**WHAT IS ARDUINO?**

Arduino is an open-source electronics platform based on easy-to-use hardware and software.

It's intended for anyone making interactive projects.

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Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online.

You can tell your board what to do by sending a set of instructions to the microcontroller on the board.

To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Processing.

Over the years Arduino has been the brain of thousands of projects, from everyday objects to complex scientific instruments.

**ARDUINO BOARD**

Arduino senses the environment by receiving inputs from many sensors, and affects its surroundings by controlling lights, motors, and other actuators.

**RASPBERRY PI?**

Raspberry Pi is a single-board computer developed in the United Kingdom. Introduced in 2012, Raspberry Pi quickly exceeded its popularity and original mission – to promote and teach basic computer science. Today, virtually every industry has developed a use for Raspberry Pi. Private and public sectors use the economically friendly device for automation, research, and medical applications. Even NASA, the International Space Station, and the UK Space Agency use Raspberry Pi to run applications and collect data.

**What Is a Jumper Wire?**

A jumper wire is a conducting wire used to transfer electrical signals between two points in a circuit.

The wires can either be used to modify circuits or to diagnose problems within a circuit.

Jumper wires typically vary in color and size depending on what they are being used for.

In breadboards, jump wires are used to establish connections between the central micro controller and other devices such as buttons and sensors.

If possible, the jumper wire should always be placed on the component side of a circuit board during assembly.

The wires should also be routed in an X-Y manner, avoiding any bends.

Jump wires should never be raised more than 1/8 of an inch above the surface of the circuit board.

**What is an ultrasonic sensor?**

An ultrasonic sensor is an instrument that measures the distance to an object using ultrasonic sound waves.

An ultrasonic sensor uses a transducer to send and receive ultrasonic pulses that relay back information about an object’s proximity.

High-frequency sound waves reflect from boundaries to produce distinct echo patterns.

**What is a Temperature Sensor?**

A temperature sensor is a device used to measure temperature. This can be air temperature, liquid temperature or the temperature of solid matter.

**Breadboard**

The breadboard is a white rectangular board with small embedded holes to insert electronic components. It is commonly used in electronics projects. We can also say that breadboard is a prototype that acts as a construction base of electronics.

White plastic is the material that is used to create breadboards. Today, most of the breadboards are Solderless breadboards. We can directly plug in the electronic components and connect it with the external power supply.

**PR Sensor**

A piezoresistive accelerometer incorporates a crystal semiconductor beam that functions like a spring component. The crystal carries a seismic mass. Numerous strain-sensitive gages are put in the crystal's body, and they're physically an integral component with the beam. The piezoresistive accelerometer offers exceptional efficiency features which includes low noise densities when measuring nearby structural responses characterized by high-frequency content. The prototypes of the piezoresistive accelerometer had been successfully fabricated using deep reactive-ion etching from each the front and back sides of silicon-on-insulator wafers.

A piezoresistive sensor element behaves in another way towards longitudinal and also transverse strain components. Piezoresistive sensor continues to be used for numerous classes of sensor apps. The sensing material in a piezoresistive sensor is really a diaphragm shaped on the silicon substrate, which bends with applied pressure. Endivco components that use new signal processing tactics for piezoresistive sensor have enabled precise, automatic, and low-cost digital compensation with the regular error parameters.

**Resistors**

A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses. High-power resistors that can dissipate many watts of electrical power as heat may be used as part of motor controls, in power distribution systems, or as test loads for generators. Fixed resistors have resistances that only change slightly with temperature, time or operating voltage. Variable resistors can be used to adjust circuit elements or as sensing devices for heat, light, humidity, force, or chemical activity.

**Buzzers**

A buzzer is a small yet efficient component to add sound features to our project/system. It is very small and compact 2-pin structure hence can be easily used on breadboard, Perf Board and even on PCBs which makes this a widely used component in most electronic applications.

There are two types of buzzers that are commonly available. The one shown here is a simple buzzer which when powered will make a Continuous Beeeeeeppp.... sound, the other type is called a readymade buzzer which will look bulkier than this and will produce a Beep. Beep. Beep. Sound due to the internal oscillating circuit present inside it. But, the one shown here is most widely used because it can be customised with help of other circuits to fit easily in our application.

This buzzer can be used by simply powering it using a DC power supply ranging from 4V to 9V. A simple 9V battery can also be used, but it is recommended to use a regulated +5V or +6V DC supply. The buzzer is normally associated with a switching circuit to turn ON or turn OFF the buzzer at required time and require interval.

**Definition of LED**

A semiconductor diode that emits light when a voltage is applied to it and that is used especially in electronic devices (as for an indicator light)

**Servo Motor**

A servo motor is a self-contained electrical device that rotate parts of a machine with high efficiency and with great precision.

The output shaft of this motor can be moved to a particular angle, position and velocity that a regular motor does not have.

The Servo Motor utilizes a regular motor and couples it with a sensor for positional feedback.

The controller is the most important part of the Servo Motor designed and used specifically for this purpose.