

Arduino Training Programme

ATAL TINKERING LAB

Evangeline Matriculation Higher Secondary School

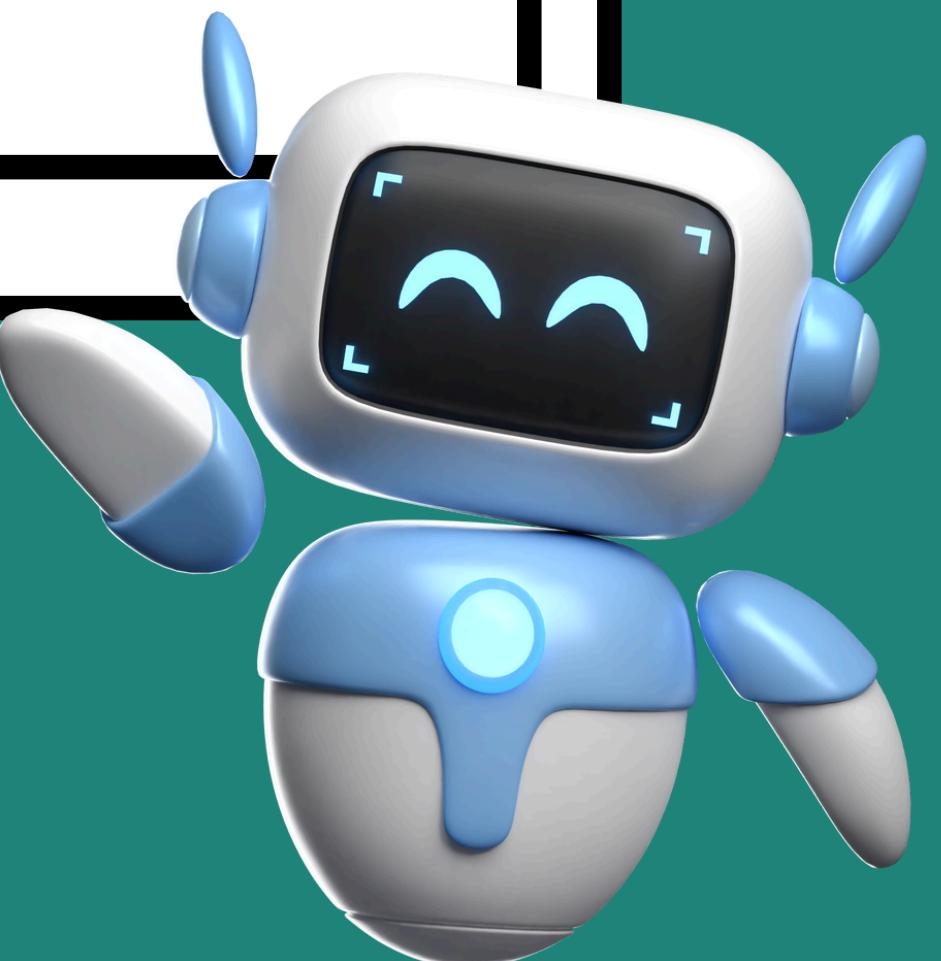
Karunya Nagar, Coimbatore.



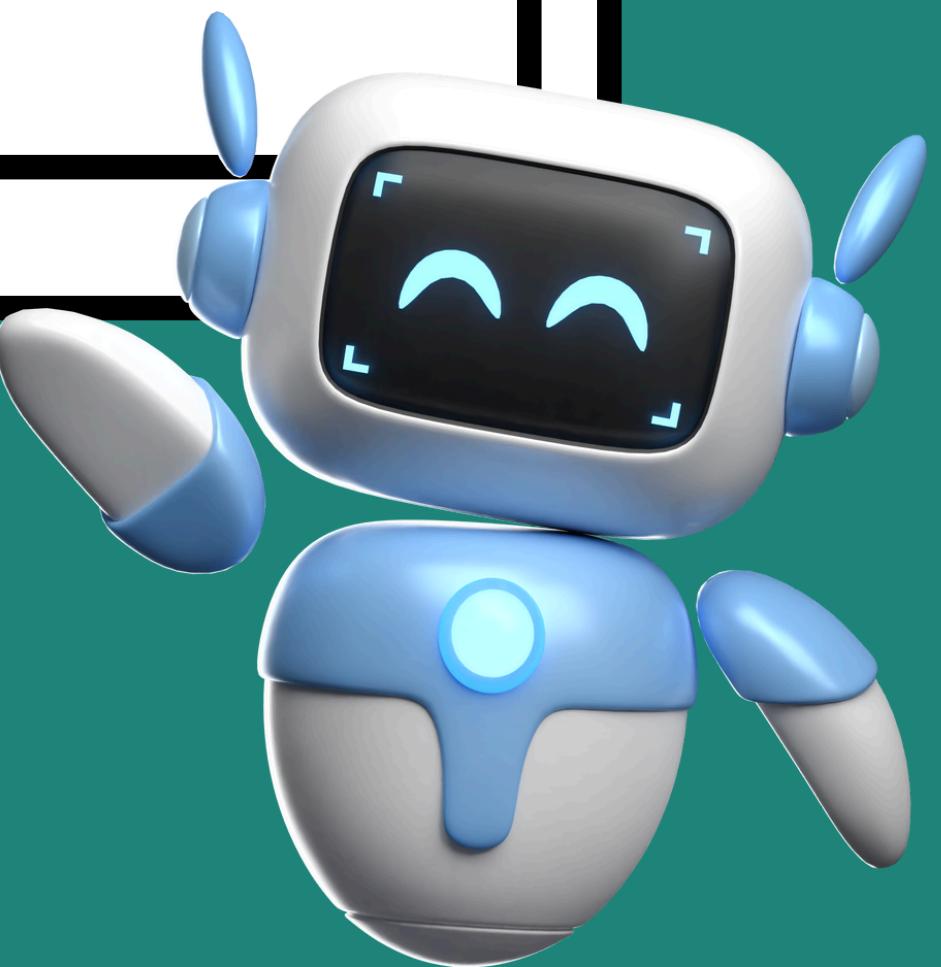
KARUNYA
INNOVATION AND
DESIGN STUDIO



How do they work?



How do humans work?



INPUT

We sense

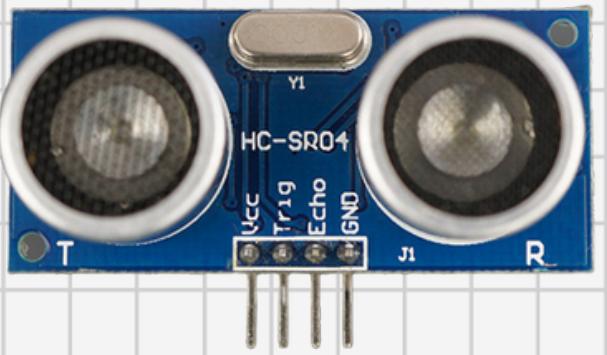
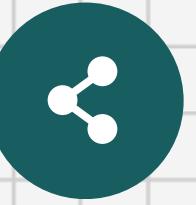
PROCESS

We think

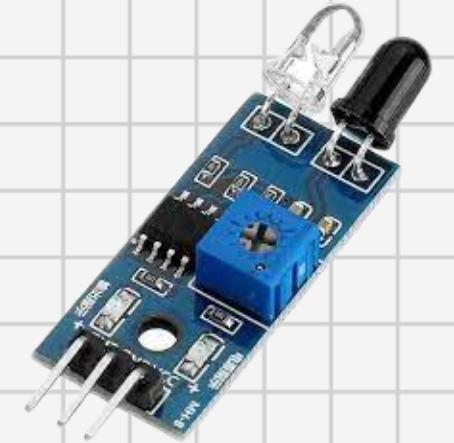
OUTPUT

We do

Sensors



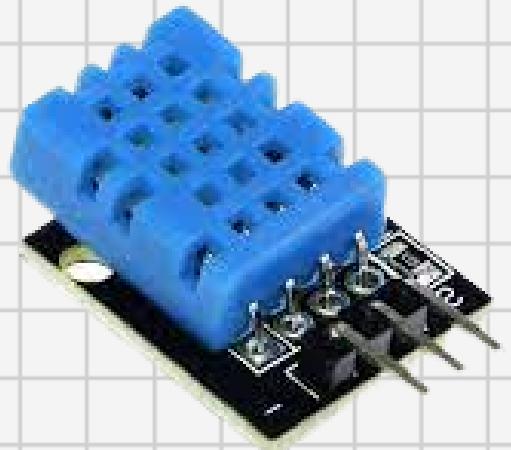
ULTRASONIC SENSOR



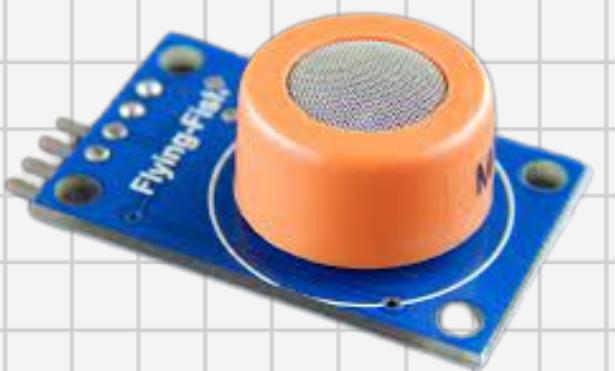
IR SENSOR



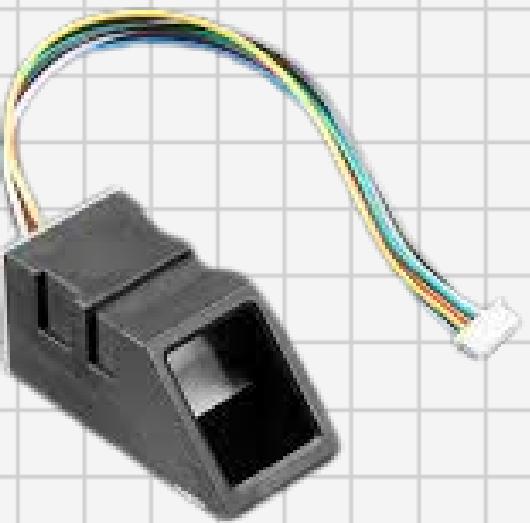
MOTION SENSOR



TEMPERATURE AND HUMIDITY

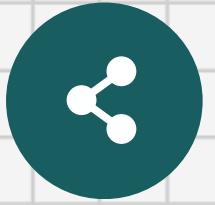


GAS SENSOR



FINGERPRINT SENSOR

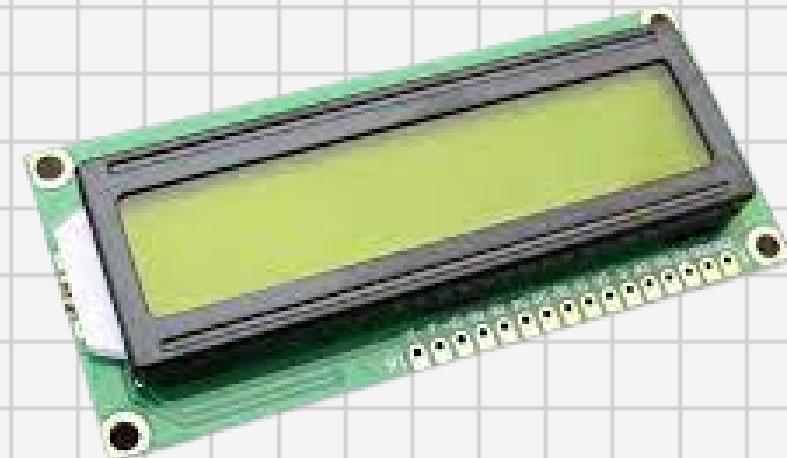
Output



SERVO MOTOR



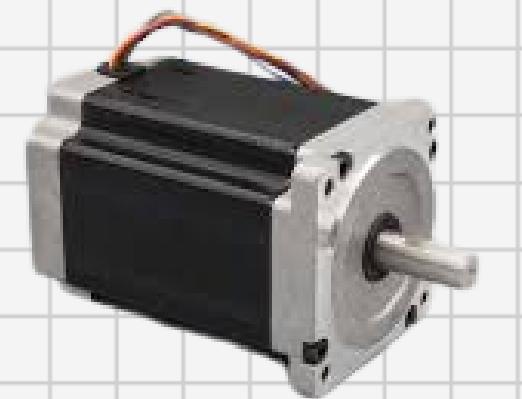
BUZZER



LCD DISPLAY



LED

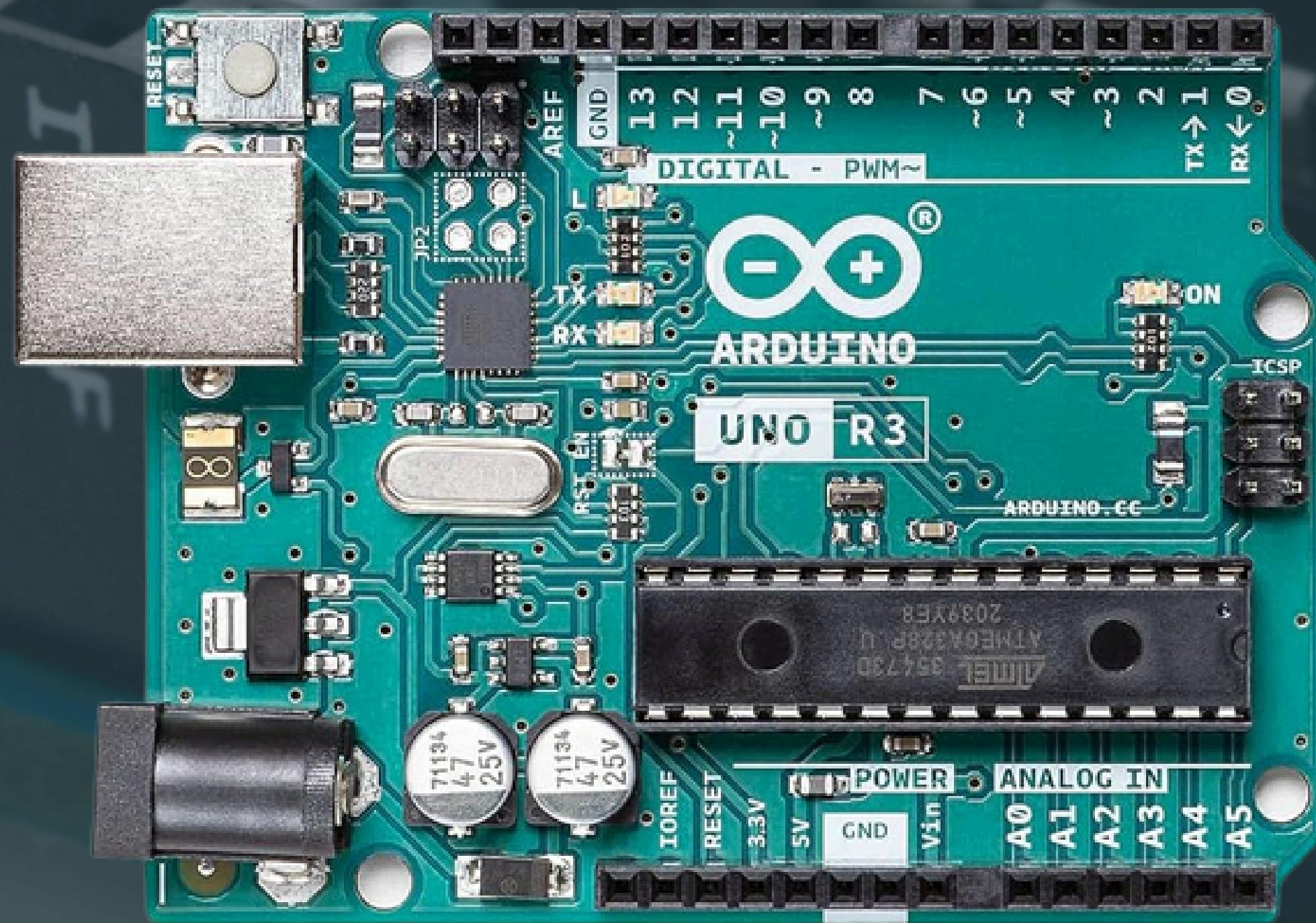


STEPPER MOTOR



GEAR

ARDUINO

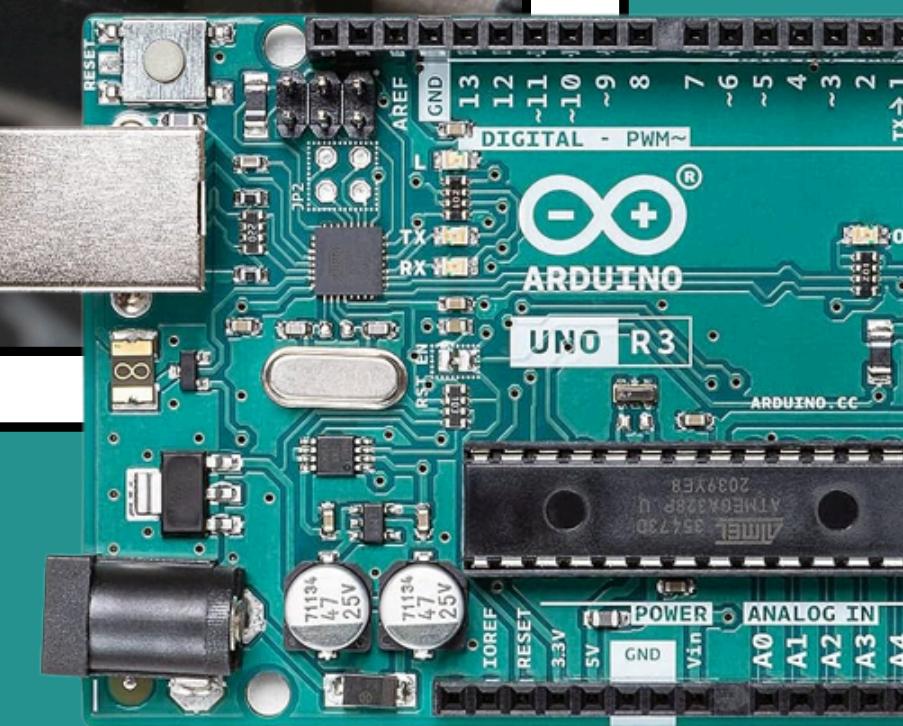


What is Arduino?

ARDUINO



ARDUINO



What can Arduino do?



Arduino is a versatile electronics platform that can sense and control the physical world. It enables you to create interactive and programmable projects, from robots and wearable devices to home automation systems and scientific instruments.

WHY ARDUINO



ARDUINO



ROBOTICS



AUTOMATION



INTERNET OF THINGS



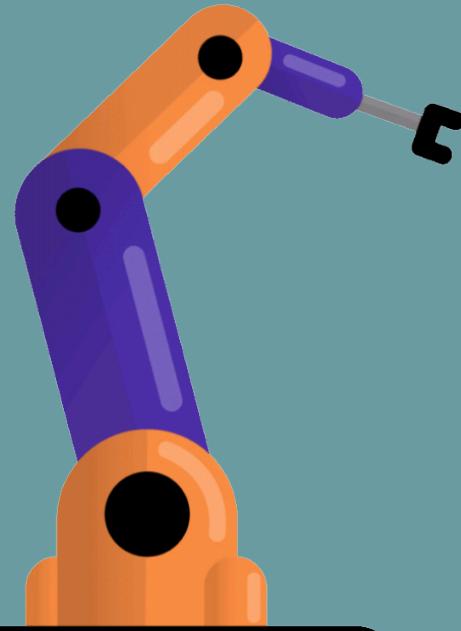
SECURITY



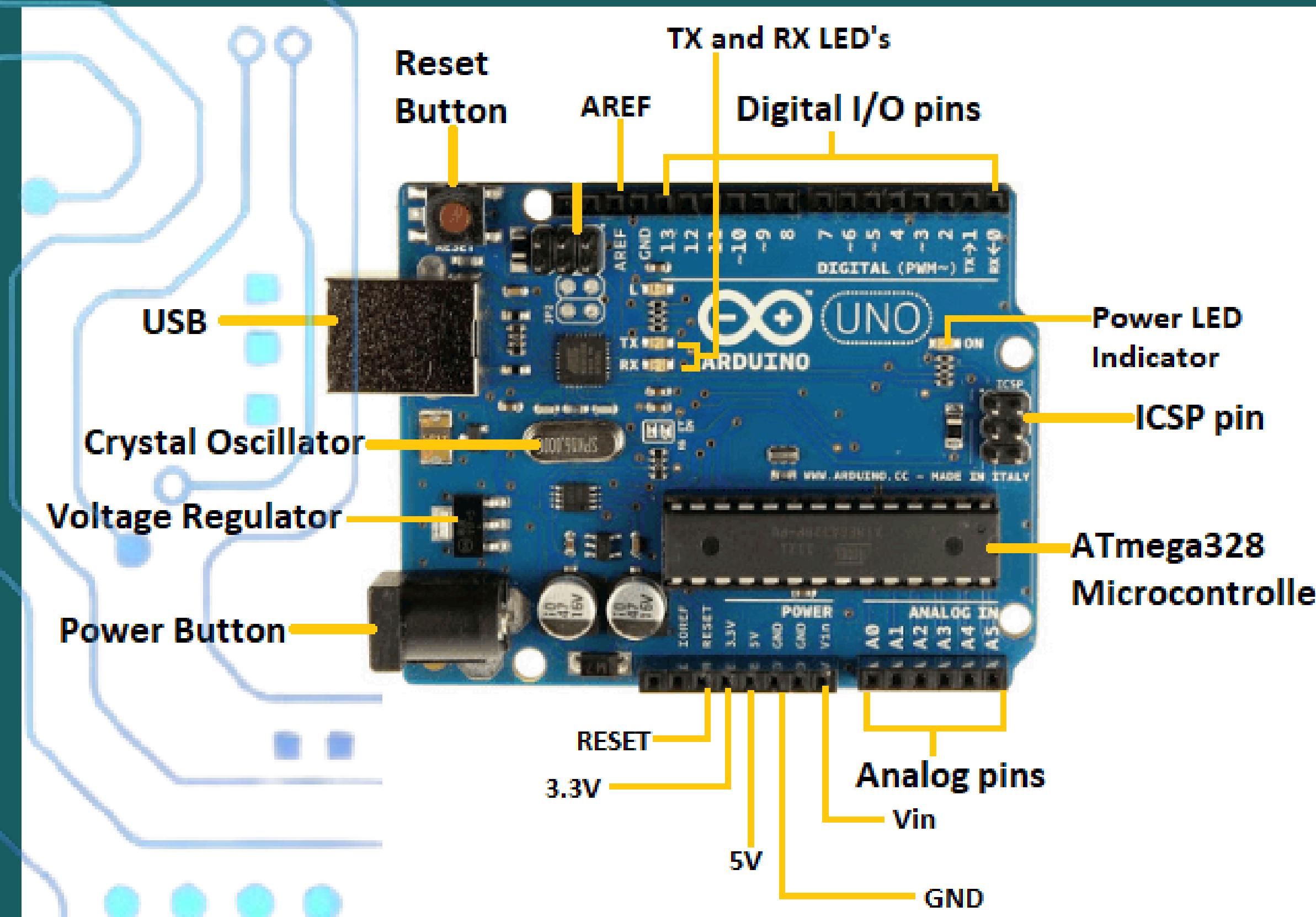
EDUCATION

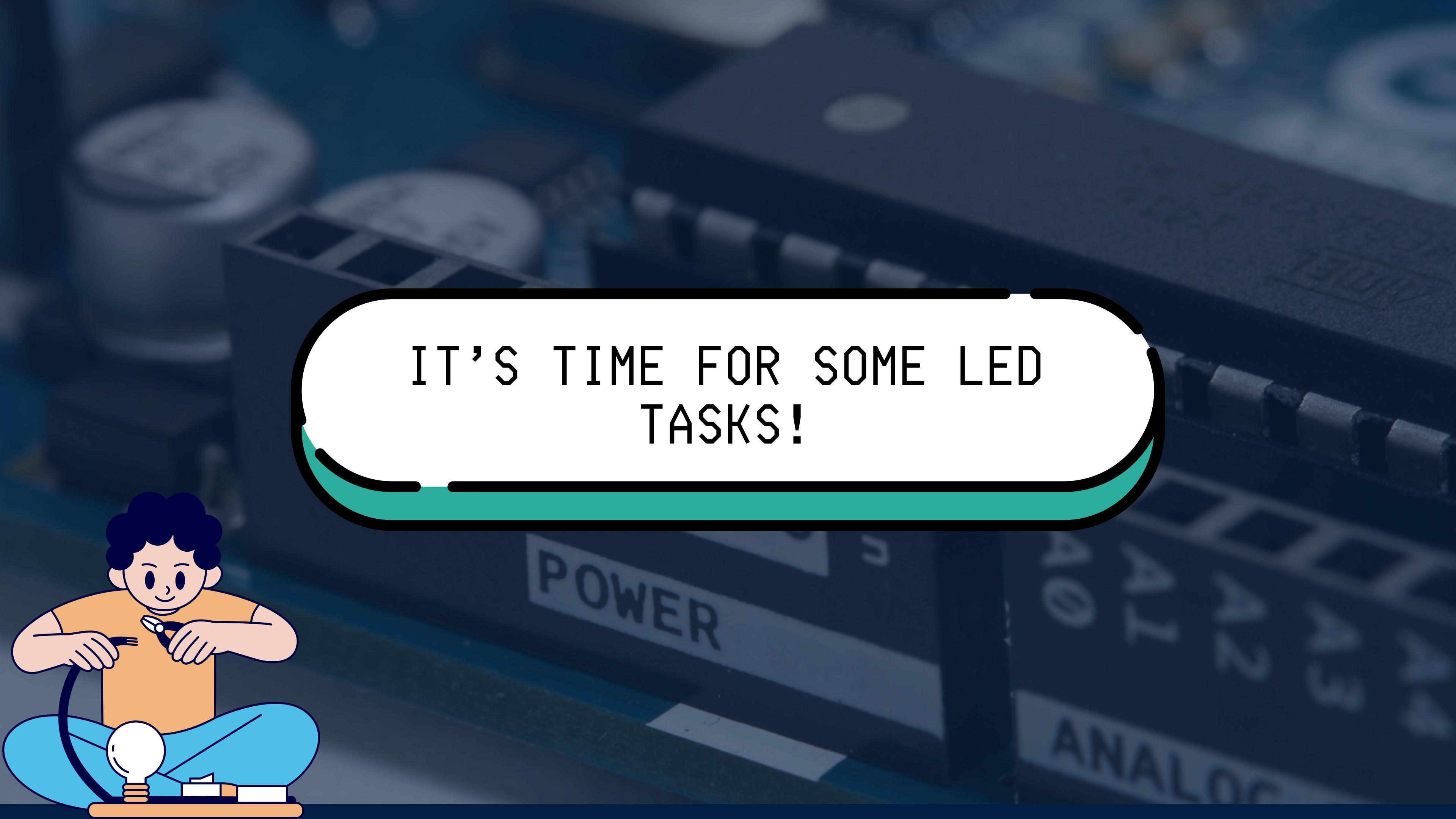


WEARABLE TECHNOLOGY



ARDUINO UNO BOARD?





IT'S TIME FOR SOME LED
TASKS!

ARDUINO - BLINKING LED

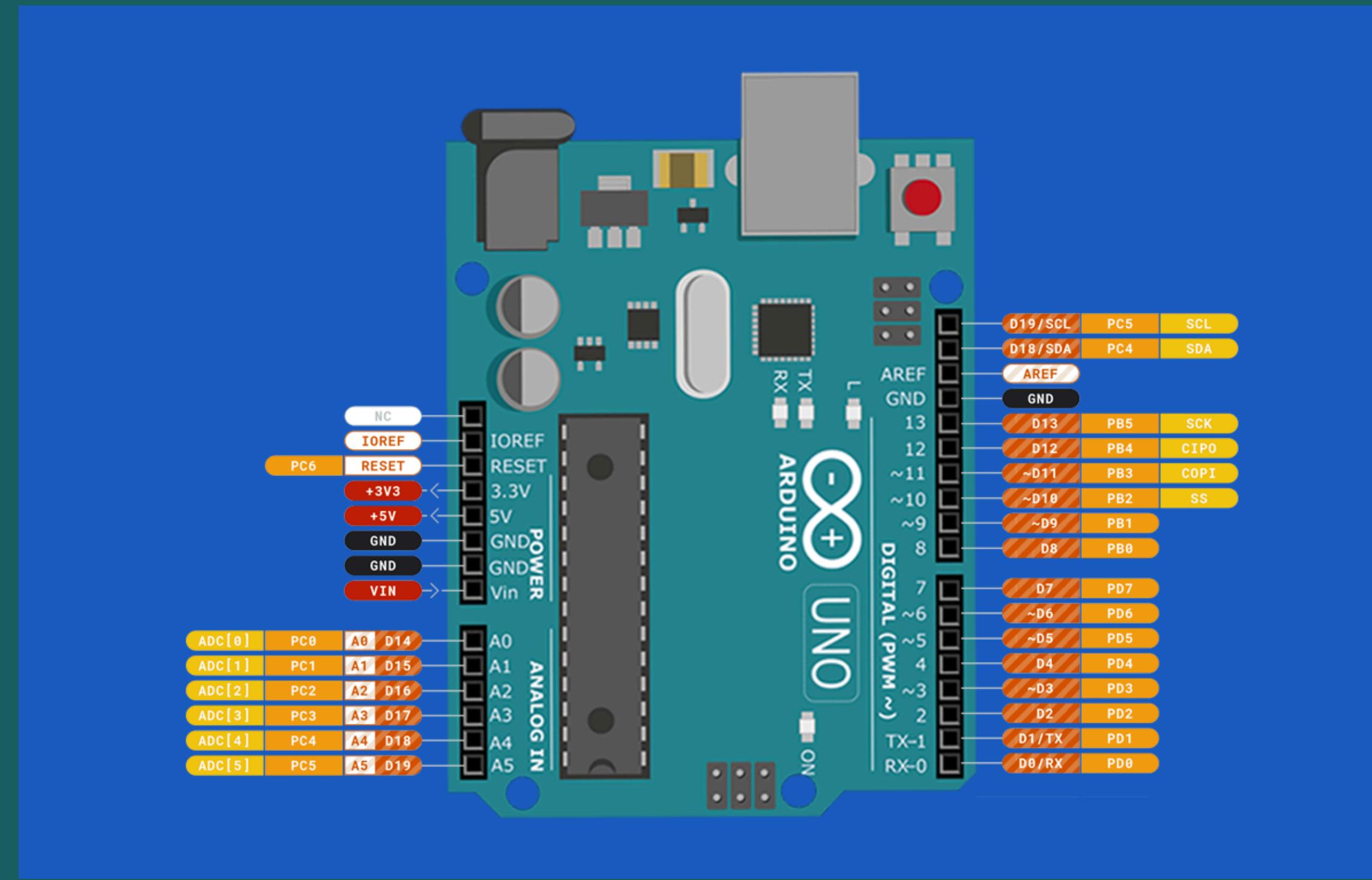
Components Required

You will need the following components

- 1 x Breadboard
- 1 x Arduino Uno R3
- 1 x LED
- 2 x Jumper Wire



Arduino pin Layout



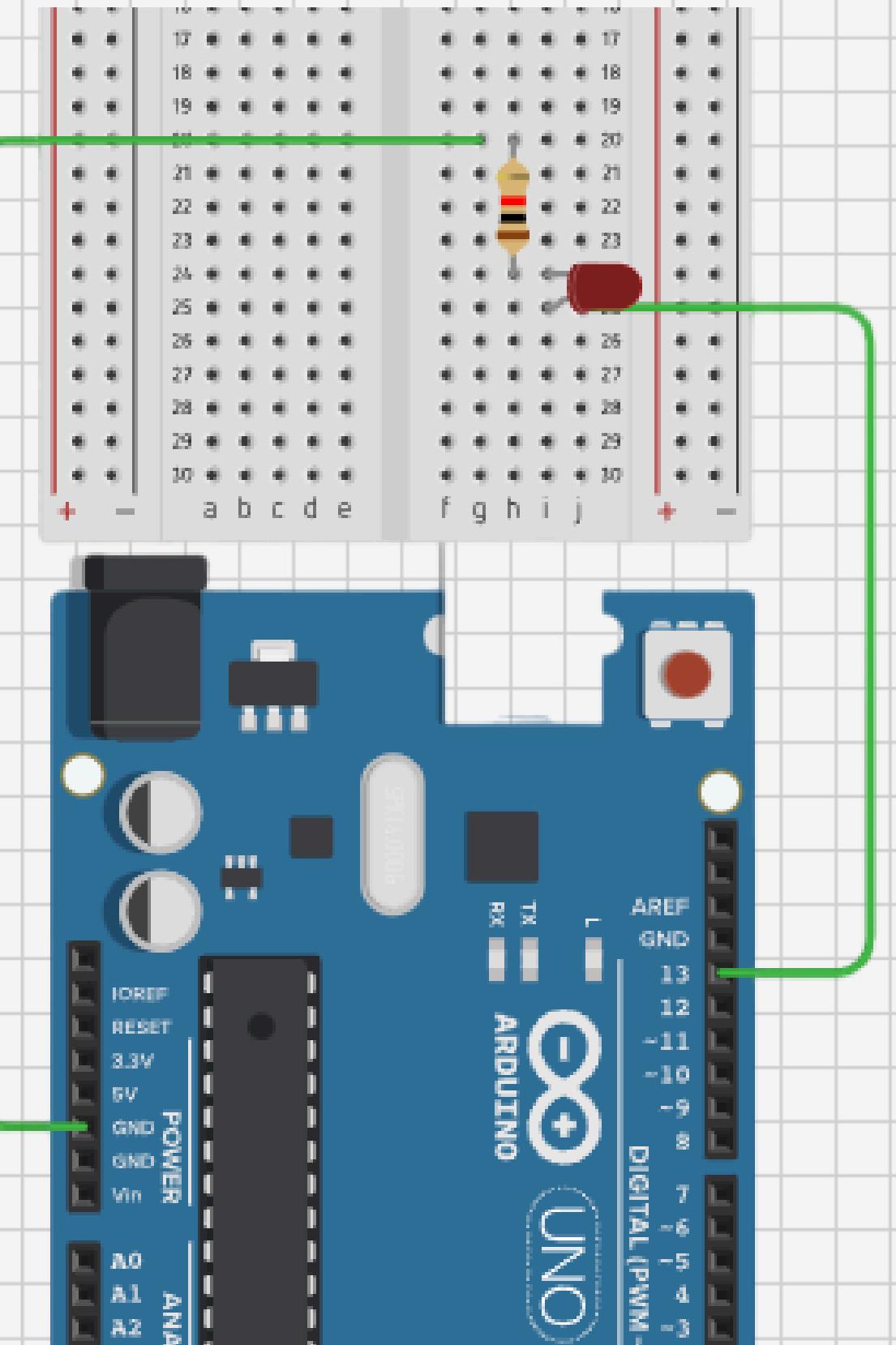


Here, the orange wire is connected to the PIN 8, and

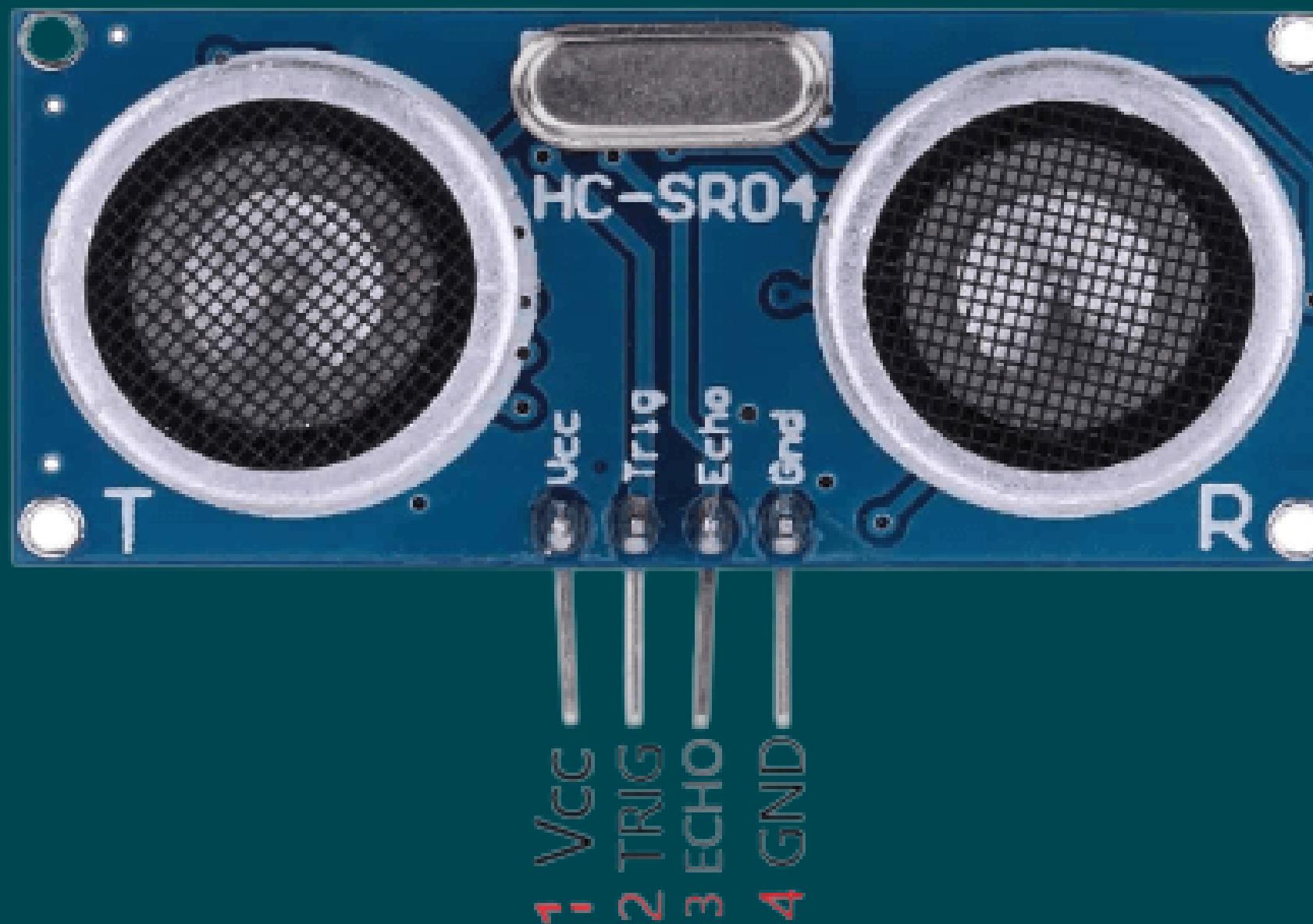
the blue wire is connected to the GND.

The shorter terminal indicates the negative. So, we will connect the shorter terminal to the Ground (GND).

- Connect the USB cable.
- Select the board and serial port in the Arduino IDE.
- Upload the sketch or code on the board.
- The LED will dim and light for the specified duration.



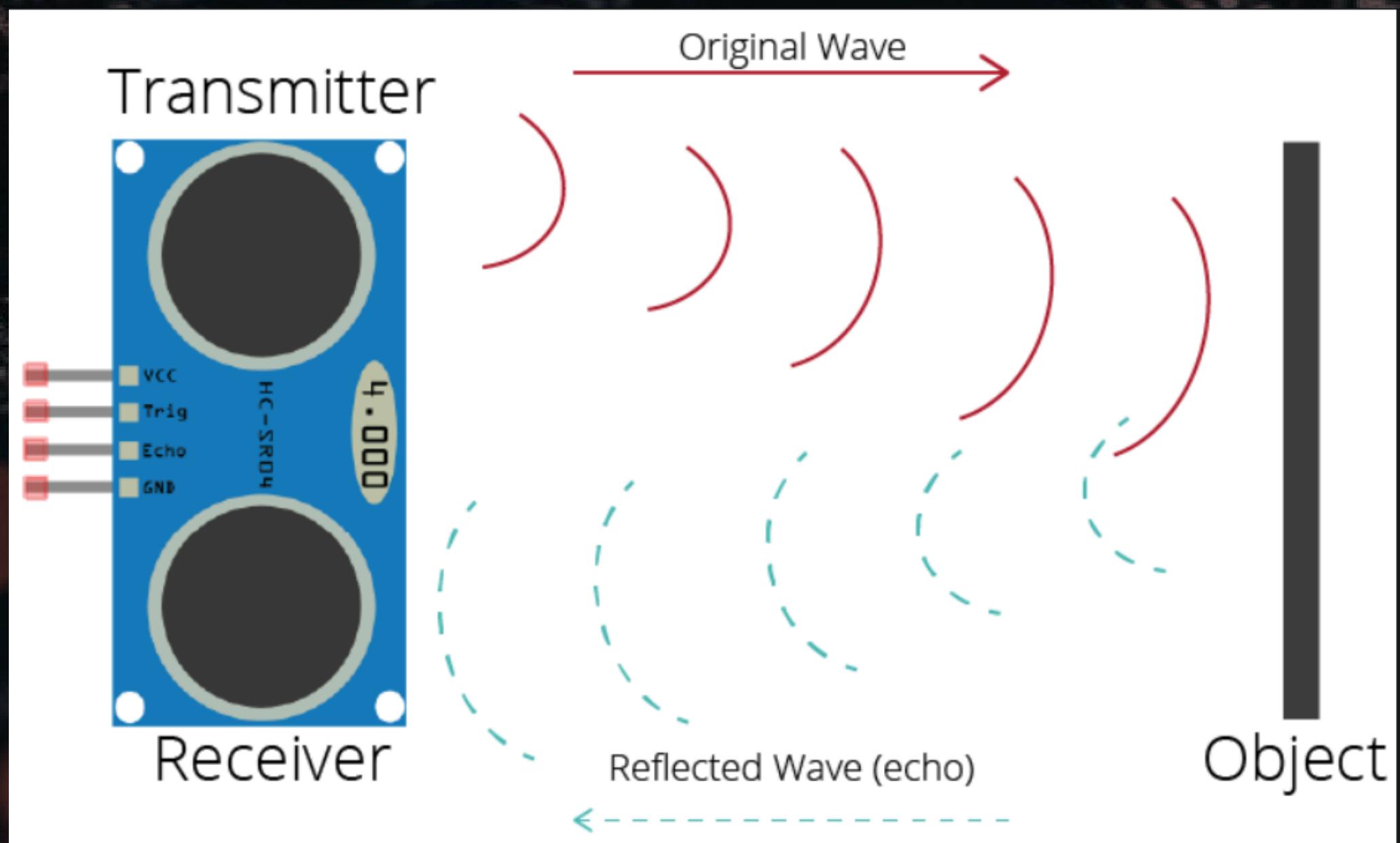
INTERFACING ULTRASONIC SENSOR USING ARDUINO



- Power Supply :+5V DC
- Working Current: 15mA
- Ranging Distance : 2cm – 400 cm/1" – 13ft
- Measuring Angle: 30 degree
- Trigger Input Pulse width: 10uS TTL pulse
- Echo Output Signal: TTL pulse proportional to the distance range
- Dimension: 45mm x 20mm x 15mm

How Does it Work?

$$\text{DISTANCE TO AN OBJECT} = ((\text{SPEED OF SOUND IN THE AIR}) * \text{TIME}) / 2$$

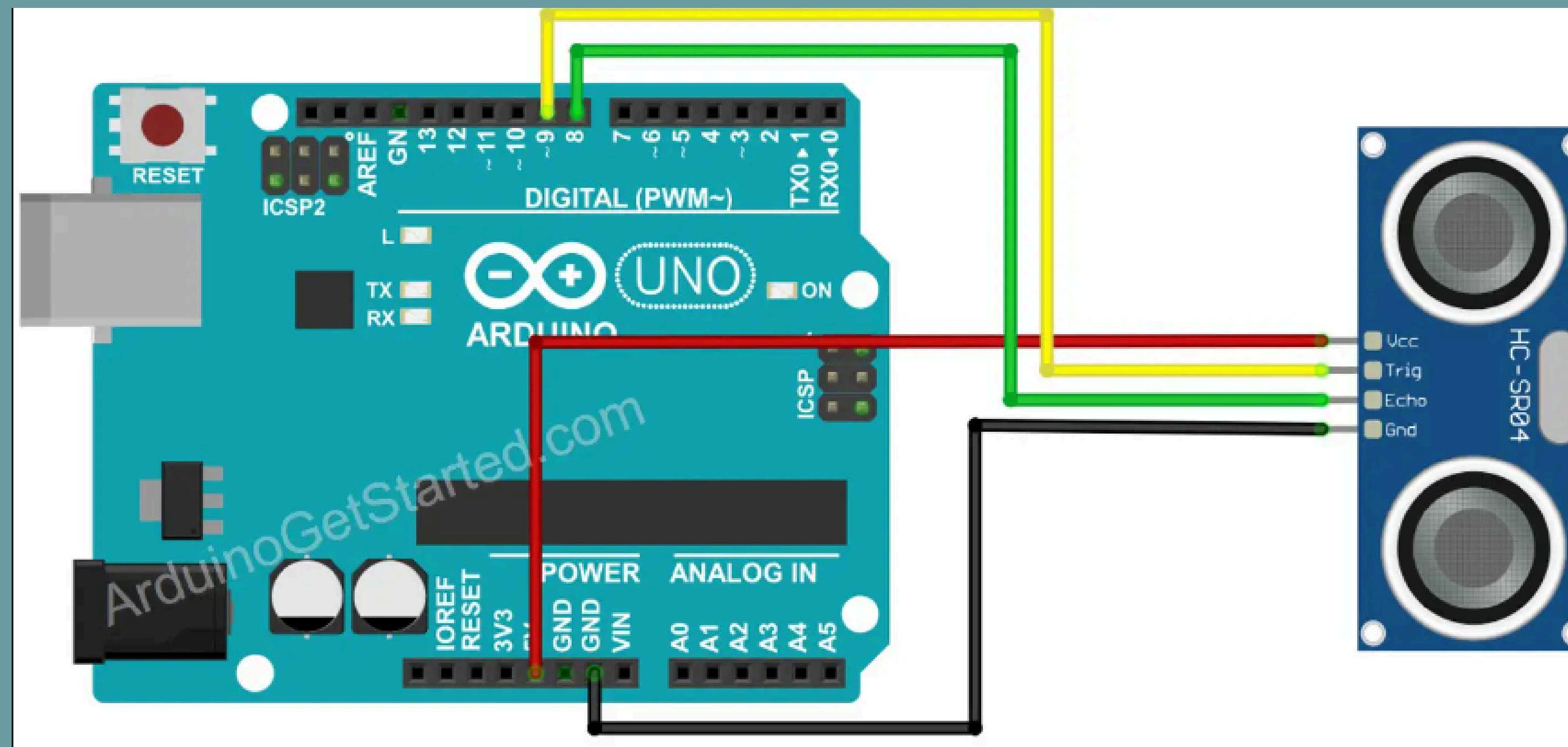


The ultrasound transmitter (trig pin) emits a high-frequency sound (40 kHz).

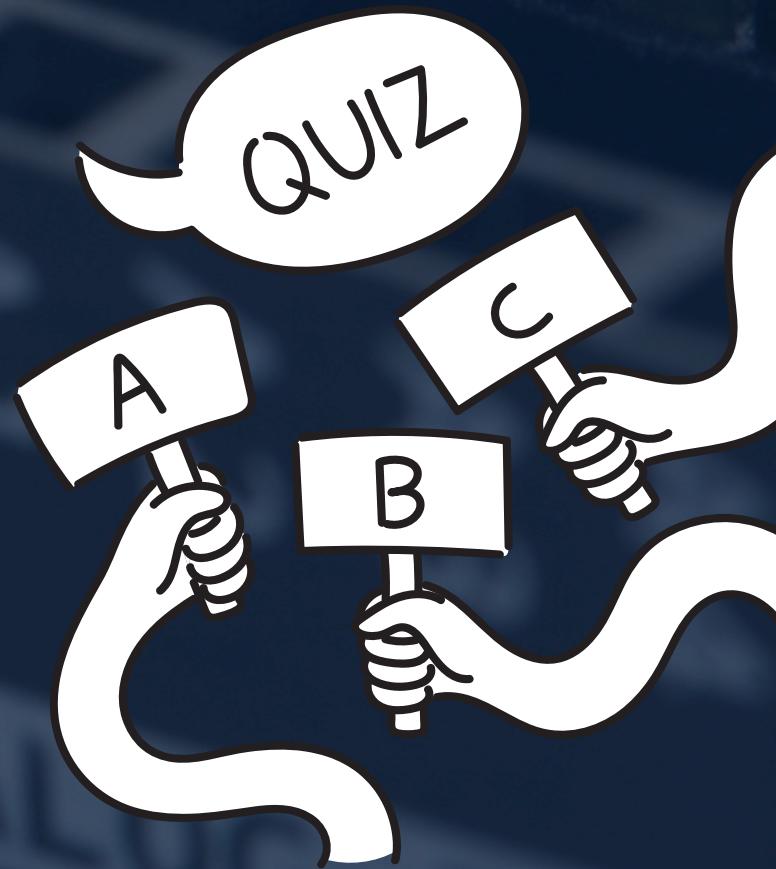
The sound travels through the air. If it finds an object, it bounces back to the module.

The ultrasound receiver (echo pin) receives the reflected sound (echo)

CONNECTION DIAGRAM



TIME FOR A SMALL QUIZ!





IT'S TIME TO GET ON SOME
HANDS-ON PROJECTS!

