**ARDUINO:-**

Arduino is an open source programmable circuit board that can be integrated into a wide variety of makerspace projects both simple and complex. This board contains a microcontroller which is able to be programmed to sense and control objects in the physical world. By responding to sensors and inputs, the Arduino is able to interact with a large array of outputs such as LEDs, motors and displays. Because of it’s flexibility and low cost, Arduino has become a very popular choice for makers and makerspaces looking to create interactive hardware projects. Arduino was introduced back in 2005 in Italy by Massimo Banzi as a way for nonengineers to have access to a low cost, simple tool for creating hardware projects. Since the board is open-source, it is released under a Creative Commons license which allows anyone to produce their own board. If you search the web, you will find there are hundreds of Arduino compatible clones and variations available but the only official boards have Arduino in it’s name.

**DIGITAL PINS:-**

Digital is a way of representing voltage in 1 bit: either 0 or 1. Digital pins on the Arduino are **pins designed to be configured as inputs or outputs according to the needs of the user**. Digital pins are either on or off. When ON they are in a HIGH voltage state of 5V and when OFF they are in a LOW voltage state of 0V.

**ANALOG PINS:-**

A/D converter  
  
While the main function of the analog pins for most Arduino users is to read analog sensors, the analog pins also have all the functionality of general purpose input/output (GPIO) pins (the same as digital pins 0 - 13).

**RASBERRY PI:-**

The Raspberry Pi is a low cost, **credit-card sized computer** that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. It’s capable of doing everything you’d expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheets, word-processing, and playing games.

**JUMPER WIRES:-**

A jumper wire is **an electric wire that connects remote electric circuits used for printed circuit boards**. By attaching a jumper wire on the circuit, it can be short-circuited and short-cut (jump) to the electric circuit.

Jumper wires typically come in three versions: male-to-male, male-to-female and female-to-female. The difference between each is in the end point of the wire. Male ends have a pin protruding and can plug into things, while female ends do not and are used to plug things into. Male-to-male jumper wires are the most common and what you likely will use most often. When connecting two ports on a breadboard, a male-to-male wire is what you’ll need.

**ULTRA SONIC SENSOR:-**

An ultrasonic sensor is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal. Ultrasonic waves travel faster than the speed of audible sound (i.e. the sound that humans can hear).

Ultrasonic sensors are used primarily as proximity sensor. They can be found in automobile self-parking technology and anti-collision safety systems. Ultrasonic sensors are also used in robotic obstacle detection systems, as well as manufacturing technology.

**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. There are different types of temperature sensors available and they each use different technologies and principles to take the temperature measurement.

**BREADBOARD:-**

A breadboard consists of plastic block holding a matrix of electrical sockets of a size suitable for gripping thin connecting wire, component wires or the pins of transistors and integrated circuits **(ICs)**. The sockets are connected inside the board, usually in rows of five sockets.

**PIR SENSOR:-**

A device used to detect motion by receiving infrared radiation. When a person walks past the sensor, it detects a rapid change of infrared energy and sends a signal. PIR sensors are used for applications such as automatically turning on lights when someone enters a room or causing a video camera to begin operating.

**BUZZER:-**

An audio signaling device like a beeper or buzzer may be electromechanical or piezoelectric or mechanical type. The main function of this is to convert the signal from audio to sound. Generally, it is powered through DC voltage and used in timers, alarm devices, printers, alarms, computers, etc. Based on the various designs, it can generate different sounds like alarm, music, bell & siren.

**RESISTOR:-**

A resistor is an electrical component that limits or regulates the flow of electrical current in an electronic circuit. Resistors can also be used to provide a specific voltage for an active device such as a transistor.

**LED:-**

A light-emitting diode (LED) is a semiconductor light source that emits light when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons.

**SERVO MOTOR:-**

A servo motor is a rotary actuator that allows for precise control of angular position. It consists of a motor coupled to a sensor for position feedback. It also requires a servo drive to complete the system. The drive uses the feedback sensor to precisely control the rotary position of the motor.