



Enigma

ROBOTICS CLUB OF IIIT-B





Getting started with Arduino

What exactly is Arduino?

It is a board which contains an Atmel microcontroller and an on board power supply.

It can be easily programmed and can communicate with your PC without any sophisticated design or implementation.



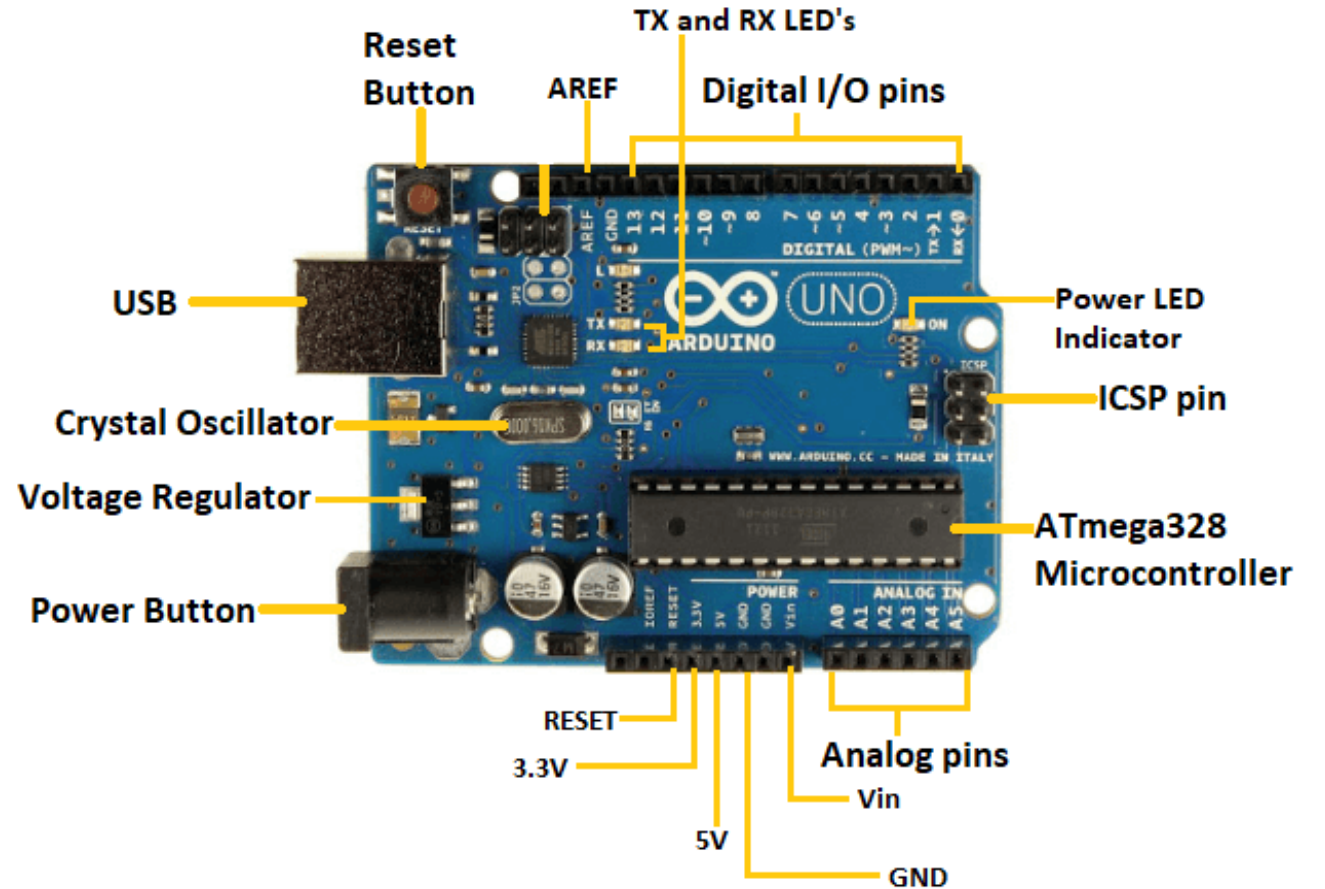
Arduino UNO

There are different kinds of Arduino boards, and Arduino UNO is among the most widely used.

It packs an Atmega328P microcontroller and has endless applications, from simple glowing LEDs to home automation.



Arduino UNO





Breadboard

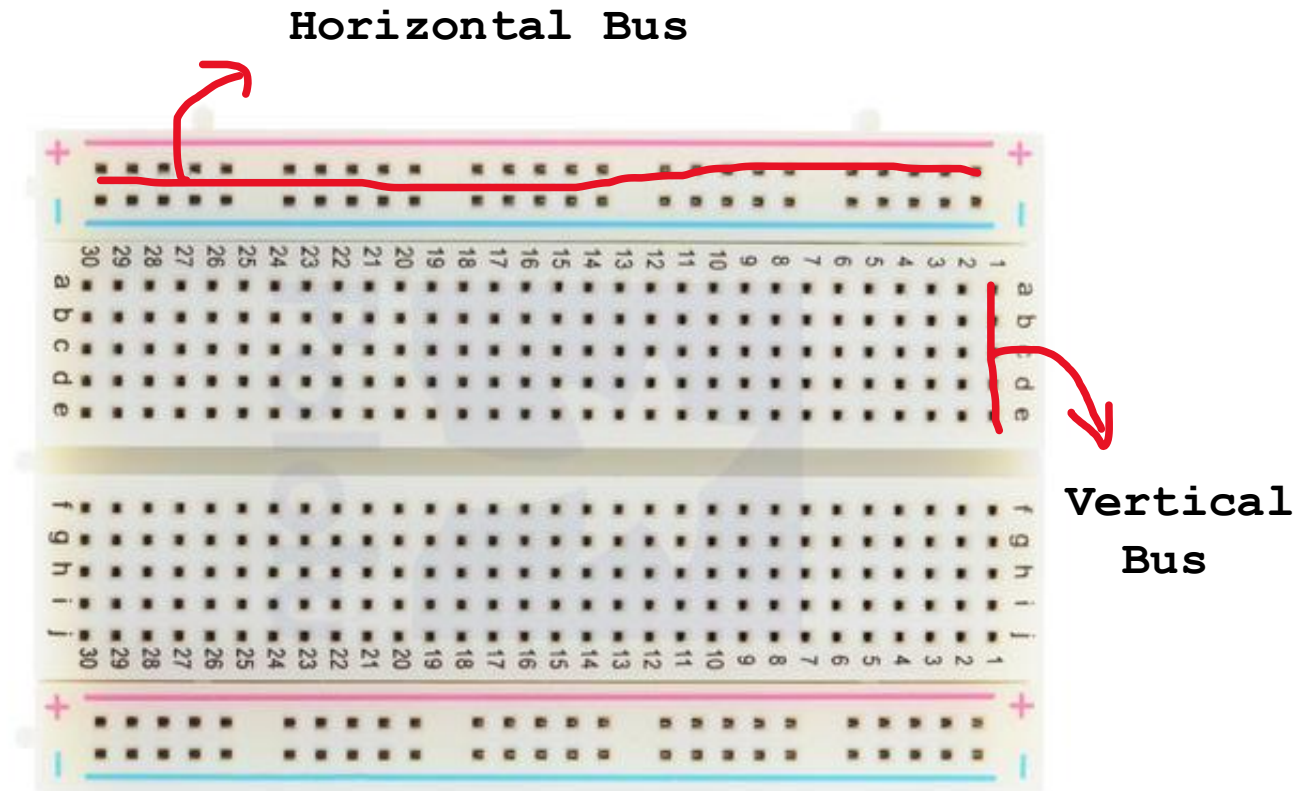
Breadboard is the base for your circuit designs and is extremely versatile.

Breadboard has two kinds of buses

- Vertical Bus
- Horizontal bus



Breadboard





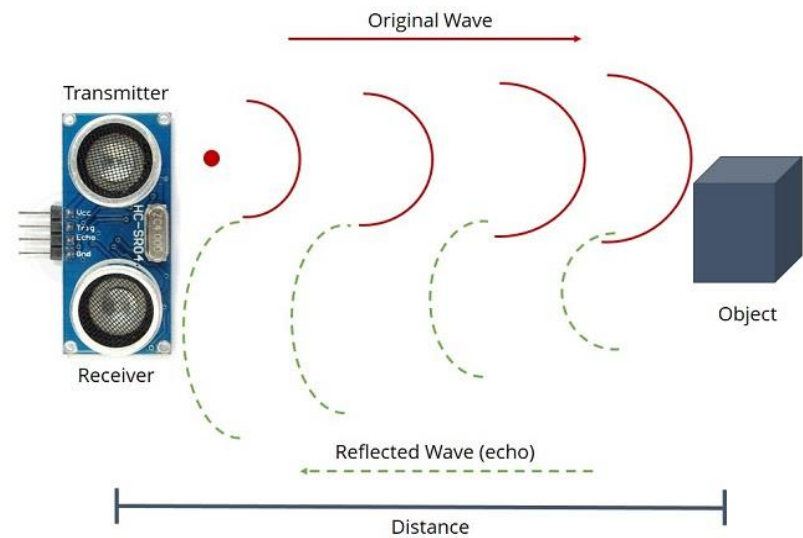
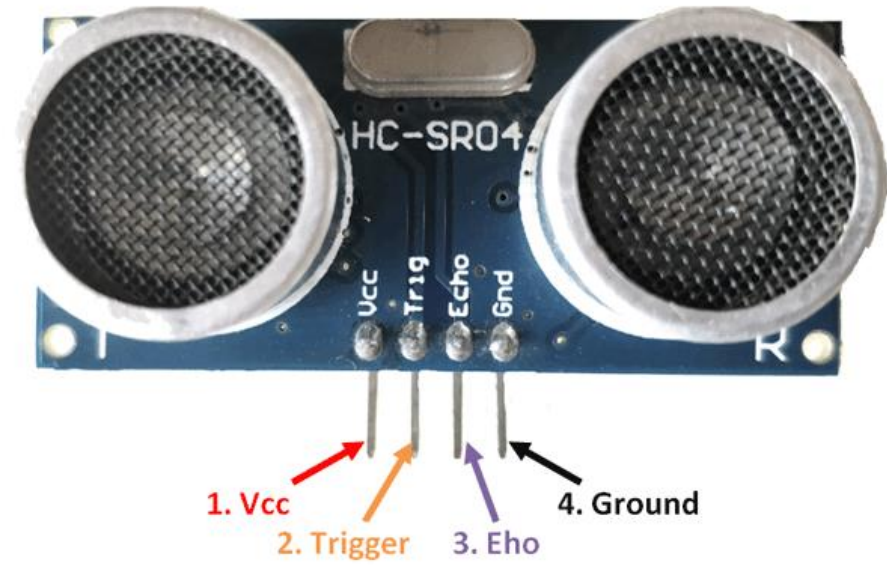
Ultrasonic Sensor

Ultrasonic sensor is a transceiver module, which means it has a transmitter as well as a receiver. It emits high frequency of the range of 20Khz.

It has a wide variety of application as it can be used to measure distance, or indicate the presence of an object.



Ultrasonic Sensor



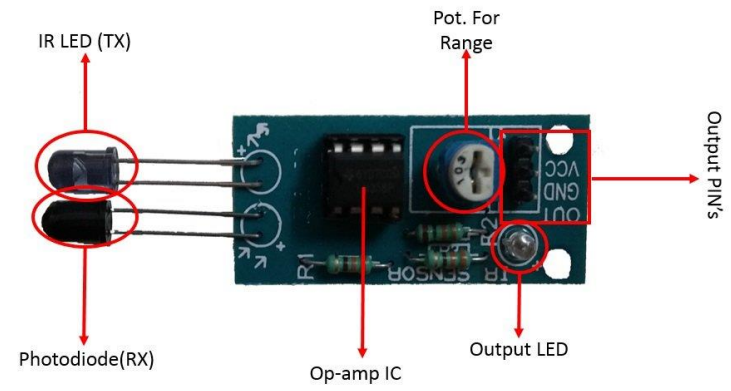


Infrared sensor

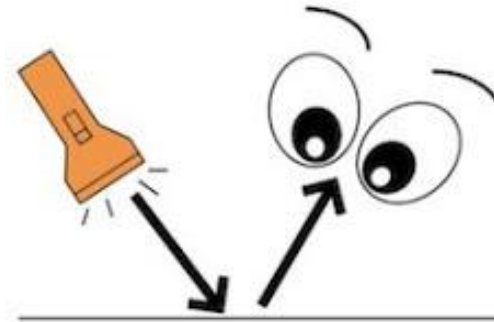
An IR sensor consists of an IR LED and a photodiode, The IR LED transmits infrared rays up to some range and the photodiode detects the IR rays which are reflected from the object.



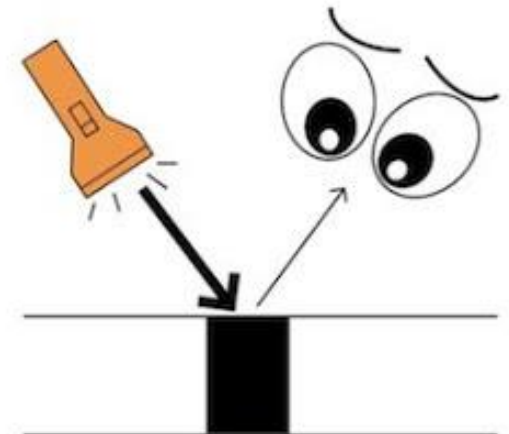
Infrared sensor



When the light from the infrared sensor shines on a surface...



...white surfaces reflect lots of infrared light back to the sensor...



.... but not much light reflects from black surfaces to the sensor.

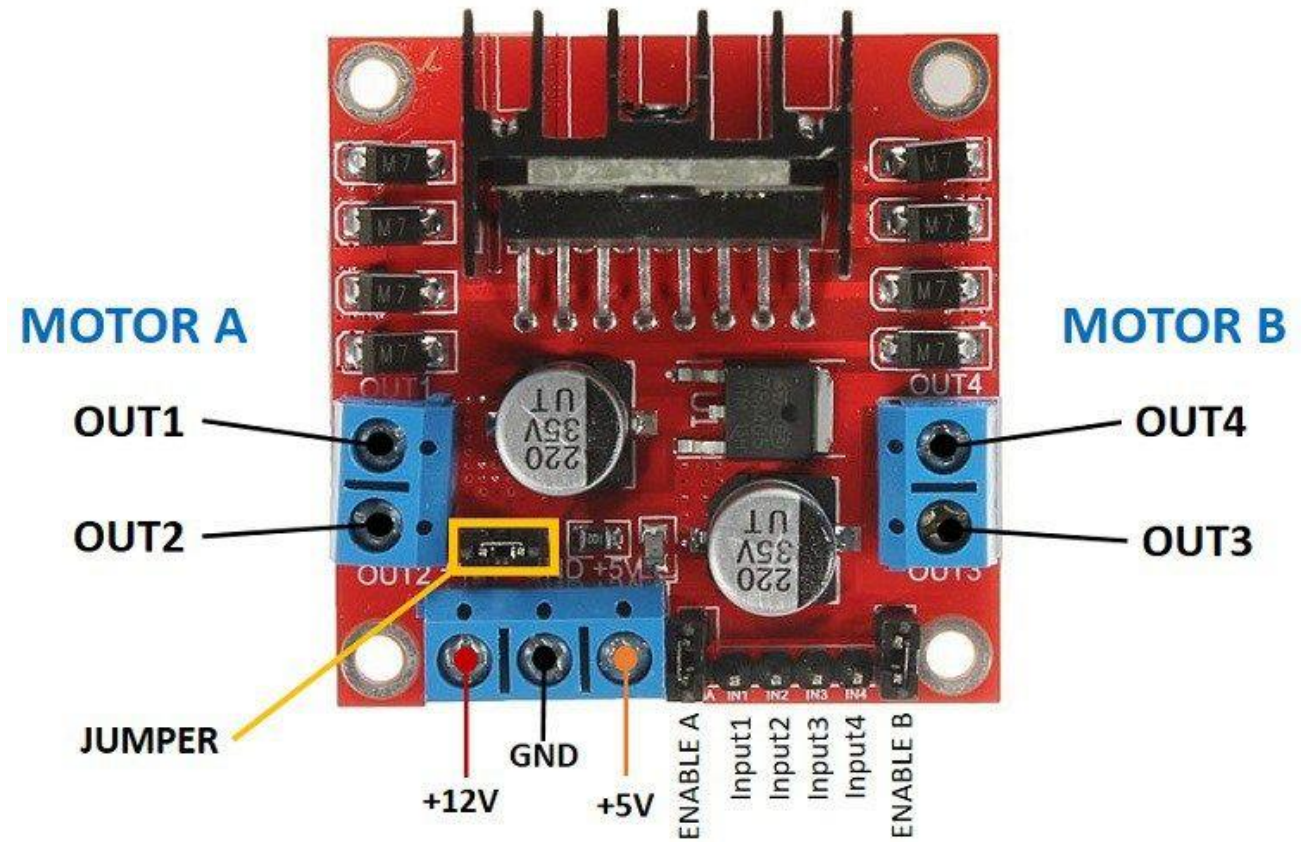


Motor Driver

The motor driver acts as an interface between the motor and the control circuit. It requires a high amount of current whereas the controller circuit works on low current signals. So the function of motor drivers is to take a low-current control signal and then converts it into a higher-current signal that can drive the motor.



Motor Driver





Other components

Wires

- Male to Male
- Male to Female

Chassis

AA Batteries

Black electrical tape



Other components





Arduino software

Download the latest version of Arduino IDE from
<https://www.arduino.cc/en/Guide> (Desktop version)

OR

You can use the Arduino web editor
using <https://create.arduino.cc/editor>