DHT11_TempHumidity_Sens-LCD_IRremote

Short description

- This Arduino project measures temperature and humidity using a DHT11 sensor and displays the values on a 16x2 LCD.
- Additionally, it can control an air conditioner using an IR LED driven by a 2N2222 transistor.

➢ **Components**

- Arduino Mega 2560
- DHT11 temperature & humidity sensor
- LCD 16x2 with potentiometer for contrast
- IR LED + 2N2222 transistor
- Resistors and breadboard

➢ **Functions**

- Read temperature and humidity data from DHT11
- Display values on LCD in real time
- Send infrared signals to control an AC (ON/OFF)

Details

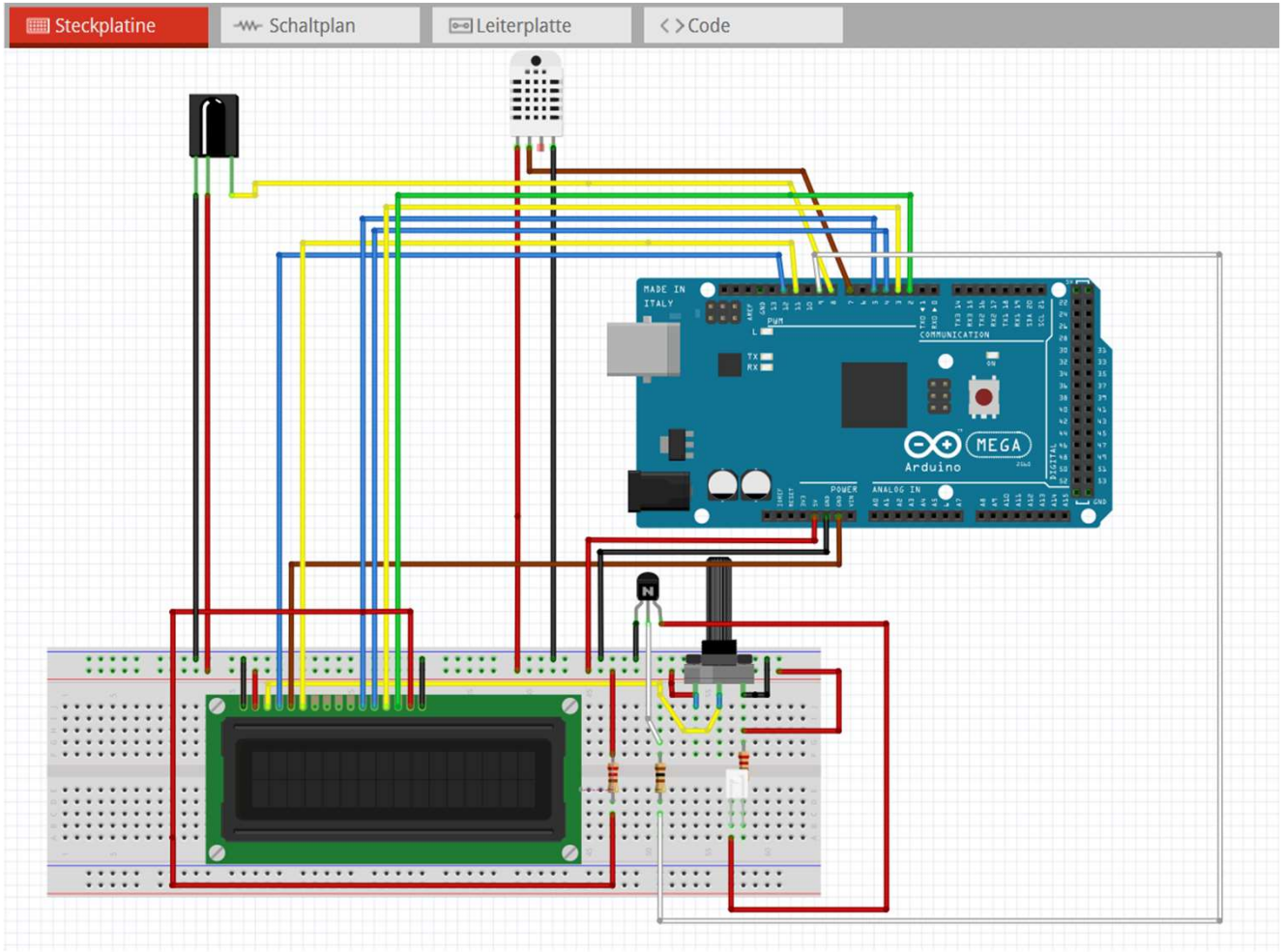
Purpose

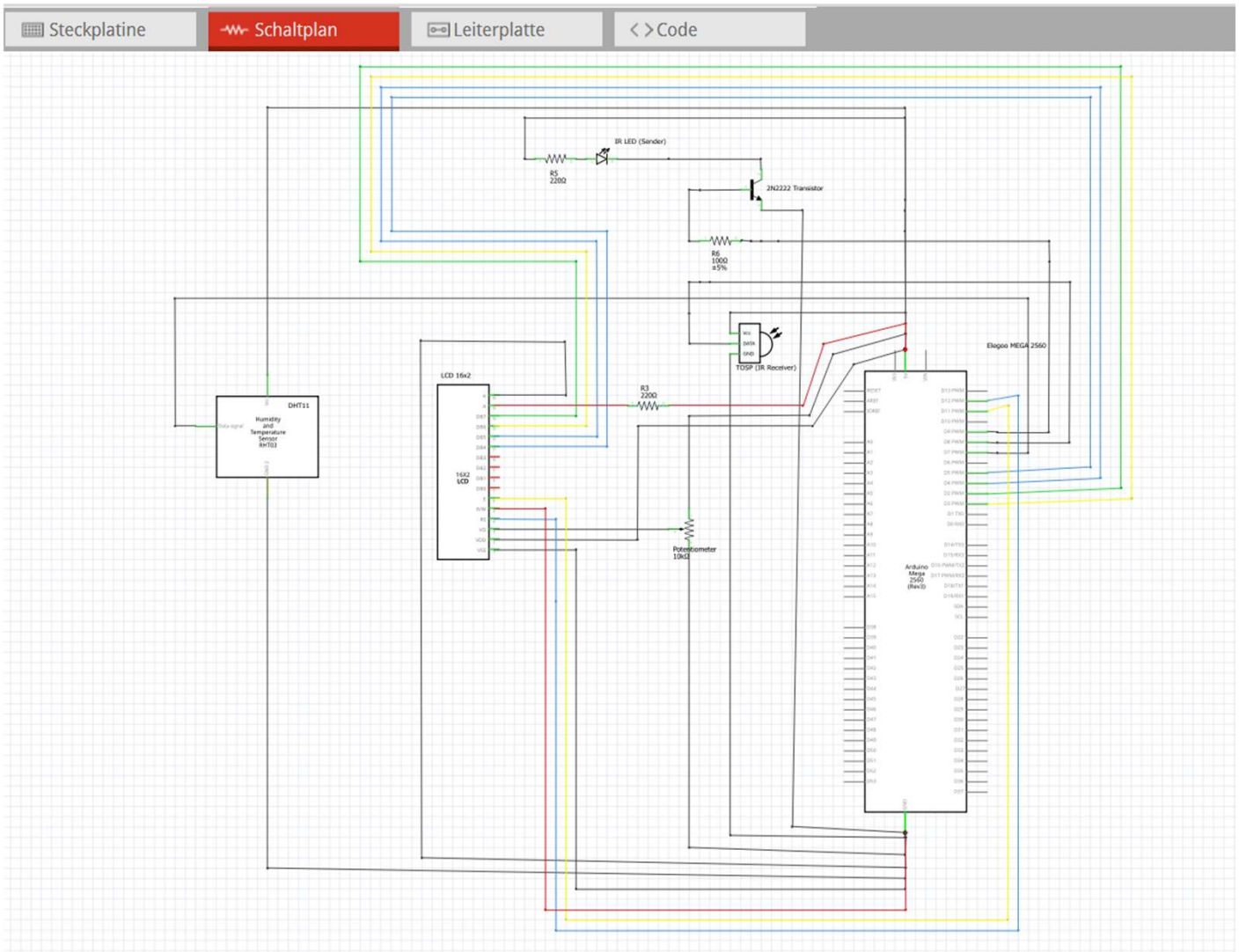
This project demonstrates the integration of sensors, display, and actuator control with Arduino.

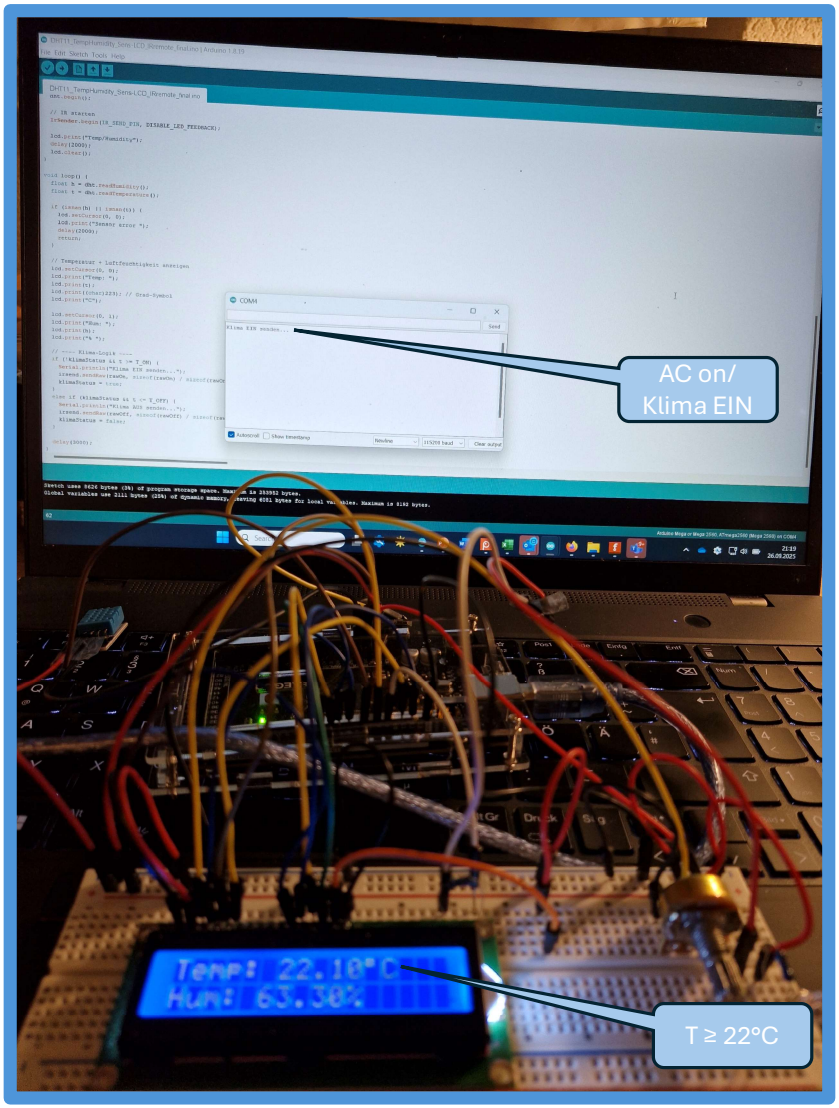
- Measure temperature and humidity using the DHT11 sensor.
- Display the measured values on a 16×2 LCD screen.
- Automatically control an air conditioner using an IR LED driven by a 2N2222 transistor.
- Implement a simple hysteresis rule (prevents rapid switching around the threshold) :
    - If T ≥ 22 °C → AC ON
    - If T ≤ 21 °C → AC OFF

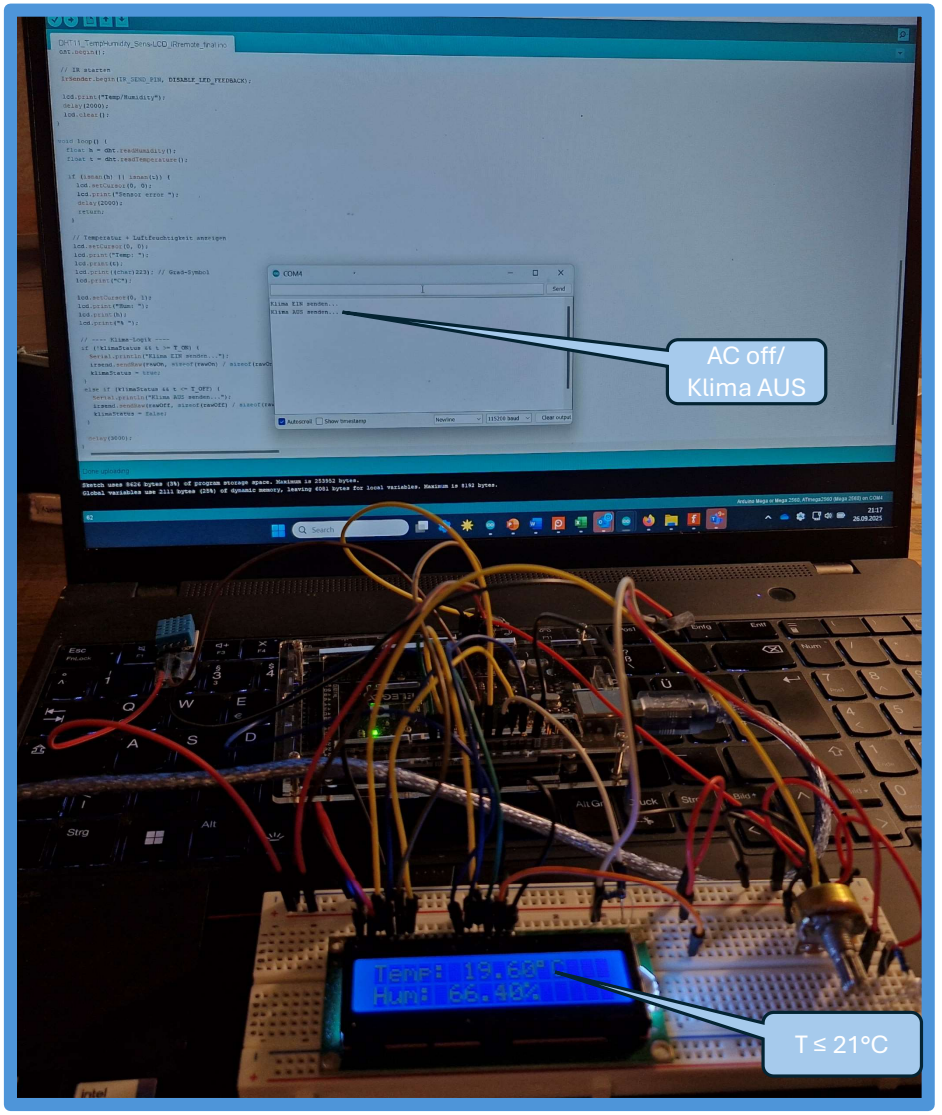
Functionality

1. The DHT11 sensor is read every 2 seconds.
2. Temperature and humidity values are displayed on the LCD.
3. The Arduino checks the hysteresis condition:
    - If AC is OFF and temperature ≥ 22 °C → send IR ON command.
    - If AC is ON and temperature ≤ 21 °C → send IR OFF command.
4. The IR LED transmits the ON/OFF commands at 38 kHz carrier frequency.
5. The 2N2222 transistor ensures enough current flows through the IR LED for reliable range.


Steckplatine
Schaltplan
Leiterplatte
Code
MADE IN ITALY
PWM
COMMUNICATION
TX
RX
ON
MEGA
Arduino
POWER
ANALOG IN
DIGITAL


Steckplatine
Schaltplan
Leiterplatte
Code
IR LED (Sender)
R5
220Ω
2N2222 Transistor
R6
100Ω
±5%
TOSP (IR Receiver)
Elegoo MEGA 2560
LCD 16x2
R3
220Ω
DHT11
Humidity
and
Temperature
Sensor
RHT03
16X2
LCD
Potentiometer
10kΩ
Arduino
Mega
2560
(Rev3)


AC on/
Klima EIN
T ≥ 22°C


AC off/
Klima AUS
T ≤ 21°C