Experiment-2

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Subject: IOT
Semester: 6th
Section/Group: DM 714-A

1. Aim:

Identification of different sensors used in IoT applications.

2. Objective:

1. To study hardware related to IoT.
2. To understand and identify different sensors used in IoT.

3. Requirement Required:-

1. Different types of sensors are required along with a proper IoT toolkit.
2. PC with Arduino Installed.

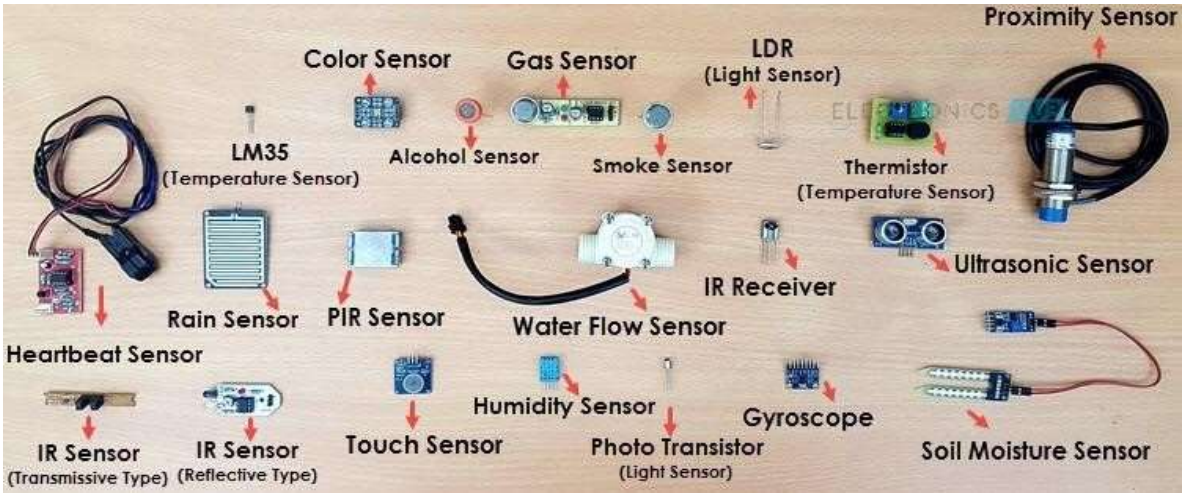
4. Sensor:

It senses the environment and gives us the data that we use to decide things on the basis of the values it gives.

A sensor is a device that detects and responds to some type of input from the physical environment. Sensors are an essential component of IoT systems, as they allow devices to collect data about the world around them and respond to that data in various ways.

Sensors are used in everyday objects such as touch-sensitive elevator buttons (tactile sensors) and lamps which dim or brighten by touching the base, and

in innumerable applications of which most people are never aware. With advances in micromachinery and easy-to-use microcontroller platforms, the uses of sensors have expanded beyond the traditional fields of temperature, pressure [1] and flow measurement,[2] for example into MARG sensors.



IoT Devices and sensors used in them:

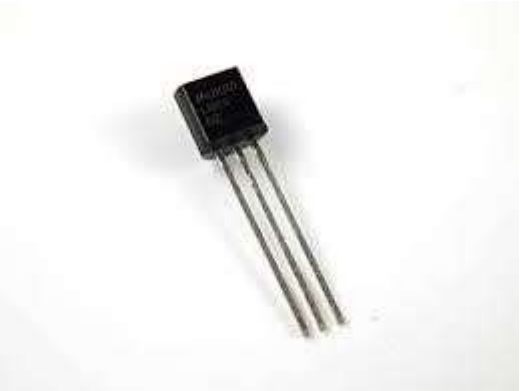
IoT Sensor	Device
Temperature Sensor	Thermostat, HVAC system
Humidity Sensor	Smart Humidifier, HVAC system
Light Sensor	Smart Lighting System

Motion Sensor	Security Cameras, Smart Doorbells
Proximity Sensor	Smart Locks, Smart Home Security System
Gas Sensor	Smart Smoke Detectors, Air Quality Monitors
Water Quality Sensor	Smart Irrigation System, Water Quality Monitors

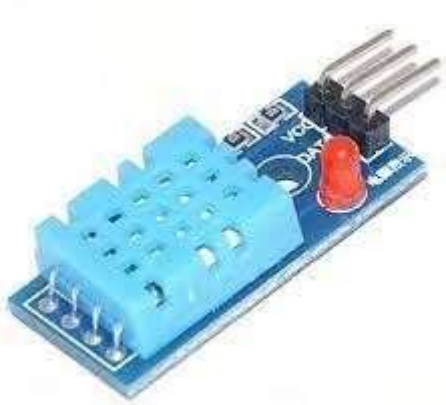
Pressure Sensor	Smart Thermostats, HVAC System
Accelerometer Sensor	Fitness Trackers, Wearable Devices
GPS Sensor	Navigation Systems, Fleet Tracking Devices
Sound Sensor	Smart Speakers, Home Security Systems

Different types of sensors used in different applications:

1. **Temperature Sensor** - A temperature sensor measures the ambient temperature of an area or an object.



2. **Humidity Sensor** - A humidity sensor measures the amount of moisture in the air, typically used to monitor the humidity levels in indoor spaces or in greenhouses.



3. **Pressure Sensor** - A pressure sensor measures the pressure of a gas or liquid. It's commonly used in industrial and automotive applications to monitor tire pressure, water pressure, and oil pressure.

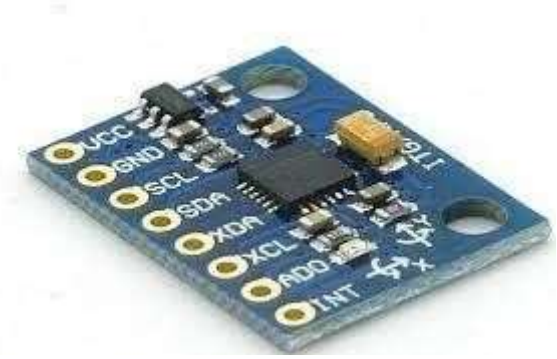
4. **Light Sensor** - A light sensor measures the intensity of light in an area. It can be used to detect the amount of light in a room and automatically adjust the lighting.

5. **Proximity Sensor** - A proximity sensor detects the presence of an object without physical contact. It's used in industrial automation, automotive, and security systems.

6. **Motion Sensor** - A motion sensor detects movement in an area. It's commonly used in security systems and lighting controls.

7. **Accelerometer** - An accelerometer measures the acceleration of an object. It's used in automotive and sports equipment to measure speed, acceleration, and orientation.

8. **Gyroscope** - A gyroscope measures the orientation of an object. It's used in aviation, navigation, and robotics to measure movement and orientation.



9. **Magnetometer** - A magnetometer measures magnetic fields. It's used in navigation, geology, and surveying to detect the Earth's magnetic field.

10. **Gas Sensor** - A gas sensor detects the presence of gas in the air. It's used in industrial and environmental monitoring to detect toxic or flammable gases.

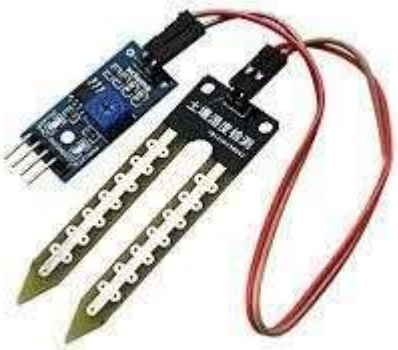
11. **Sound Sensor** - A sound sensor measures the sound level in an area. It's commonly used in noise pollution monitoring and in home automation to detect smoke alarms and glass breaking.

12. **Infrared Sensor** - An infrared sensor detects infrared radiation. It's used in temperature measurement, motion detection, and in remote controls.

13. **Water Quality Sensor** - A water quality sensor measures the quality of water in terms of temperature, pH, dissolved oxygen, and other

parameters. It's commonly used in environmental monitoring and in aquaculture.

14. **Soil Moisture Sensor** - A soil moisture sensor measures the moisture content of the soil. It's used in agriculture to optimize irrigation and crop growth.



15. **Radiation Sensor** - A radiation sensor measures ionizing radiation. It's used in medical, nuclear power, and environmental monitoring to detect radioactive materials.

Outcome:

Learn about many sensors that are used in different places to sense different things.