

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

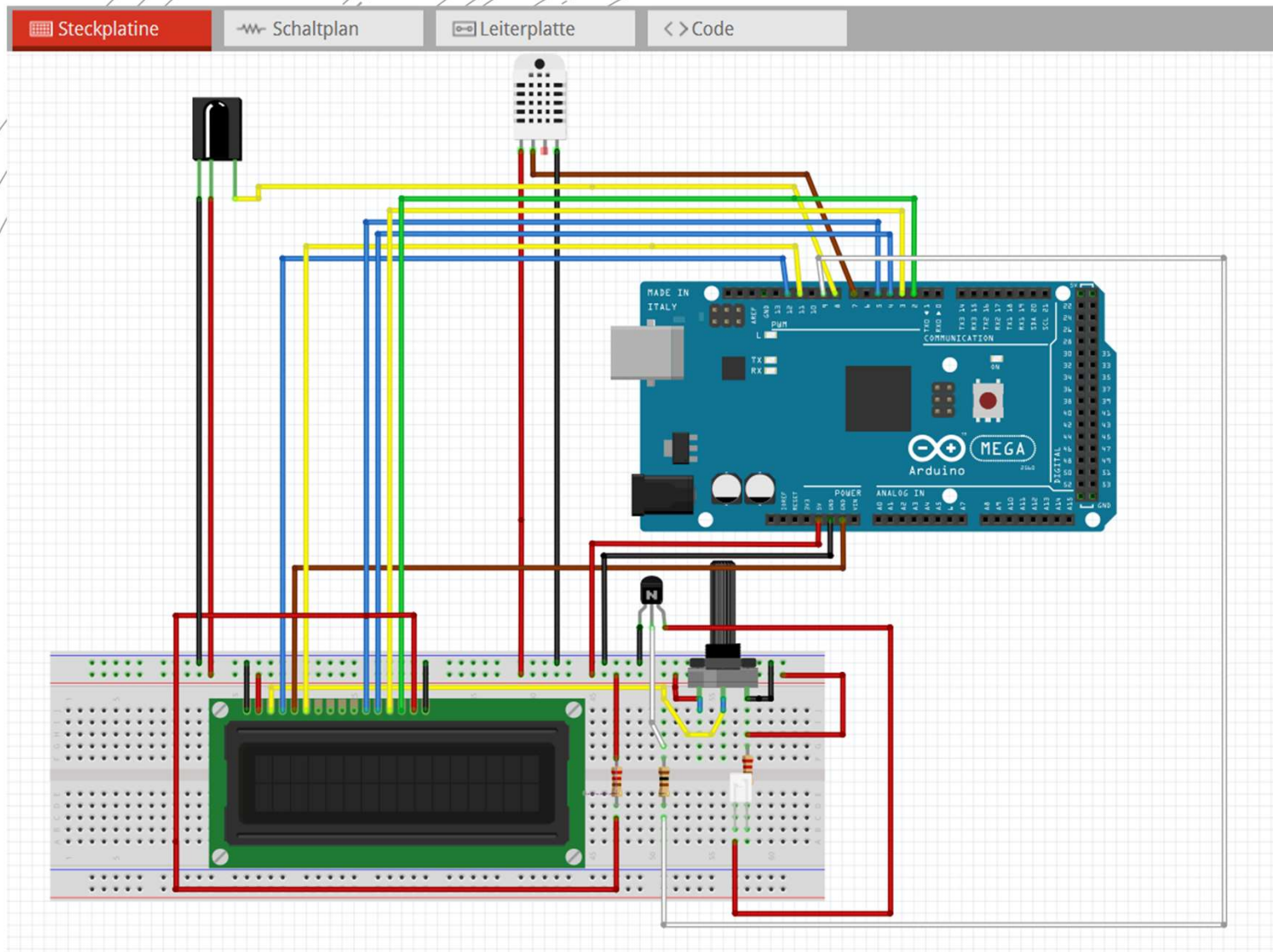
➤ Purpose

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

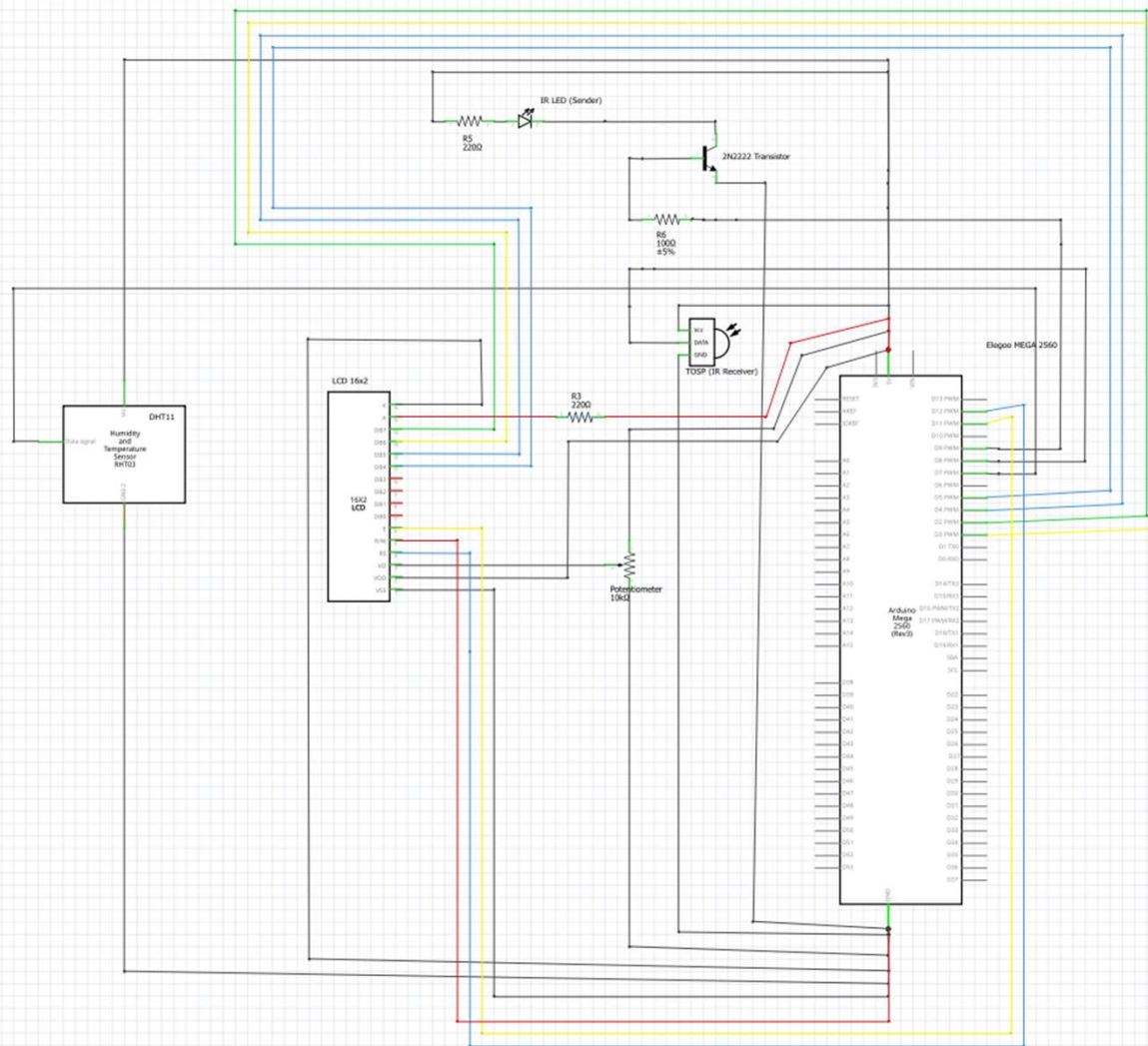
- Measure temperature and humidity using the DHT11 sensor.
- Display the measured values on a 16×2 LCD screen.
- Automatically control an air conditioner using an IR LED driven by a 2N2222 transistor.
- Implement a simple hysteresis rule (prevents rapid switching around the threshold) :
 - If $T \geq 22\text{ }^{\circ}\text{C} \rightarrow \text{AC ON}$
 - If $T \leq 21\text{ }^{\circ}\text{C} \rightarrow \text{AC OFF}$

➤ Functionality

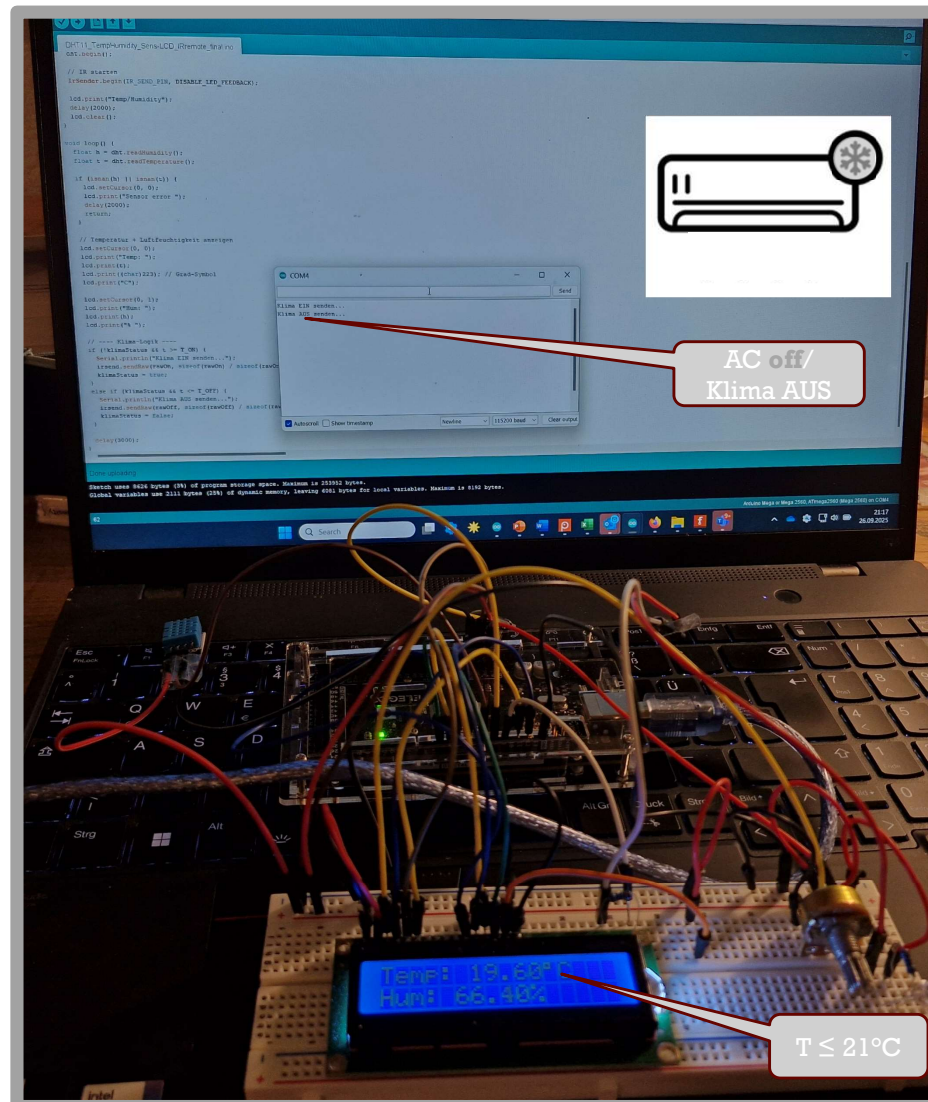
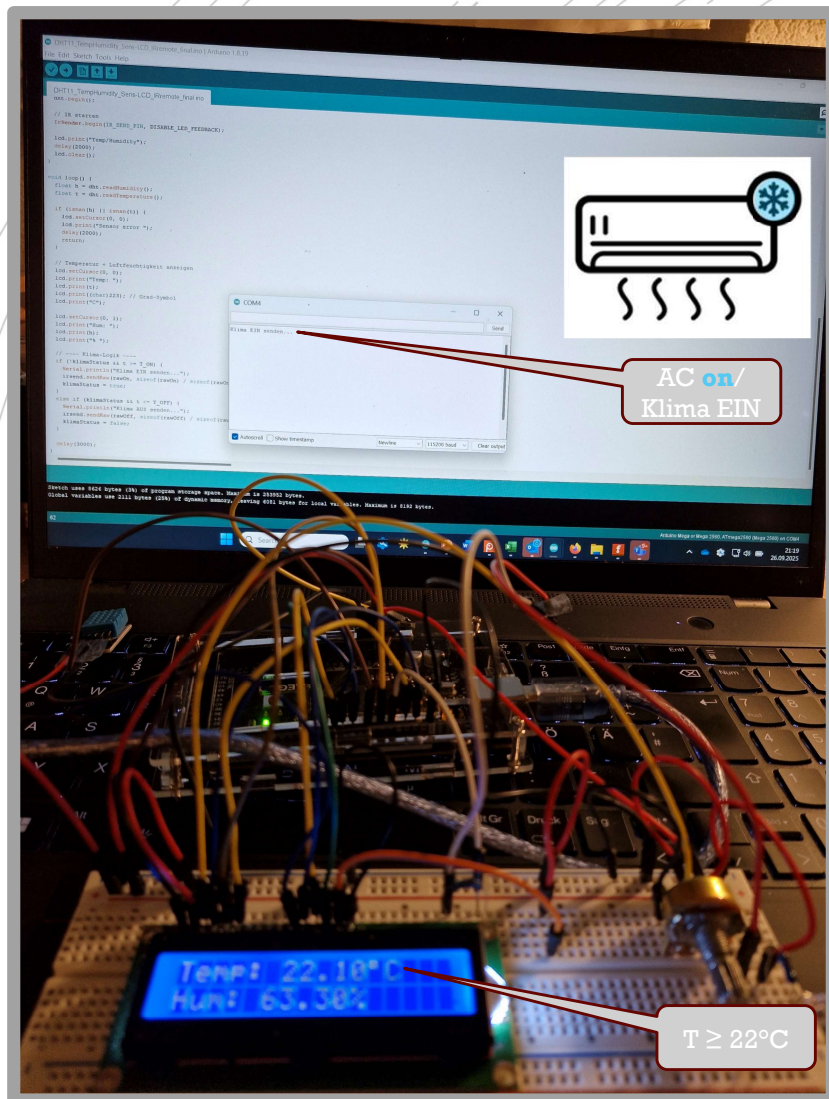
- 1. The DHT11 sensor is read every 2 seconds.
- 2. Temperature and humidity values are displayed on the LCD.
- 3. The Arduino checks the hysteresis condition:
 - If AC is OFF and temperature $\geq 22\text{ }^{\circ}\text{C} \rightarrow$ send IR ON command.
 - If AC is ON and temperature $\leq 21\text{ }^{\circ}\text{C} \rightarrow$ 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.



Breadboard



Circuit diagram



AC
control