

1. How is IoT different from M2M?

M2M connects machines to machines, whereas IoT takes machine-to-machine connectivity, integrates web applications and connects it to a cloud. ... Simply put, **IoT is more than device connectivity**, as it is the network of connected devices

Examples of M2M : Smart Home, ATM , Kiosk, Swipe machines

Examples of IoT : Smart Agriculture, Smart Grid, Smart Healthcare

2. Describe the different components of IOT

An IoT device typically comprises four major components.

- **Sensors** – Much of IoT involves environment adaptability and the major factor contributing to it are the sensors in the IoT devices. Sensors are devices which enable the IoT devices to gather data from its surroundings. Effectively, they may be perceived as instruments which sense the environment and perform multiple tasks. Sensors make the IoT devices capable of real world integration. It can be of varied types. From a simple GPS in your phones to the live video feature on a social media platform.
- **Connectivity**- With the advent of cloud computing, devices can be launched on a cloud platform and in the due course, devices can interact freely with each other at a cheaper and more transparent scale. For IoT devices, cloud computing facilitates freedom from exclusive network providers. Instead, small network connection mediums like mobile satellite networks, WAN, Bluetooth etc. are used.
- **Data Processing** – As soon as the environmental stimuli are gathered by the sensors and transmuted to the cloud, it is the job of the data processors to process the information collected and perform the required tasks. From adjusting the temperatures of the AC to facial recognition on mobile phones or biometric devices, data processing software are largely responsible for enhancing the automation in IoT devices.
- **User Interface** – The IoT introduced a new paradigm among the available devices for active interaction and engagement. This has transformed the user interface widely. Instead of one-way communication mechanisms of traditional devices, IoT enables cascading effects on end-user commands. This is precisely why IoT devices are all the more communicative and active.

3. What are the most used sensors types in IoT

- a. Temperature sensors
- b. Proximity sensor
- c. Pressure sensor
- d. Gas sensor
- e. Smoke sensor
- f. IR sensors
- g. Ultrasonic sensors

4. What is mean by Arduino?

It's a programmable microcontroller, it used to sense and control the electronic devices programmatically.

5. What is the programming language use in Arduino

Programming language used mostly is Arduino, you can also use python and scratch programming.

6. Can you list a few pins on Arduino Uno

Digital Ground

Digital Pins 2-13 (green)

Digital Pins 0-1/Serial In/Out - TX/RX - *These pins cannot be used for digital i/o (digitalRead and digitalWrite) if you are also using serial communication (e.g. Serial.begin)*

Analog In Pins 0-5 (light blue)

Power(3.3 and 5 V) and Ground Pins

PWM pins **3, 5, 6, 9, 10, 11**

What is PWM output pins in Arduino?

On an Arduino Uno, PWM output is possible on **digital I/O pins 3, 5, 6, 9, 10 and 11**. On these pins the analogWrite function is used to set the duty cycle of a PWM pulse train that operates at approximately 500 Hz². Thus, with a frequency $f_c = 500\text{Hz}$, the period is $t_c = 1/f_c \sim 2\text{ms}$.

7. What is an Actuator?

Takes action based on the data collected from a sensor or other input device : A robotic arm, dc motor, servo motor

8. How is PIR sensor different from Ultrasonic sensor?

PIR (Passive Infrared) sensors **detect occupants' presence by sensing the difference between heat emitted by moving people and background heat.**

Ultrasonic sensors detect the presence of people by sending out ultrasonic sound waves into a space and measuring the speed at which they return.

9. Application of PIR sensor

Automatic door closing in lift, automatic Switching operation.

10 Application of Ultrasonic sensor

10 Applications of Ultrasonic sensor

Smart Dustbin, Smart Fridge

Smart cars

Liquid level control

11 What is LDR

LDR-Light Dependent Resistors. A Light Dependent Resistor (LDR) is also called a **photoresistor**. This optoelectronic device is mostly used in light varying sensor circuit, and light and dark activated switching circuits.

12. What is DHT11

The **DHT11** is a commonly used Temperature and humidity **sensor**

13. What is 6LoWPAN

Low Power Private Area Networks using IPv6 addressing

14. What is WSN

Wireless Sensor Networks

15. What is Zigbee?

ZigBee is a wireless Technology with IEEE 802.15.4 based high-level communication protocols which can use to create personal area networks with small, low-power devices for home automation, medical device, and other low-power low bandwidth needs. Hence, ZigBee is a low-power, low data rate, and close proximity wireless ad hoc network..

16. What is BLE?

Bluetooth Low Energy is a power-conserving variant of Bluetooth personal area network (PAN) technology

17. What is CoAP

Constrained Application Protocol (CoAP) is a specialized web transfer protocol for use with constrained nodes and constrained networks in the Internet of Things. Constrained with respect to power and security

18. What are the challenges in IOT?

Power utilization and Security will be the major challenges faced in IOT. As all devices are connected to one single network, a small bug implanted into the network will affect all those devices which lead to a chaos

19. What is the internet of Everything?

The Internet of Everything is that the intelligent affiliation of individuals, process, information and things

20. What is RFID?

Radio frequency identification system **(RFID) is an automatic technology and aids machines or computers to identify objects, record metadata or control individual target through radio waves.**

21 What is wearable technology in IoT?

- [Wearable technology](#), also known as "wearables", is a category of electronic devices that can be worn as accessories, embedded in clothing, implanted in the user's body, or even tattooed on the skin. The devices are hands-free gadgets with practical uses, powered by microprocessors and enhanced with the ability to send and receive data via the Internet.
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The rapid adoption of such devices has placed wearable technology at the forefront of the [Internet of things \(IoT\)](#).