED CONTROL))

```
void Fan_Speed_Control() {
  if (tempC < 32)
  { fanSpeed = 0;
  } else if (tempC >= 32 && tempC < 34)
  { fanSpeed = 40;
  } else if (tempC >= 34 && tempC < 37)
  { fanSpeed = 130;
  } else if (tempC >=37 )
  { fanSpeed = 255;
  }
  analogWrite(FanPin, fanSpeed);
  Serial.print("Fan Speed: ");
  Serial.println(fanSpeed);
```

APPLICATIONS

LIGHTING CONTROL

CLIMATE CONTROL (HVAC)

SECURITY SYSTEMS

SMART LOCKS

ENERGY MANAGEMENT

APPLIANCE CONTROL

CONCLUSION

Home automation systems enhance convenience, security, and energy efficiency by enabling centralized and remote control of various household devices and systems. This integration not only improves the quality of life but also offers potential cost savings and increased property value, making it a valuable addition to modern living.