

Assignment of IOT

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Q1 Explain the application of IOT in home automation system.

ans 1 The IOT based home Automation will enable the user to use a home automation system based on IOT. The modern homes are automated through the internet and the home appliances are controlled. The beauty of the home automation system lies in the fact that the settings are manageable from your smart phones and other remote-control devices. Smart home IOT devices can help reduce costs and conserve energy. The home automation segment includes smart lighting, smart TVs and other appliances. Home automation in India is creating big opportunities not only for Indian automation companies but also for foreign companies. The rapid development

of home-based automations, along with m2m communication will continue to create billions of new connected objects over the next 5 years and beyond.

Q2 What is threat analysis in IOT? Explain in details.

Ans2 IT Security vulnerabilities also have an impact on the IOT. Distributed denial of service (DDoS) might be able to deny important functionality. It needs to be ensured that a DDoS-attack does not stop fundamental parts of an IOT-system from working. In addition, the IOT itself might become a major target for Botnet owners, since so many devices can be made members if not secured properly. Other attacks like man in the middle (MITM) might allow the attacker to gain access into a personal home network or take over the identity of a device and therefore cause damage to the whole system.

There are several other attacks like radio-based DoS or replay attacks, which the IOT is vulnerable to. In order to avoid the most common attacks it becomes clear that the implementation of existing counter measures is required. There are several other mechanisms like (a) / Symmetric encryption standards and signing protocols, which are also suitable for the needs of the IOT.

Q3 How big data can be used in IOT?

Ans Big data analytics is emerging as a key to analyzing IOT generated data from "connected devices" which helps to take the initiative to improve decision making. The role of big data in IOT is to process a large amount of data on a real-time basis and storing them using different storage technologies.

IOT big data processing follows four sequential steps:-

- ① A large amount of unstructured data is generated by IOT devices which are collected in the big data systems. ~~This~~
- ② In the big data system which is basically a shared distributed database, the huge amount of data is stored in big data files.
- ③ Analyzing the stored IOT big data using analytic tools like Hadoop mapReduce or spark.
- ④ Generating the reports of analyzed data.

Q4 How e-health sensor platform can be used for various health related applications? explain.

ans 4 The e-health sensor allows Arduino and Raspberry Pi users to perform biometric

and medical applications where body monitoring is needed by using 10 different sensors:

Pulse, oxygen in blood, airflow (breathing), body temperature, Electrocardiogram (ECG), glucometer, galvanic skin response, blood pressure, patient position and muscle / electromyography sensor.

④ Sensor platform -

- Pulse and oxygen in blood (SPO₂) -

Pulse oximetry a noninvasive method of indicating the arterial oxygen saturation of functional haemoglobin.

- Electrocardiogram (ECG) -

It is a diagnostic tool that is routinely used to assess the electrical and muscular function of the heart.

- Airflow: breathing -

Abnormal respiratory rates and changes in respiratory rate are a broad indicator of major physiological instability, and in many cases, respiratory rate is one of the earliest indicators of this instability.

- Body temperature —

It depends upon the place in the body at which the measurement is made, and the time of day and level of activity of the person. Different parts of the body have different temperatures.

- Blood pressure —

It is the pressure of the blood in the arteries as it is pumped around the body by the heart.

It is recorded as two no. — the systolic pressure over the diastolic pressure.

- Galvanic Skin Response (GSR) —

It measures the electrical conductance between 2 points, and is essentially a type of ohmmeter.

- Glucometer —

It is a medical device for determining the approximate concentration of glucose in the blood.

- Electromyogram —

It measures the electrical activity of muscles at rest and during contraction.

- Patient position and falls —

It is necessary to monitor the body positions and movements made bcoz of their relationship to particular disease.

Q5 What is the controller service in weather monitoring system?

Ans 5 weather monitoring systems are used to monitor the continuously changing climatic conditions. The data gathered by such devices is used to forecast weather as well as keep a log of the environmental changes at a place. Such data is extremely useful in the study of earth and analyzing the changing climatic and environmental conditions at a place. Further the data and analysis so collected can be utilized in a variety of applications like agriculture, geology, mining and weather forecast.