SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
COIMBATORE-35.

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DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUT205 – INTERNET OF THINGS IN AUTOMOTIVE SAFETY

II YEAR /IV SEMESTER

Unit 4- Interfacing of Arduino & ESP8266 with Input / Output Devices

Topic : Analog & Digital Sensor

CONTENT

❖ Sensors

❖ Types of Sensors

    ➢ Analog

    ➢ Digital

❖ Analog Vs Digital Sensor

1. What is Node MCU?

2. What is GPRS?

SENSOR

➢ A sensor is an appliance that detects changes in physical or electrical or other quantities.

➢ So, it produces an electrical or optical signal output as an acknowledgement of the change in that specific quantity.

- ➤ Analog Sensor

- ➤ Digital Sensor

ANALOG SENSOR

❖ Analog Sensor produces continuous analog output signal and these sensors are analog sensors.

❖ This continuous output signal produced by the analog sensors is proportional to the measurand.

❖ The Analog sensor senses the external parameters (and gives analog voltage as an output.

❖ The output voltage may be in the range of 0 to 5 V
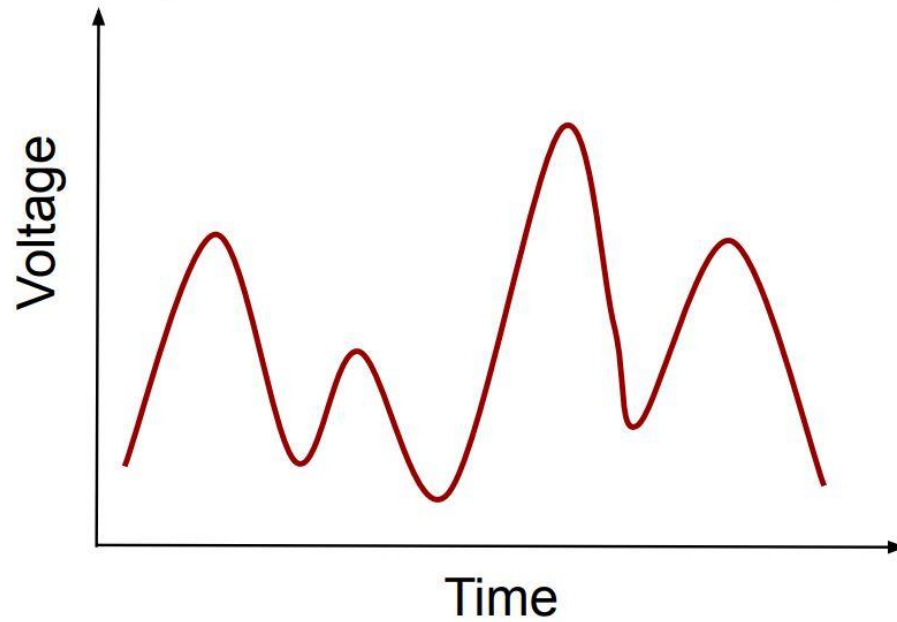

Analog Signal
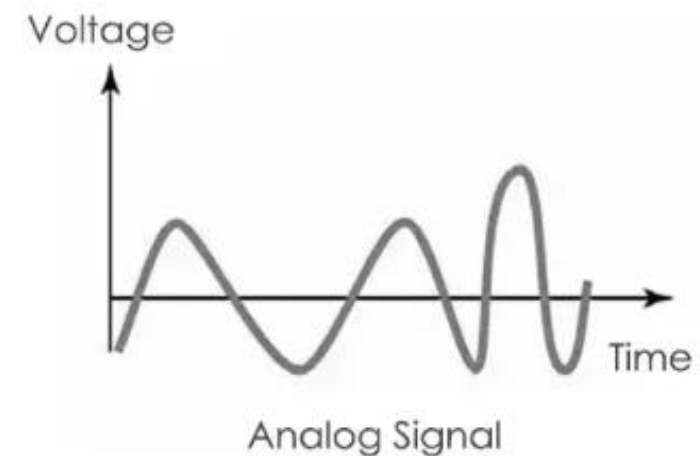
DIGITAL SENSOR

➢ **Digital Sensor** produce discrete values (0 and 1's).

➢ Discrete values often called digital or binary signals in digital communication.

➢ Electronic sensors or electrochemical sensors in which data conversion and data transmission take place digitally are digital sensors.

➢ These digital sensors are replacing analog sensors as they are capable of overcoming the drawbacks of analog sensors.

➢ But, In digital sensors, the signal measured directly converted into digital signal output inside the digital sensor itself.

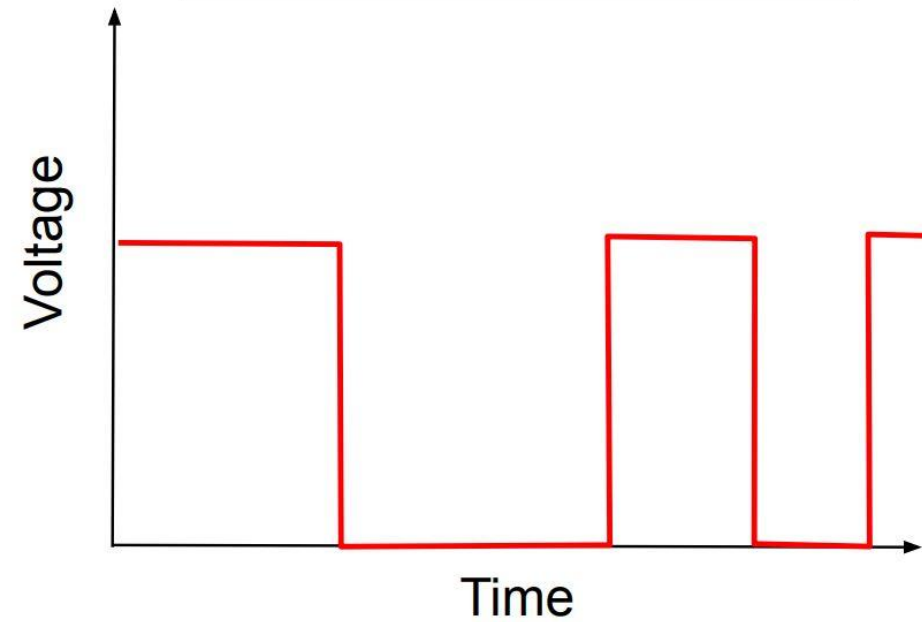➢ So, this digital signal transmitted through cable digitally.

ANALOG VS DIGITAL SENSOR

Analog Sensor Output

Digital Sensor Output

ANALOG VS DIGITAL SENSOR

Factors	Analog Sensors	Digital Sensors
Waves	Denoted by Sine Waves	Denoted by Square Waves
Signal	Continuous Signal is representing physical measurements	Digital signal representing discrete time signals generated by digital modulation
Data Transmission	Subject to deterioration by noise	Noise immune without deterioration
Bandwidth	Less Bandwidth	More Bandwidth
Power	Draws large power	Negligible Power
Memory	Stored in the form of the wave signal	Stored in the form of binary bit
Impedance	Low impedance	High Impedance of order 100 megaohm
Errors	Observational error occurs	Free from Observational error

ANALOG SENSORS

➢ Microphones.

➢ Photocells (light sensitive resistors)

➢ Temperature sensors.

➢ Force-sensitive resistors.

➢ Flex sensors.

➢ Thermistor (temperature sensitive resistor)

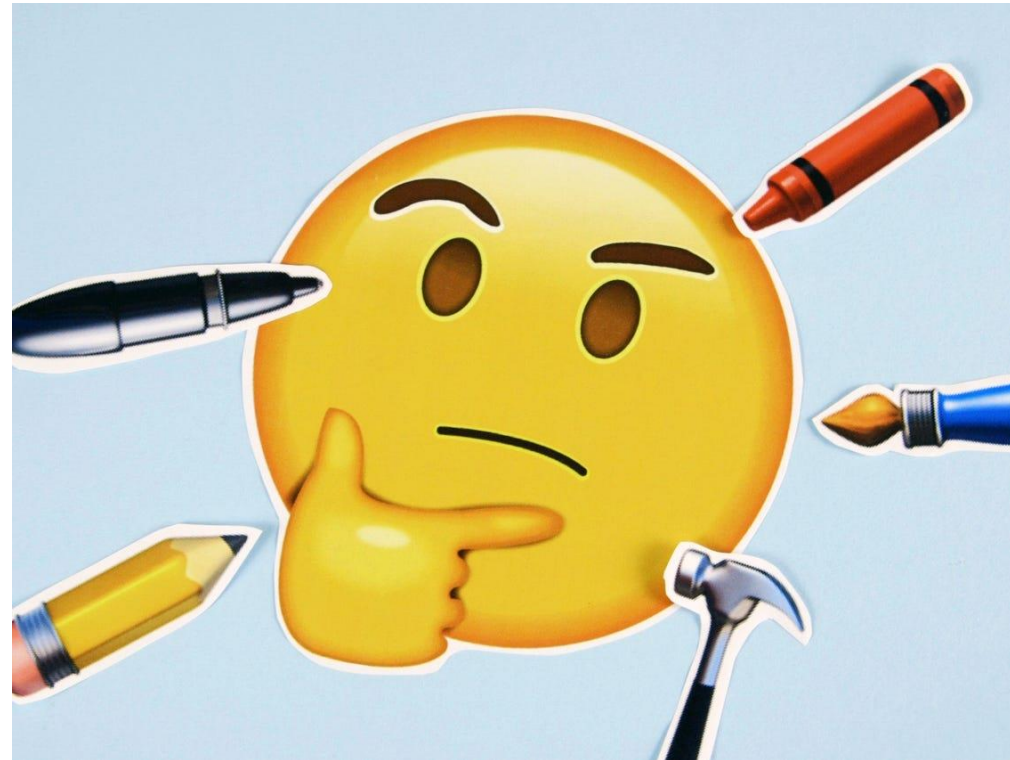➢ Ultraviolet light sensor.

➢ Light sensor

DIGITAL SENSORS

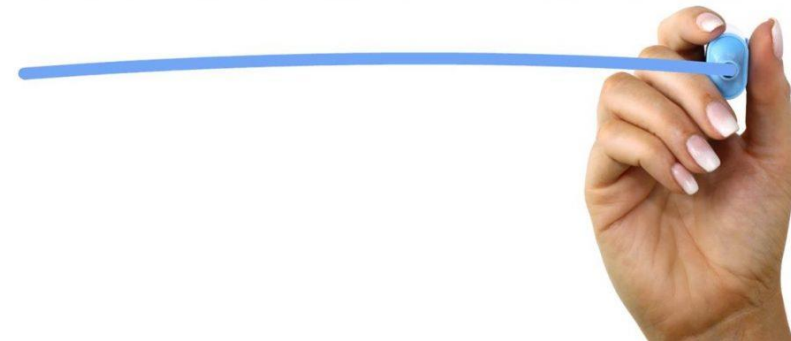➢ Digital Accelerometer

➢ Digital Temperature Sensor

Task

1. Mention the types of sensors

2. What is Analog Sensor?

3. Mention any four sensors.

REFERENCE

❖ https://iot4beginners.com/analog-sensors-vs-digital-sensors/

THANK YOU !!!