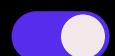
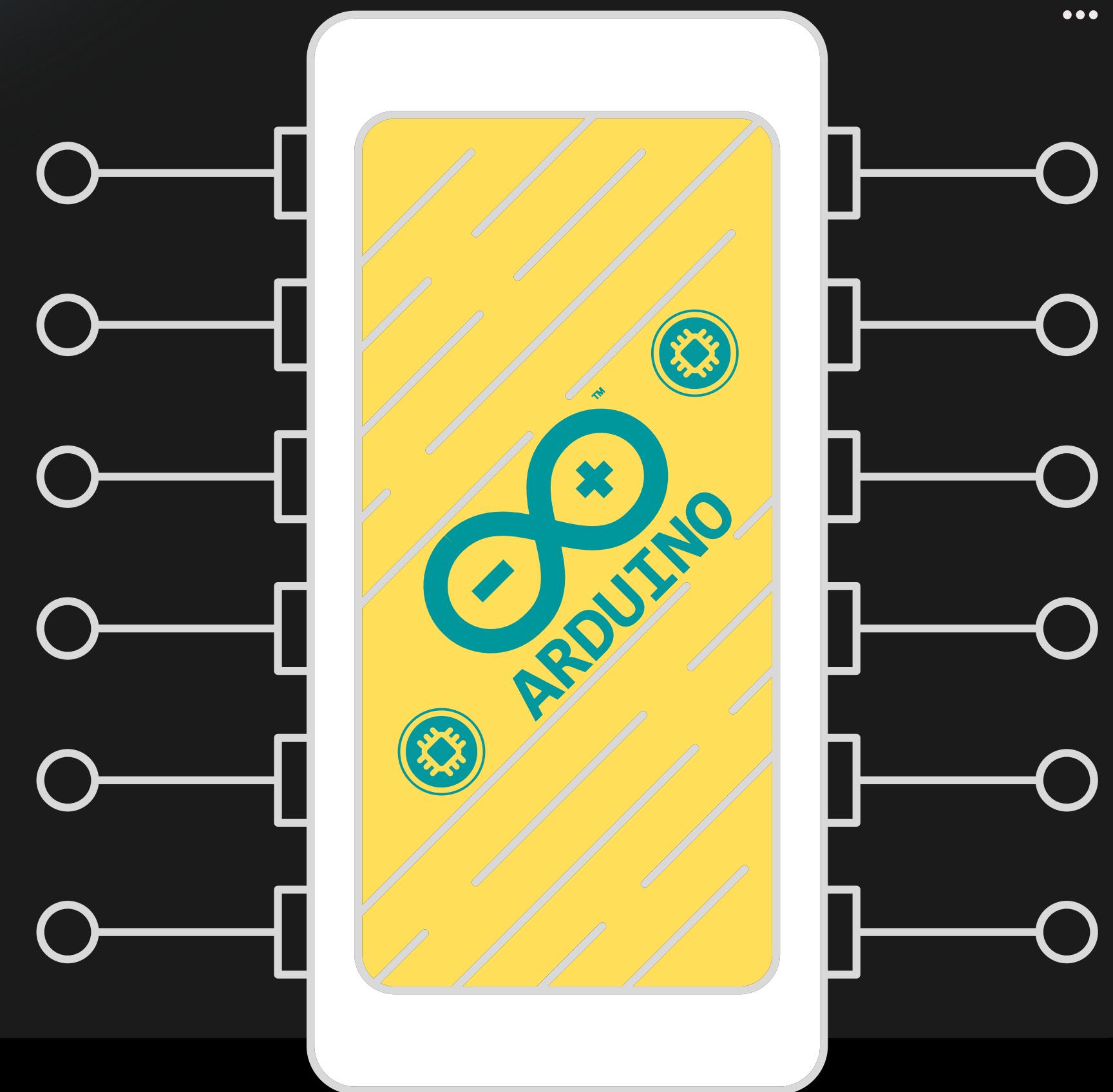


Door Buzzer & Automatic Room Temperature Controller

PRINCIPLES OF MEASUREMENT AND SENSORS



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Group Members



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- 05** • NIRANJAN PRASANTH
- 06** • ISHAAN DADHICH

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Index

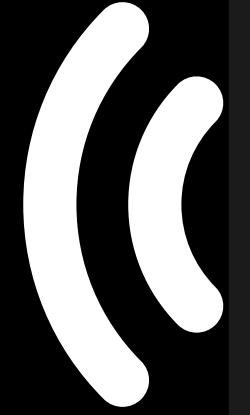


SLIDE No:

01	• SENSORS USED	4
02	• DOOR BUZZER	5-8
03	• SIGNAL CONTIONING UNIT	9-10
04	• SIGNAL CONTIONING UNIT OF ULTRASONIC SENSOR	11-14
05	• AUTOMATIC ROOM TEMPERATURE CONTROLLER	15-18
06	• SIGNAL CONTIONING UNIT OF TEMPERATURE SENSOR	19-20
07	• CONCLUSION	21

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SENSORS USED



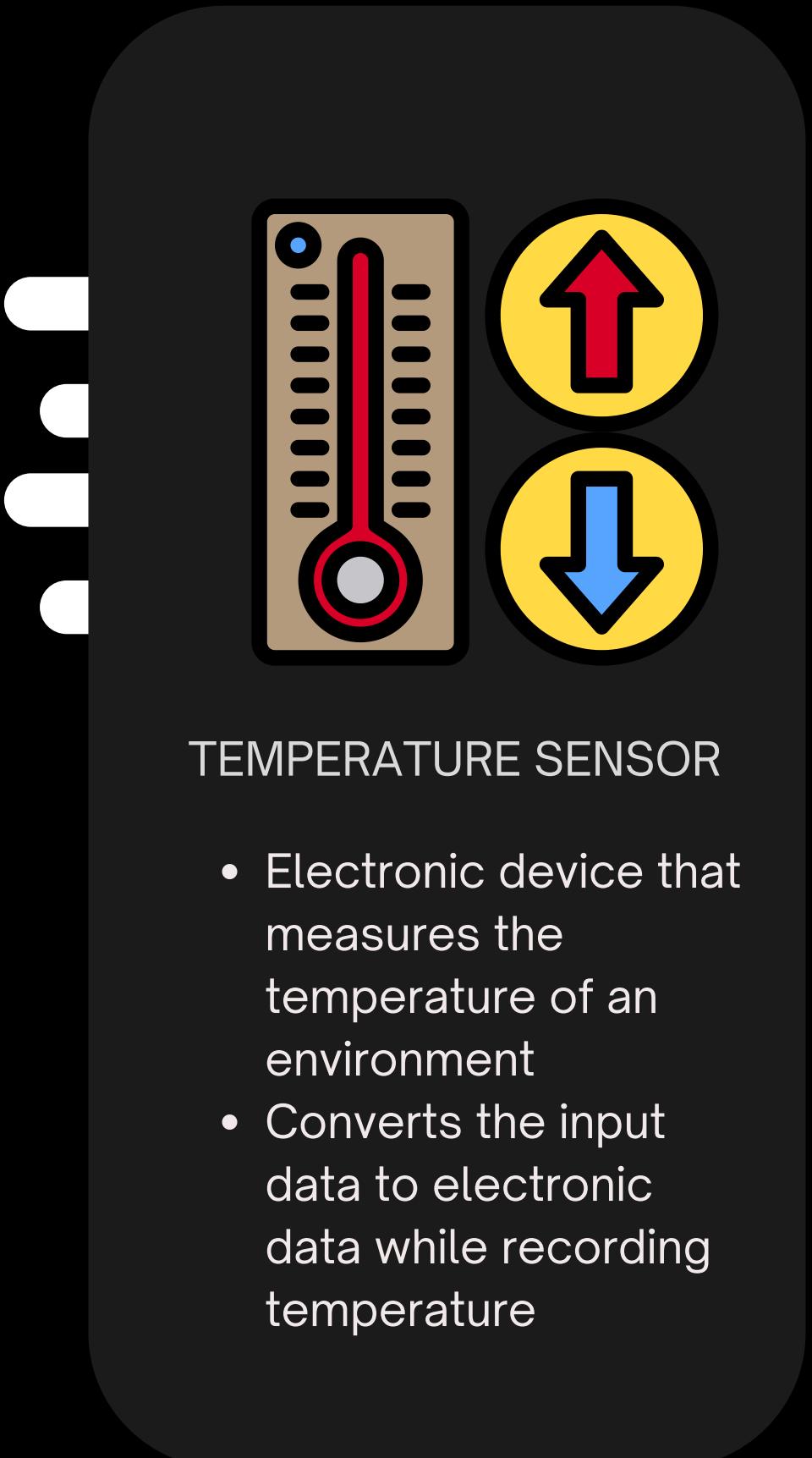
ULTRASONIC SENSOR

- Device that detects an object and measures the distance to it
- Uses a transducer to send and receive ultrasonic pulses

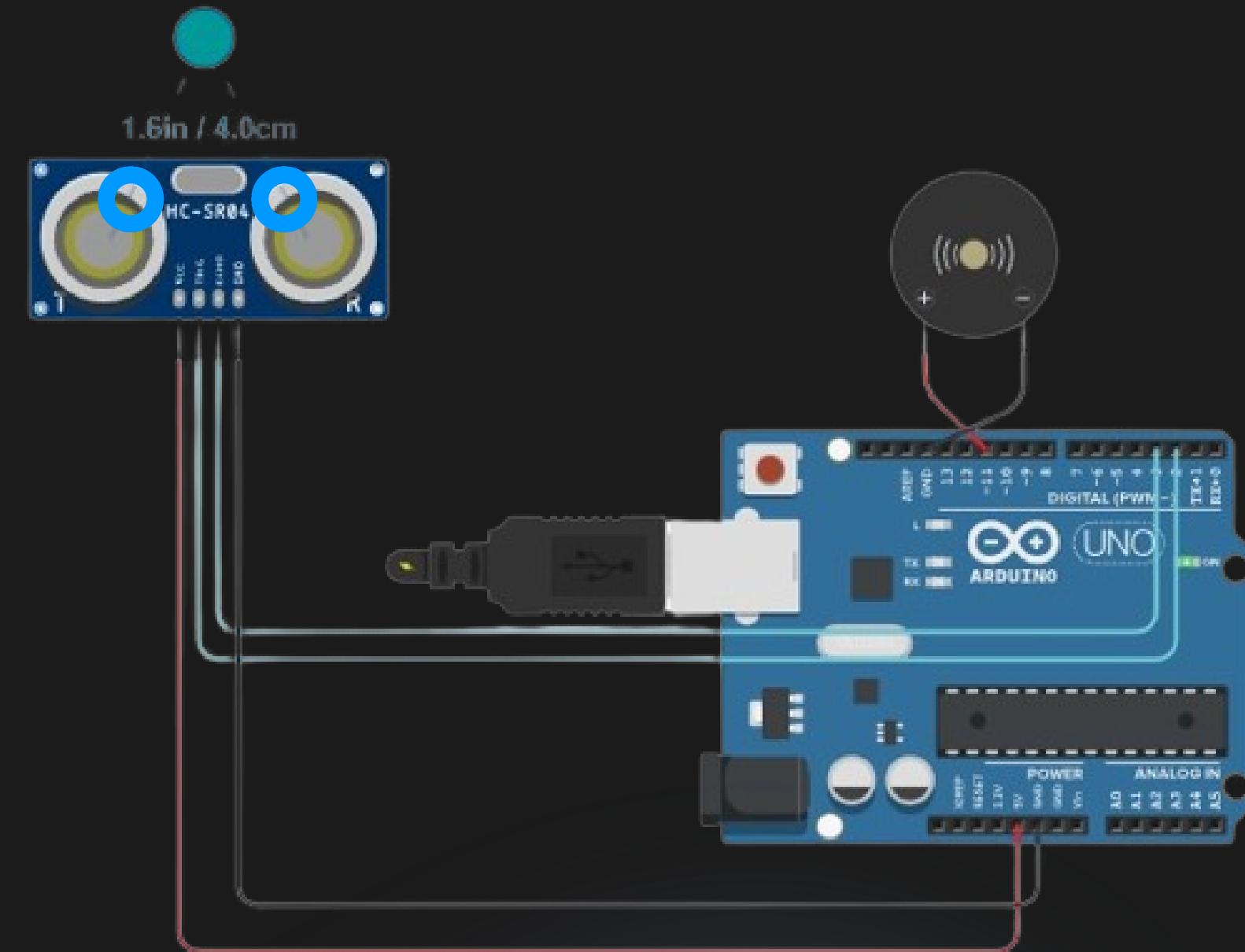


TEMPERATURE SENSOR

- Electronic device that measures the temperature of an environment
- Converts the input data to electronic data while recording temperature



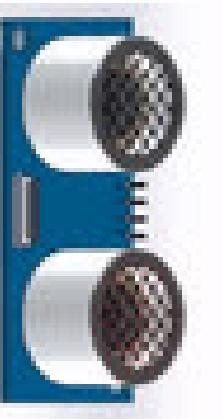
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[Go Back to Agenda Page](#)



- The ultrasonic sensor used in this project is used as a distance sensor, it will tell us the distance at which the object is placed.
- Using this distance value, we will turn the buzzer on or off.
- The concept used in developing this technology is ultrasonic reflection similar to that which is used in a SONAR.
- As the distance reduces to below 10 units the doors will open automatically with a buzzer sound



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Block Diagram of Door Buzzer

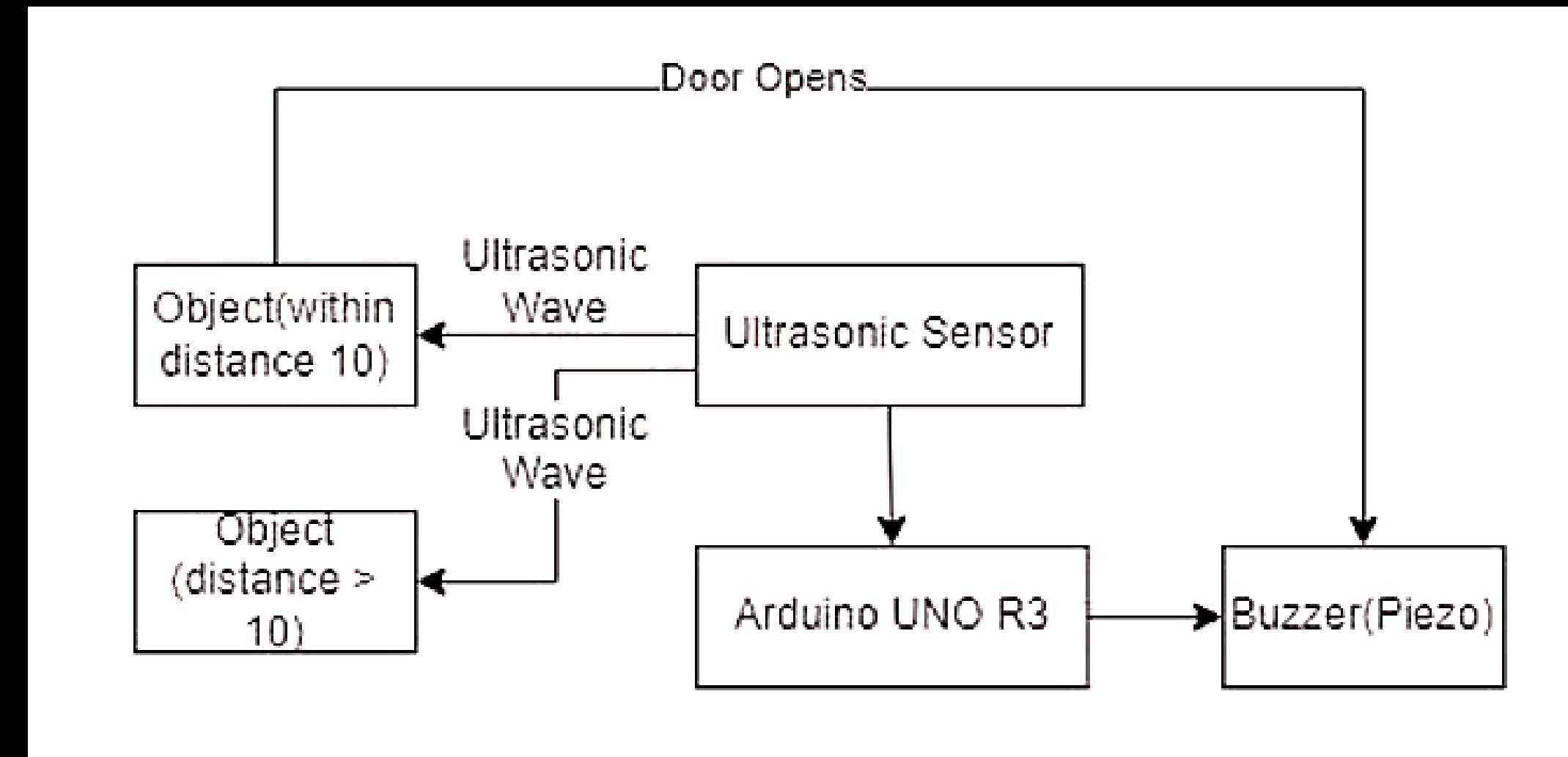
COMPONENTS USED:

➤ ARDUINO UNO R3

➤ ULTRASONIC SENSOR
(HC-SR04)

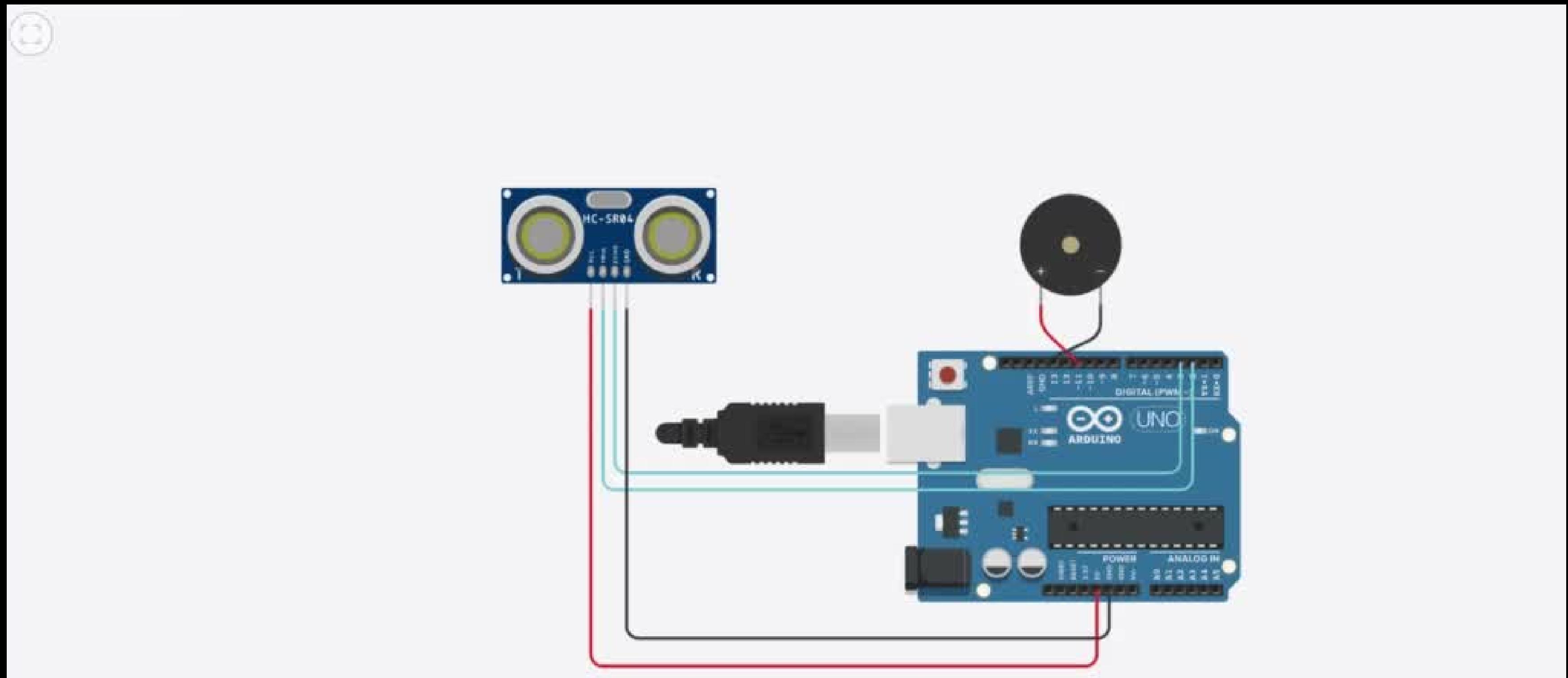
➤ PIEZO

➤ CONNECTING WIRES





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SIGNAL CONDITIONING UNIT



What Do Signal Conditioners Do?

Signal conditioners take the analog signal from the sensor, manipulate it, and send it to the ADC (analog-to-digital converter) subsystem to be digitized for further processing (usually by computer software).

As the name implies, they are in the business of conditioning signals so that they can be converted into the digital domain by the A/D subsystem, and then displayed, stored, and analysed.

After all, you cannot directly connect 500V to one of the inputs of an A/D card and thermocouples, RTDs, LVDTs, and other sensors require conditioning to operate and to provide a normalized voltage output that can be input into the A/D card.

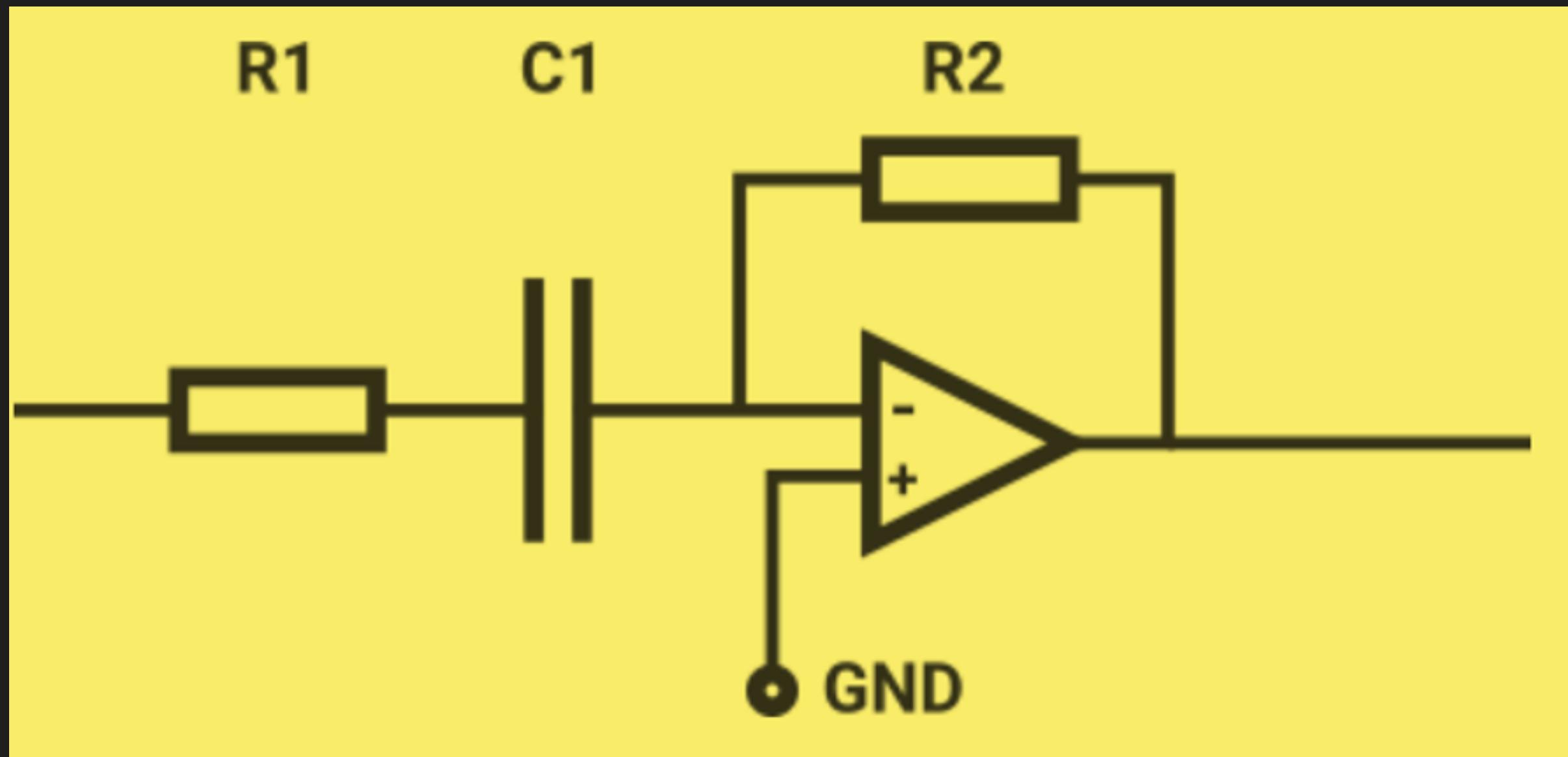
...

Signal Conditioners Types In the world of electric sensors, we need different types of signal conditioning circuits in order to properly condition signals coming out from those sensors. Today common types of signal conditioners are:

- Voltage and high-voltage signal conditioners
- Charge signal conditioners
- Load cell signal conditioners
- Thermocouple signal conditioners
- Digital signal conditioners
- LVDT signal conditioners
- Thermistor signal conditioners
- Current signal conditioners
- IEPE signal conditioners (or ICP/piezoelectric signal conditioners)
- Strain gauge signal conditioners
- RTD signal conditioners
- DC signal conditioning
- AC signal conditioning

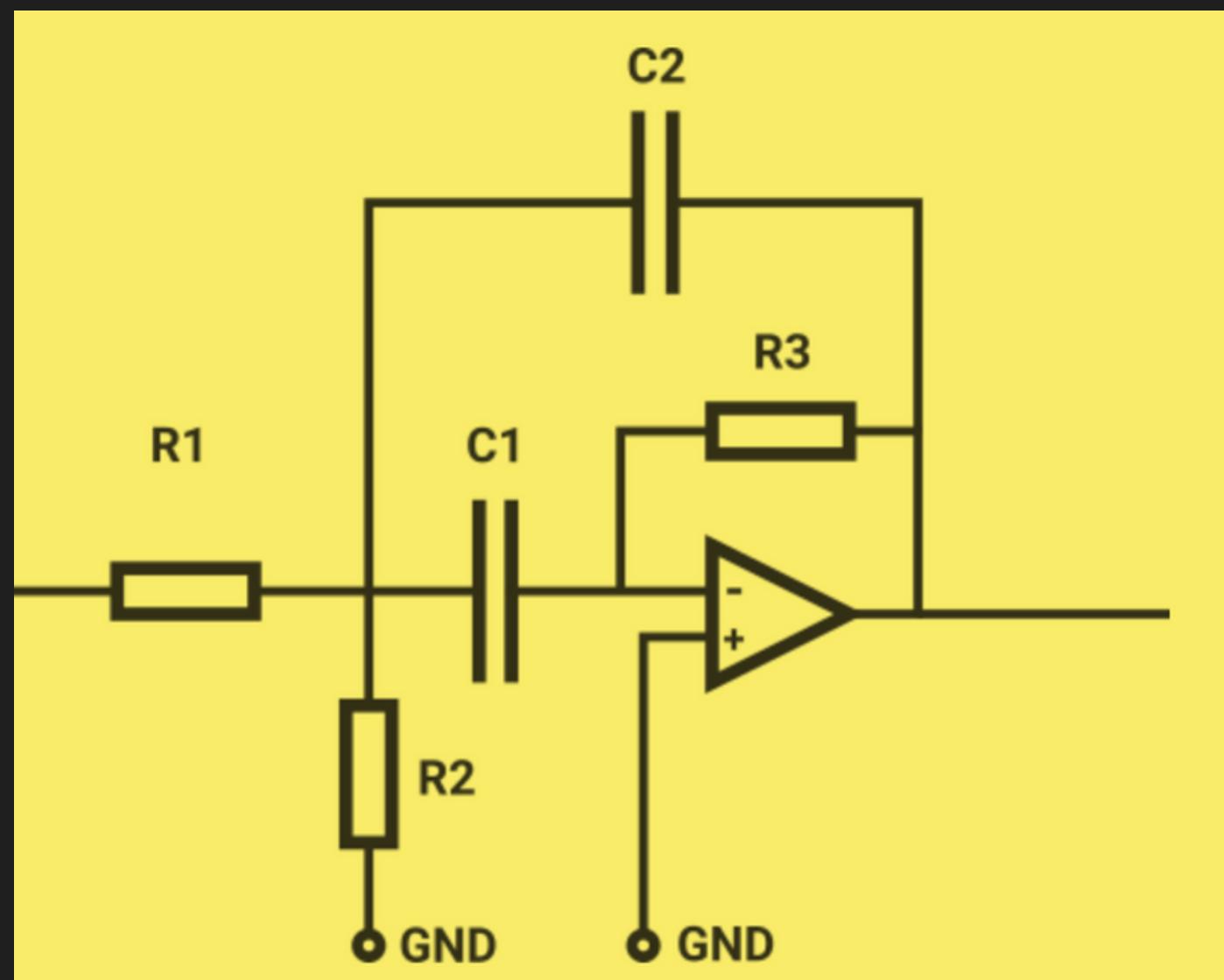
Inverting High Pass Filter

In first order high pass, meaning that it reduces lower frequencies while letting higher frequencies pass. First order comes from the fact that there is only one element in there that influences the frequency response, namely the capacitor.

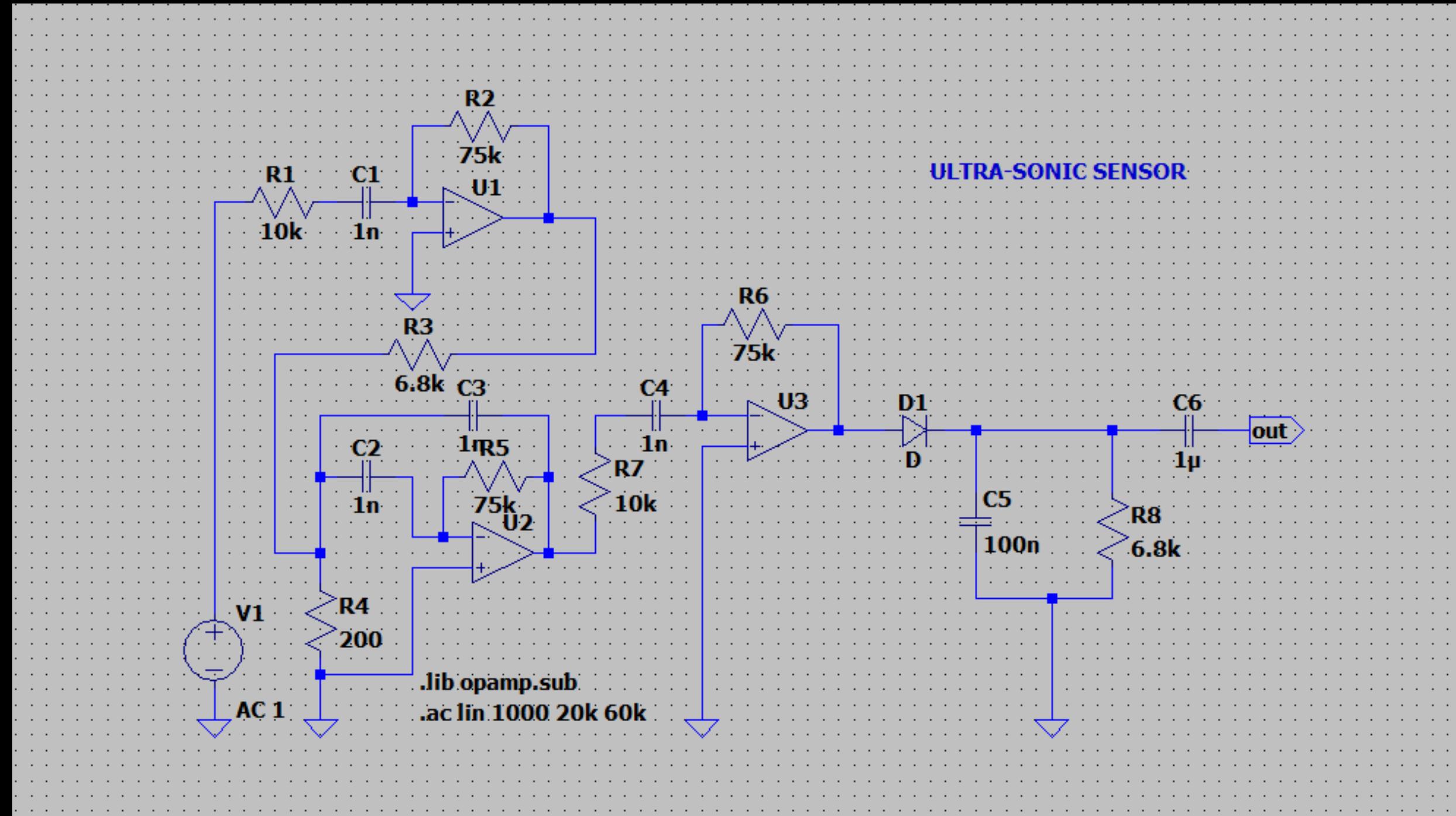


Band Pass Filter

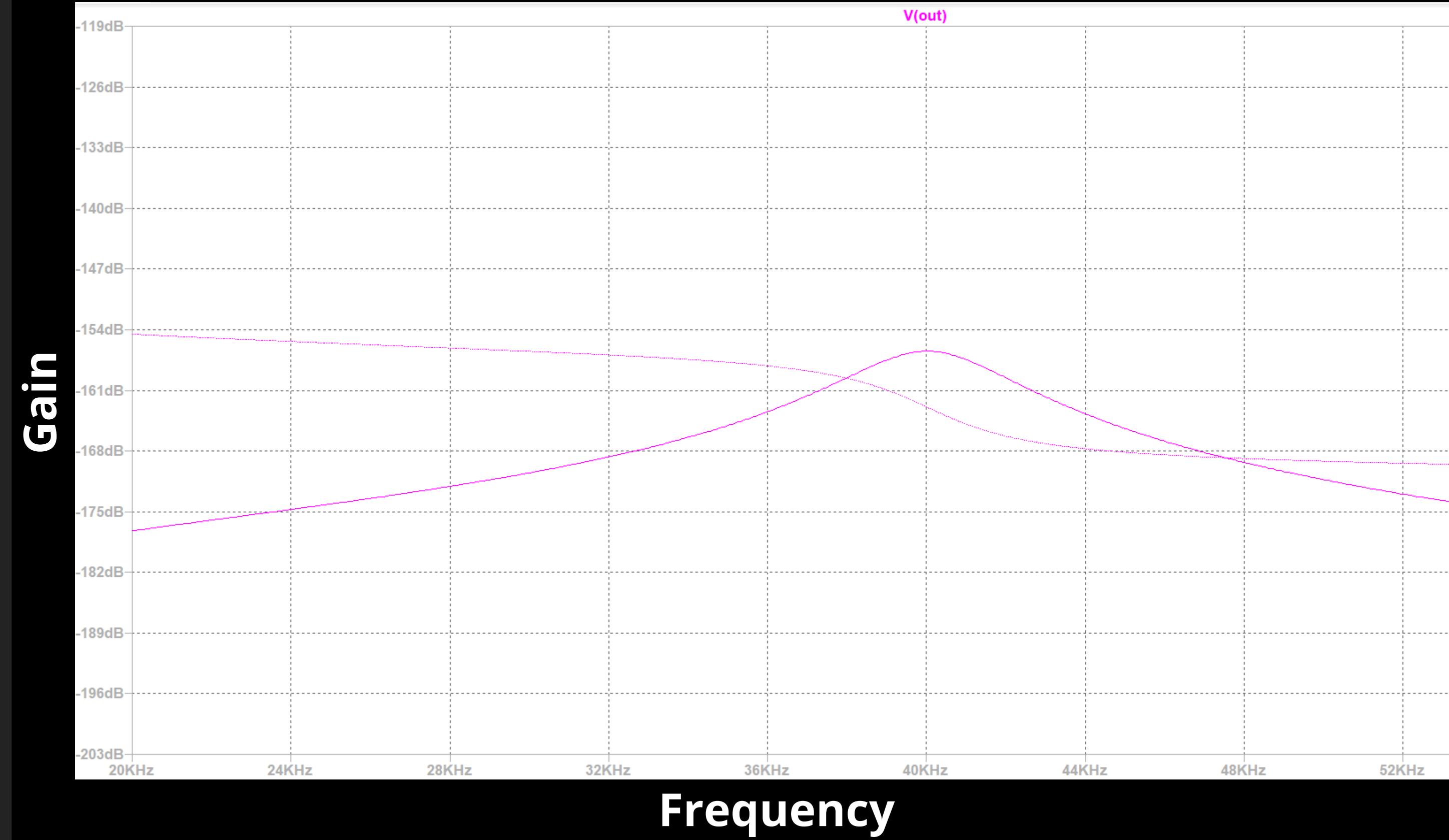
The bandpass amplifier amplifies frequencies around a specific center frequency and reduce everything else that's further away.



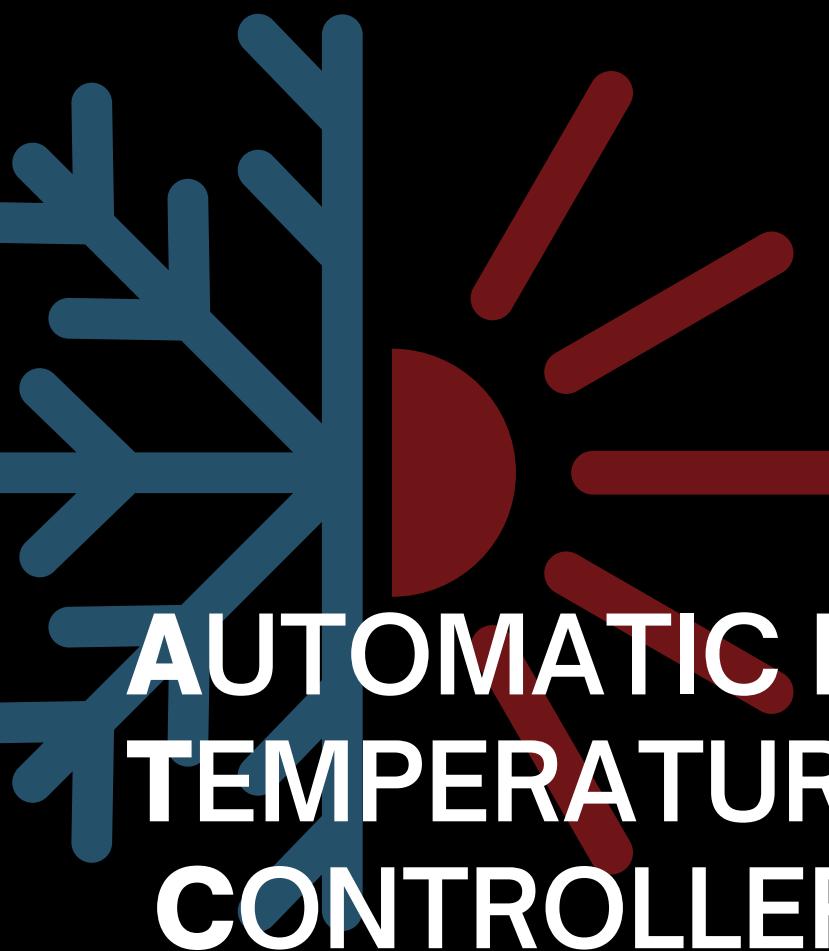
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Signal Conditioning Unit

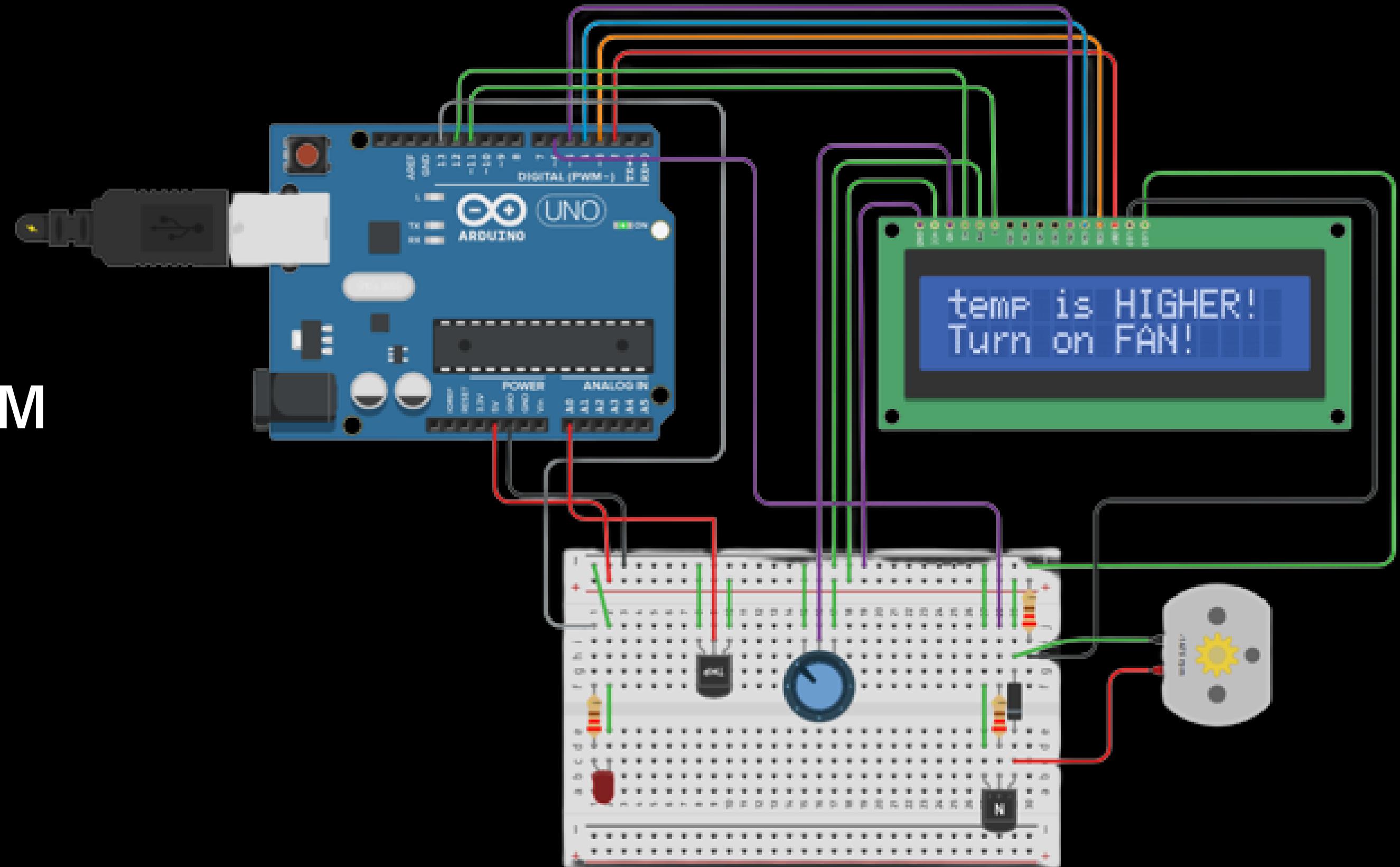


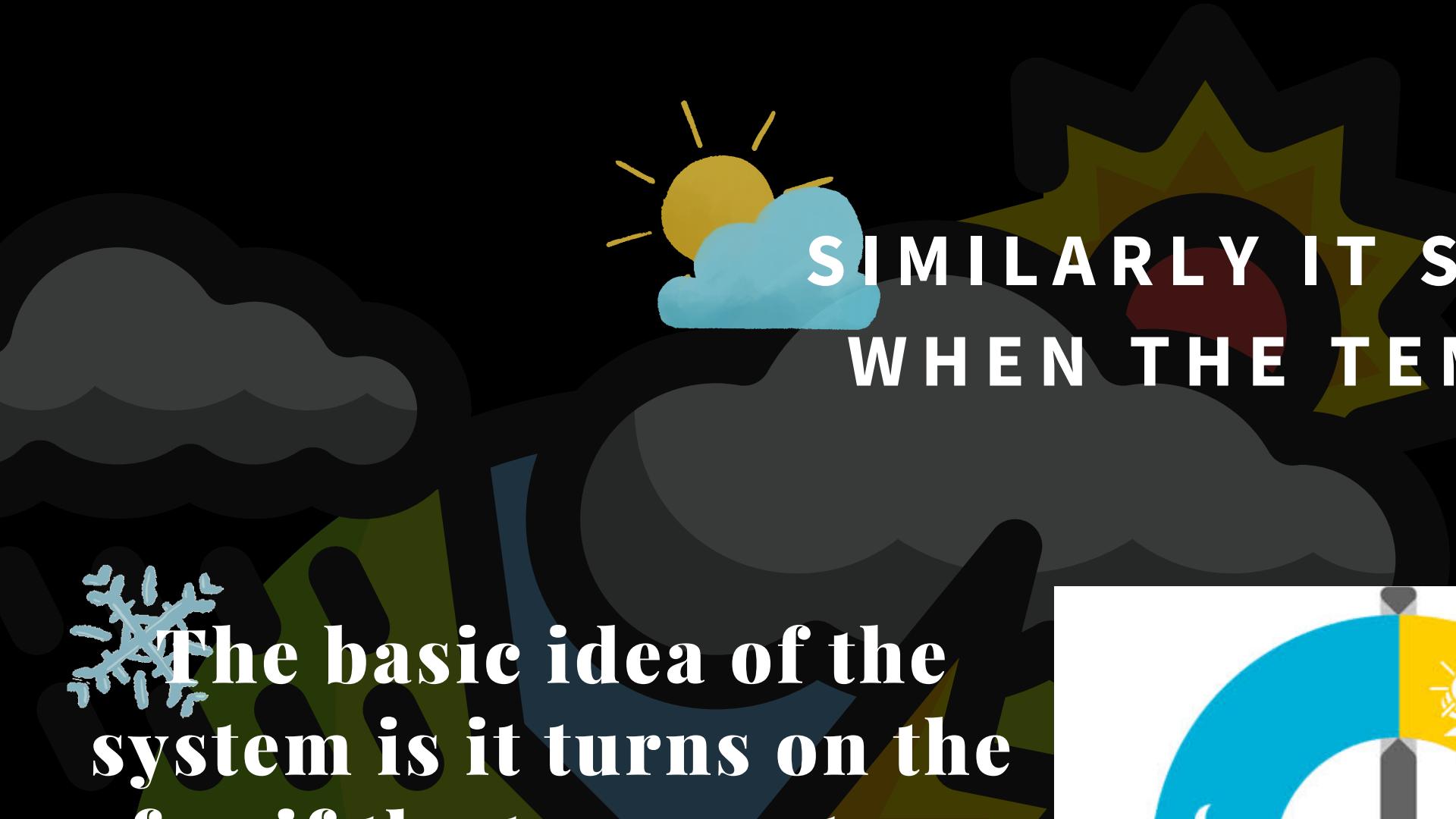
Plot of Signal Conditioning Unit



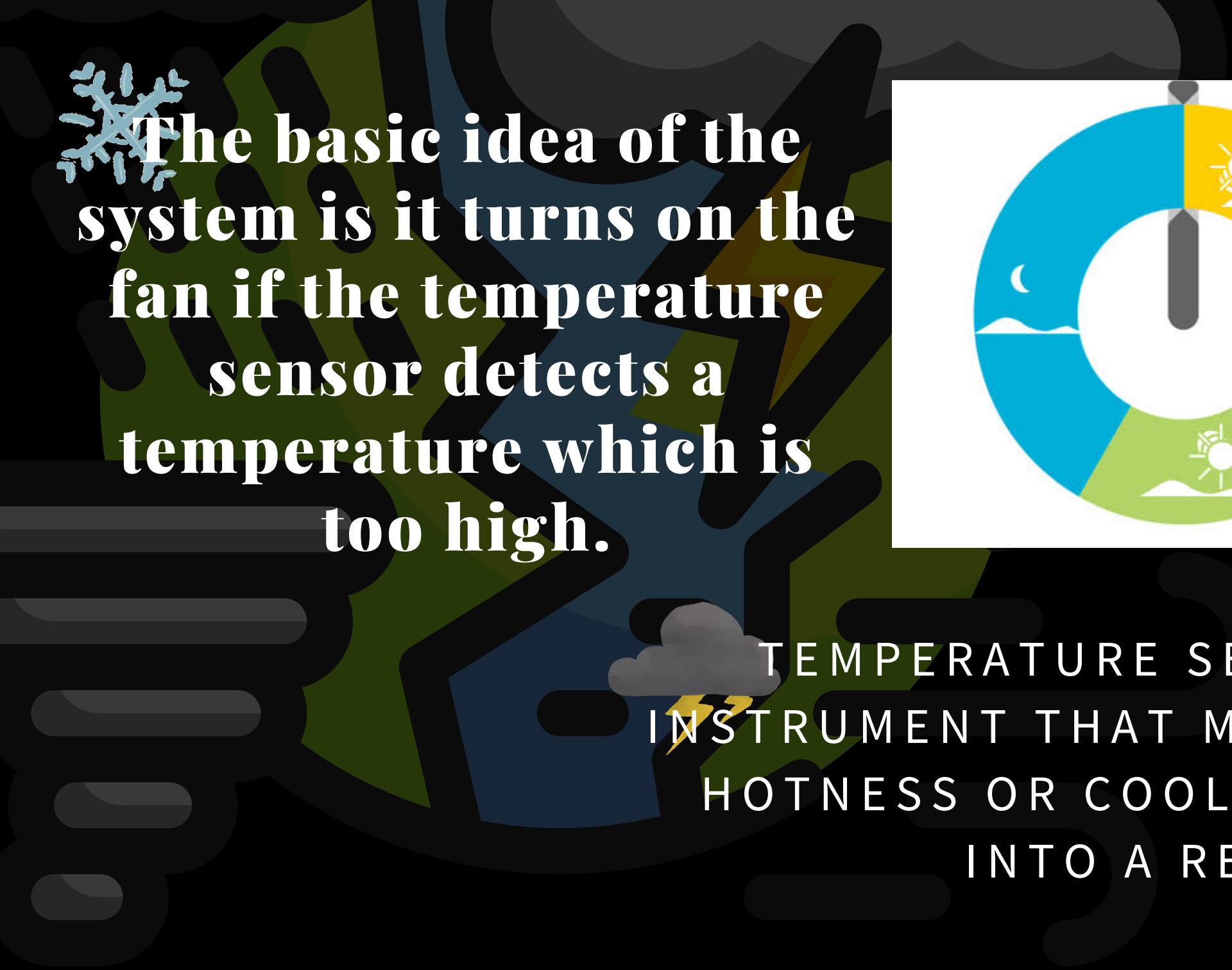
AUTOMATIC ROOM TEMPERATURE CONTROLLER

USING TEMPERATURE SENSOR





**SIMILARLY IT SWITCHES ON THE HEATER
WHEN THE TEMPERATURE IS TOO LOW.**

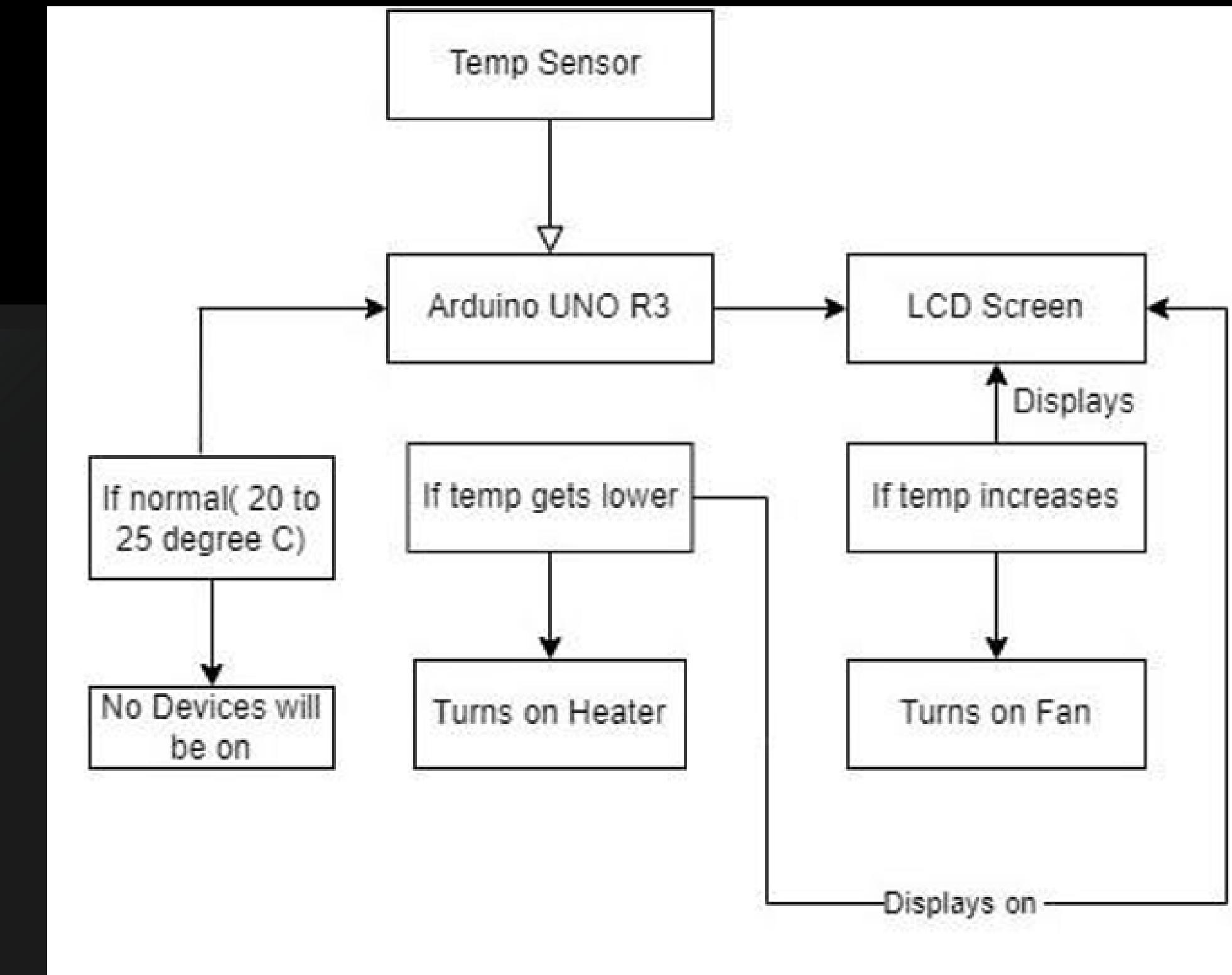


The basic idea of the system is it turns on the fan if the temperature sensor detects a temperature which is too high.



TEMPERATURE SENSORS ARE A SIMPLE INSTRUMENT THAT MEASURES THE DEGREE OF HOTNESS OR COOLNESS AND CONVERTS IT INTO A READABLE UNIT.

BLOCK DIAGRAM OF TEMPERATURE CONTROLLER



Components Used:

RESISTOR



LCD



LED(FOR
DEMONSTRATING
HEATER)

POTENTIOMETER



TEMPERATURE
SENSOR

DC
MOTOR(REPRES
ETING FAN)

HIGH RATED,HIGH
VOLTAGE CURRENT
DIODE



AN ARDUINO
UNO R3

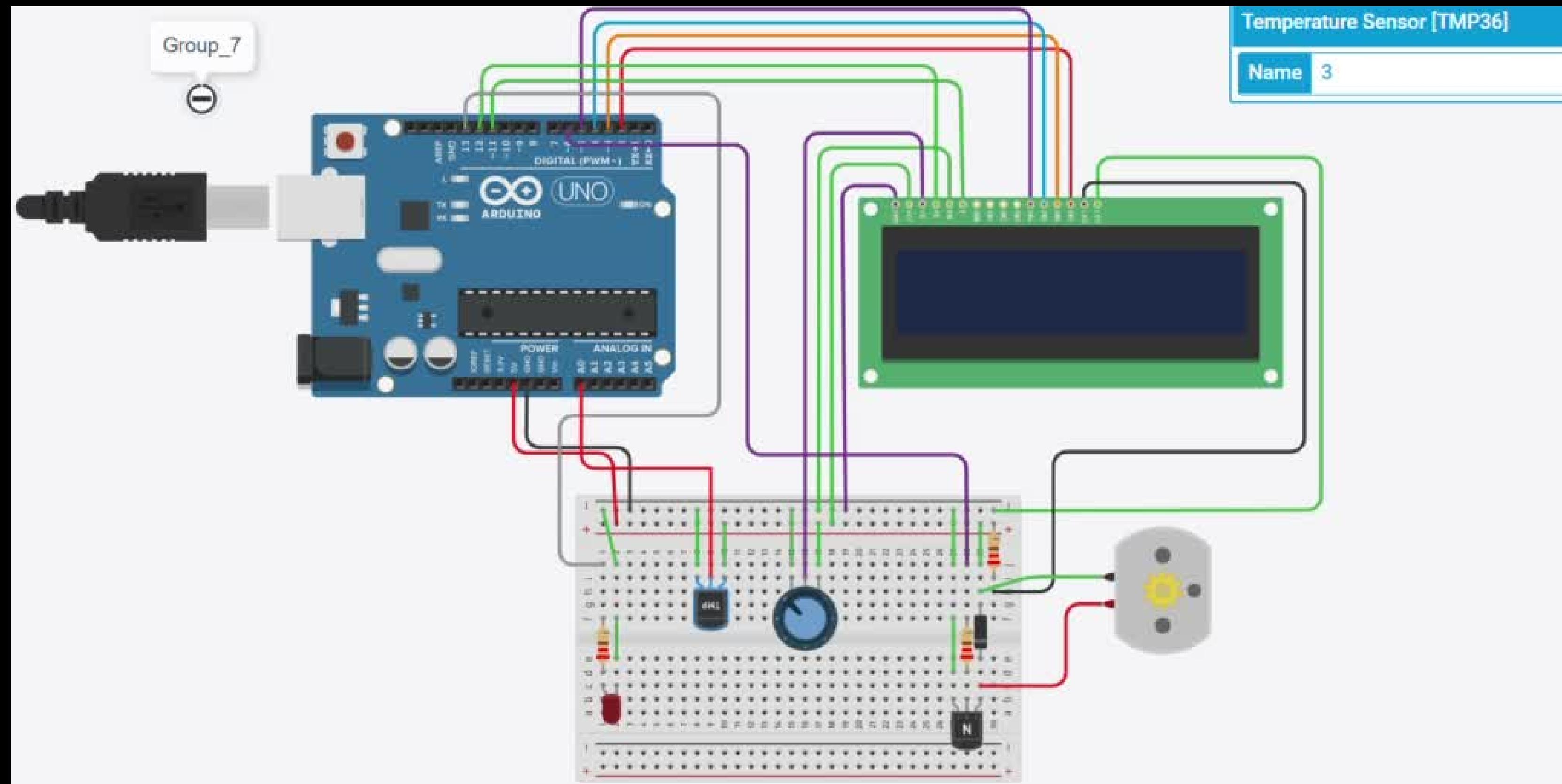


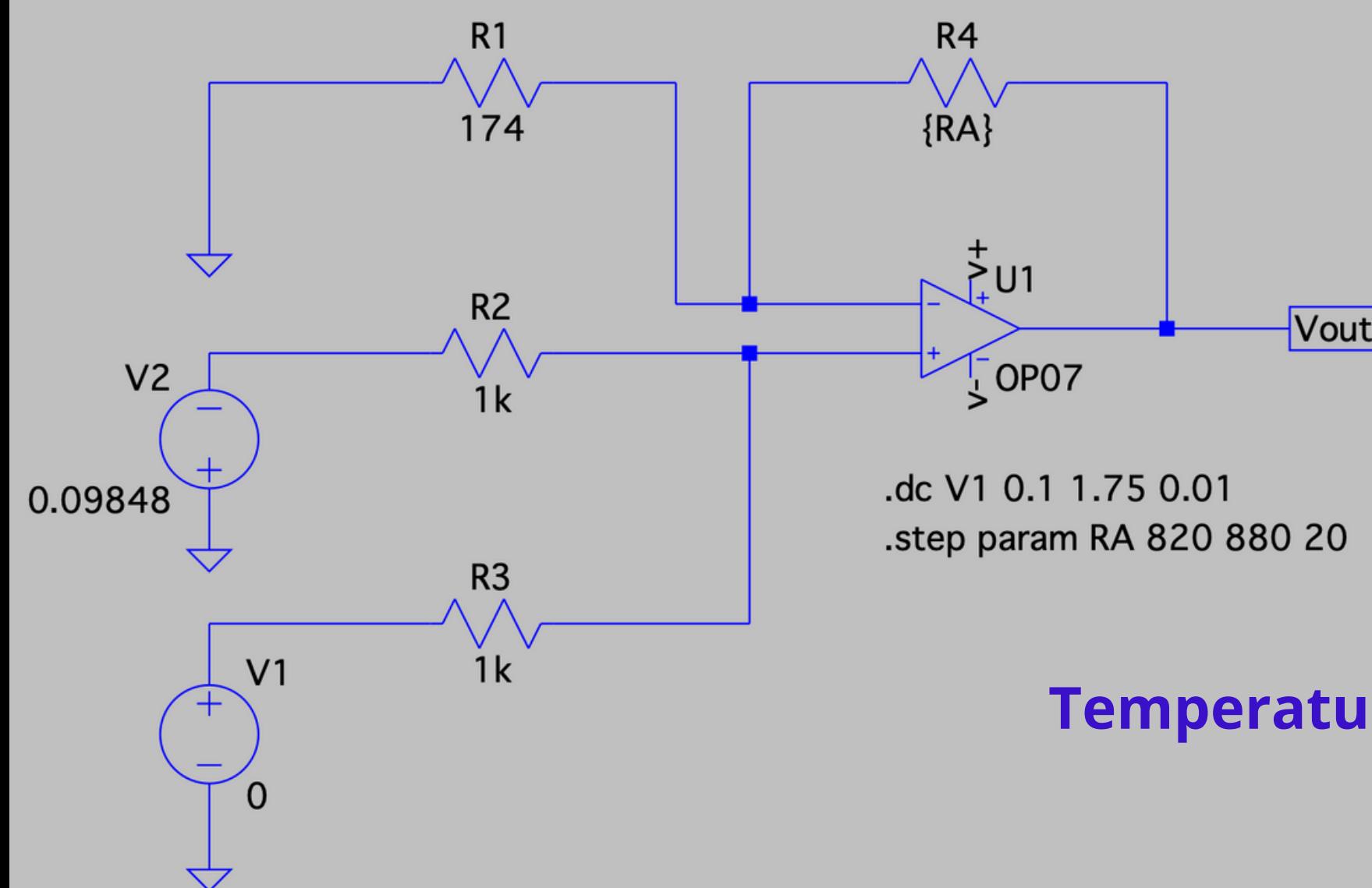
NPN
TRANSISTOR



CONNECTING
WIRES

...

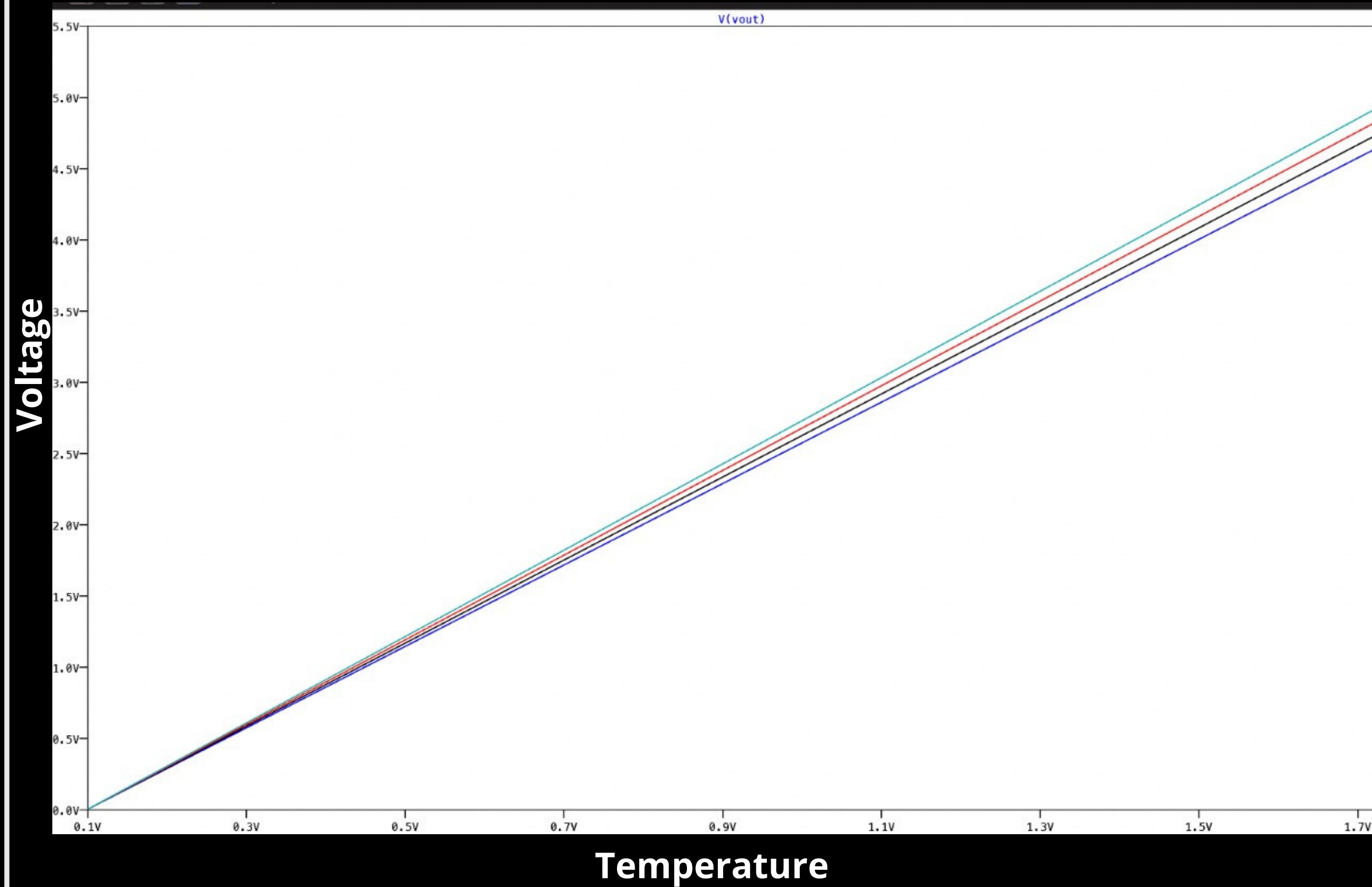




Temperature Sensor

Signal Conditioning Unit

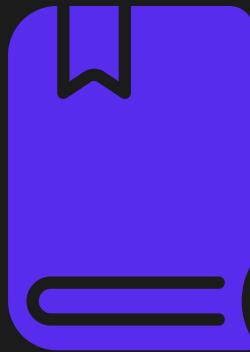
Plot of Signal Conditioning Unit



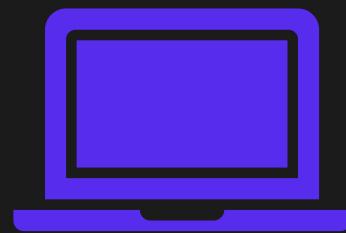
CONCLUSION



Successfully implemented Door Buzzer Using Ultrasonic Sensor and Automatic Room temperature controller using Temperature Sensor.



The outcome of this project is considered as the best understanding of basic and advanced mode of connections, codes, the working of sensors and years of innovation lead to the discovery of such extremely beneficial sensors to mankind.



We have also gotten a better understanding of the use of the Ultrasonic sensor and the Temperature sensor. We saw the working of each sensor and their applications in various fields.

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Thank you!

Insert a parting or call-to-action message here.

