Internet of Things(IoT)

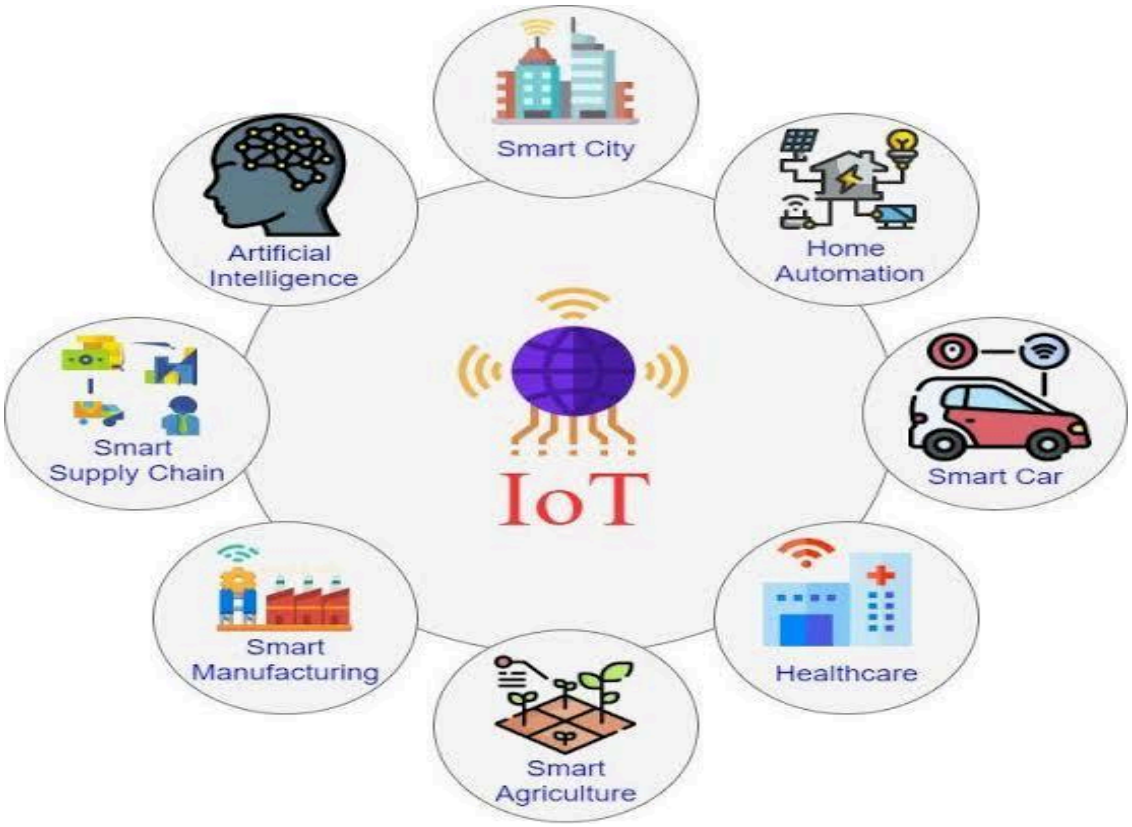
"*In a world where devices talk, IoT is the language that powers the conversation.*"

Ever wondered how your smart watch knows when you've had a bad night's sleep? Or how your fridge can remind you that you're out of milk? Let's unravel the buzz and take a friendly dive into the world of IoT.

"Let's talk about IoT: What it is and why it matters"

Introduction to IoT

IoT stands for the internet of things. It refers to the interconnectedness of physical devices, such as appliances and vehicles, that are embedded with software, sensors, and connectivity which enables these objects to connect and exchange data.



Why should we use IoT ?

1. Automation and efficiency:-

Iot devices can be programmed to perform specific tasks automatically. This helps in increasing efficiency and productivity.

2. Cost saving:-
   It can help to reduce costs by automating tasks.
3. Increased safety and security:-
   It can monitor people and other things, which helps safety and security.
4. Convenience:-
   It can make tasks easy by making them remote-controlled.

How does an IoT system actually work?

An IoT device basically uses data from the surrounding or the input from the user and then analyzes that data. Firstly sensors collect data from the environment. It could be one sensor or a collection of sensors. They collect the data which is used later. These sensors can be GPS, LDR, temperature sensors, etc. Next, the collected data by the sensor is sent to the cloud via some connection. The connection can be WiFi, LAN, satellite, Bluetooth, etc. The software reads and analyzes the data according to the program written in it.

Major components of IoT:-

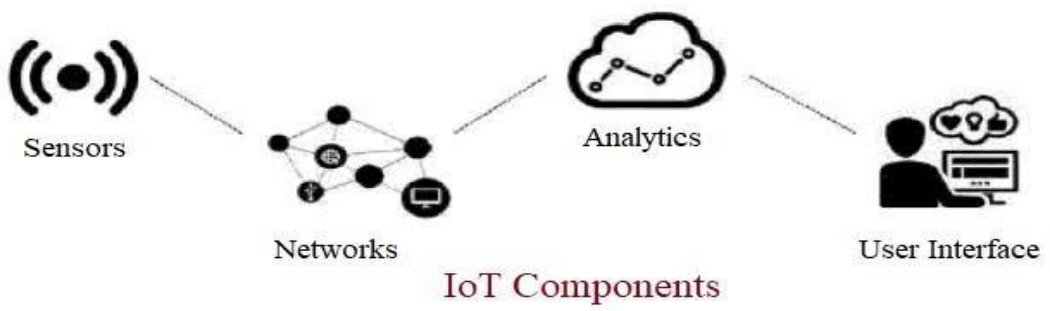
1. Sensors or devices:-
Sensors or devices are basically used to collect and transmit the data and also perform actions based on those data. For example, the sensors can be used for measuring temperature and humidity.

2. Gateway:-
Gateway is one of the essential components of IoT that offers communication, management, and data processing. Here are some functions of gateways in Iot: data aggregation, communication, security, protocol translation, load balancing, and latency reduction.

3. Cloud:-
Cloud in IoT refers to the service that provides the management, storage, and processing of the data that is generated by IoT devices.

4. Analytics:-
In analytics, meaningful insights are analyzed that are generated by IoT devices and sensors. Some applications of analytics in IoT are Anomaly detection, environmental monitoring, Energy management, smart cities, and agriculture.

5. User Interface:-
User Interface, also known as UI in the Internet of Things and provides an interface by which the users can interact with the applications and systems.
some examples such as data visualization, user-friendly design, personalization, remote management, Authentication, and security.



IoT Components

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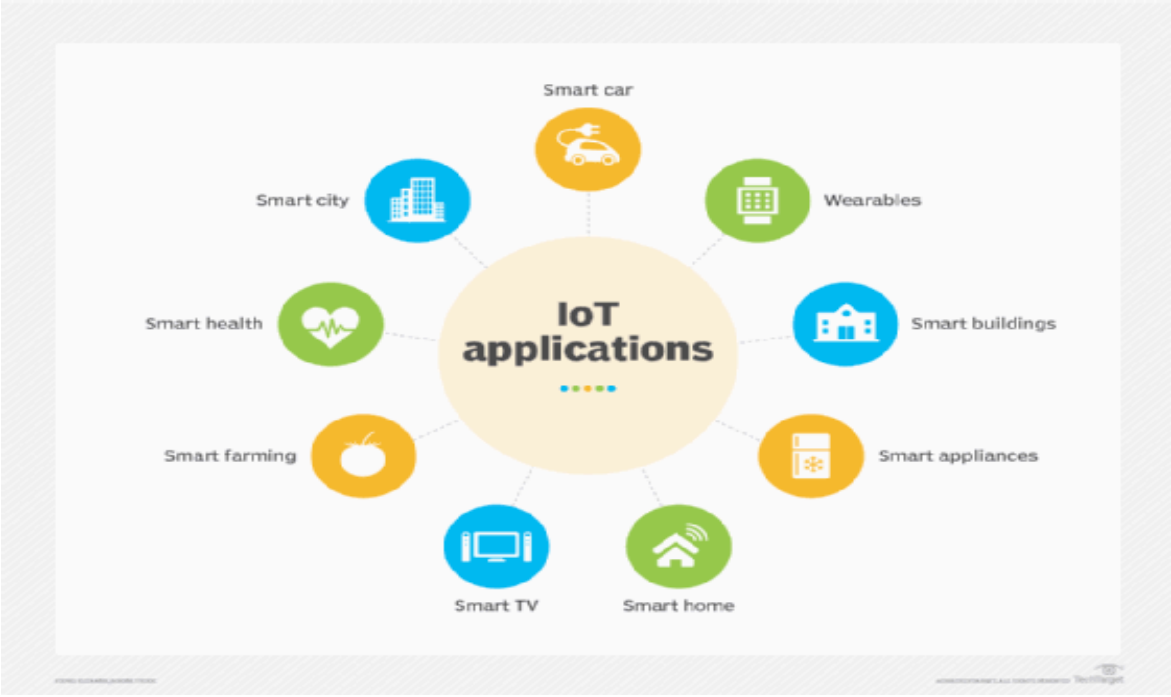
Real Life example of working of IoT

->Smartwatches are an example of IoT devices that contain an accelerometer that measures the number of steps taken, detects hand movements, etc.
->Using GPS, these devices can determine your location and compute the distances traveled.
->IoT devices make our home smart, for example we can lock and unlock our doors using an application. The devices which have sensors that can detect any type of mishappening in our home, eg: Glass break, smoke, heat motion detectors, etc.



Conclusion:-

The Internet of things(IoT) is a revolutionary technology that connects physical devices to the internet, enabling them to collect, exchange, and act on data. It transforms everyday objects into smart devices,

enhancing automation, efficiency, and real-time decision-making. IoT works through a network of sensors and connectivity modules.

References:-

1.https://www.geeksforgeeks.org/introduction-to-internet-of-things-iot-set-1/
2.https://www.naukri.com/code360/library/what-are-the-components-of-iot