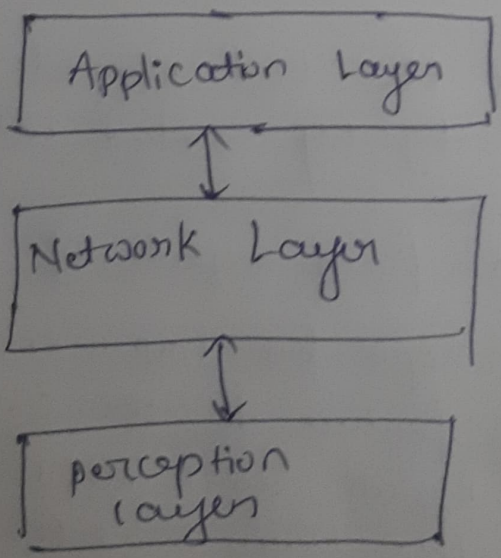
Three layered architecture of iot.

This is the most basic architecture. It was introduced in the early stages of research in the area of iot.
It has three layer namely perception, network and application layer.

The perception layer:

This is the physical layer which has the sensor for sensing and gathering info -rmation about the environment. It senses some physical parameter or identifies other smart objects in the environment.



ii) The network layer is responsible for connecting to other smart things, network devices and servers. Its features are also used for transmitting and processing sensor data.

iii) The application layer is also responsible for delivering application specific data to user.
Ex: Smart homes, smart cities, smart health.

Advantage:

→ 3-layered architecture is very simple to understand and handling the data in environment becomes easy.
→ Less amount of processing is needed as data only travels through 3-layers.

Disadvantage

→ This is not the best approach as system components are tightly coupled with each other
→ It focuses on finer aspects of iot.
→ Very less scope for improvement. adding new feature to the existing layer makes difficult as it needs to be compile complete layer modules which are tightly coupled.

5 layered iot architecture.

This additionally includes the processing and business layers.

The five layers are, perception, transport, procesing, application and business layer.

The role of the perception & application layer is same as in 3-layer architecture.

The transport layer : transfer the data from one perception layer to the procesing layer and vice a versa. through networks such as wireless 3G, LAN, Bluetooth, RFID & NFC.

The procesing layer is also known as the middleware layer. It stores, analyzes, and proceses huge amounts of data that comes transport layer. It can manage and provide a diverse set of services to the lower layer. It employs many technologies, database, cloud computing. Big data processing, Data Mining etc.

The Business Layer

This manages the whole iot system. including applications, business and profit models. and user's privacy This layer Basically involves making flowchart, graphs, analysis of results and how device can be improved etc.

Advantage:

→ lot of scope of improvement for integr-ating new things to the system in the future.

→ All functionality are losely coupled compared to 3 & 4 layerd architecture

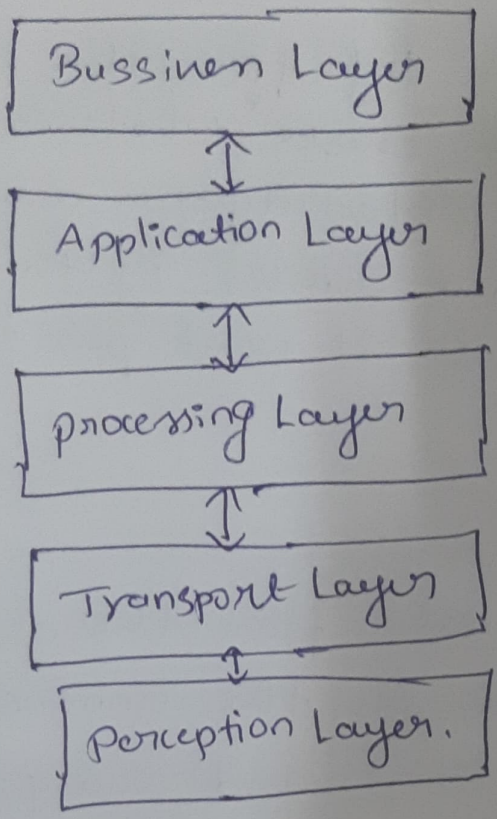
→ Bussiness layer is extensible to provide good service to the customer.

Disadvantage

→ This layer do not considers the security and authentication of the devices

→ Data authentication & User authorization are not handled seperately

→ It does not check for malacious content in the data.



6 Layred IoT architecture.

This architecture contains the seperate 6 layers for each fine grain task there by loosly coupling each system functionality.

The perception Layer:

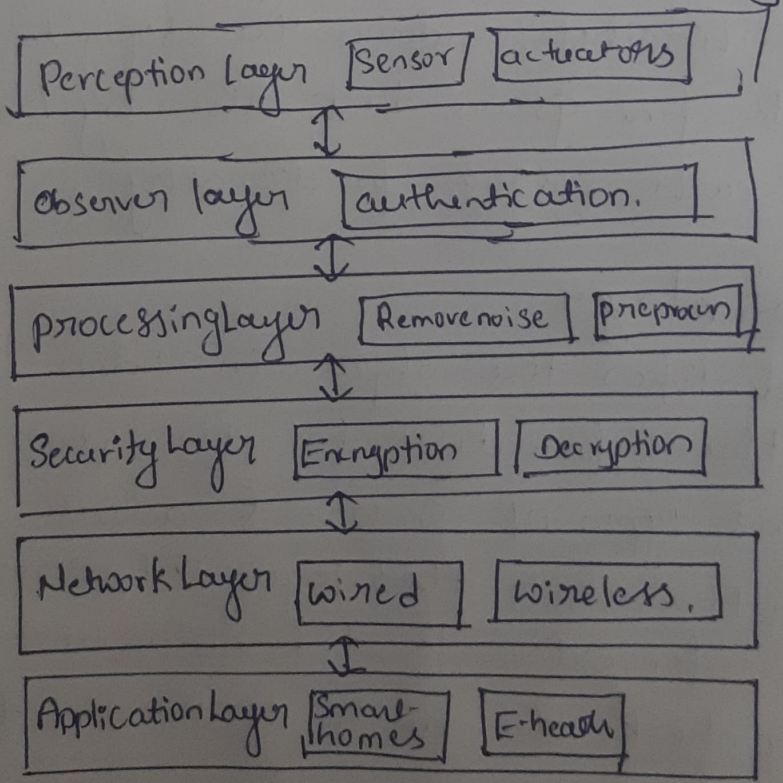
It identifies the objed inorder to gather the information. For this purpose different types of sensors & actuators are ~~ap~~ attached to this layer. It send collected information to the observer layer to check the authentication of these senson and devices.

Observer Layer:

It monitors the info from the perception Layer. This layer checks whether the information is protected farom any kind of intruders and viruses. If there is any breach in the data it won't pan the info to next layer.

processing Layer:

It procen the data from the observer Layer This layer eliminales the unnecessary information. It stores and analyzes the huge amount of data from observer layer. It saves the networks from heavy traffic



Security layer:

This is designed to make architecture of iot Secure. It converts information collected by Processing layer into an unknown form called cipher text. It also performs decryption of cipher.

Network Layer:

This is also known as transmission layer It connects all the devices using some common networks and shares the information to other connected things.

This layer can transmit the data any medium based on the network used.

Application Layer:

It delivers the numerous application feature into the user using protocols. or API examples like Sending email _api for sending command to device, api for pushing and polling of info from server.

Advantage:

→ This is one of the most flexible iot architecture
→ new methods and technologies can be added without much modification in existing tech.

Disadvantage:

→ There are problems like cascading failures exists.
→ lot of time consumed in passing info to multiple layer.

4 Layered architecture.

This architecture only contains 4 layers.

Application layer:

It helps to control and monitor various aspects of the iot system. It helps to visualize and analyze system stats at present stage of action.

Service Application Support layer:

- Device Modeling
- Device Control
- Data publishing
- Data analytics
- Data Discovery.

Network / communication Layer:

Communication between devices and remote sensors.

Device Layer: This layer provides sensing actuation control and monitoring activities.