Welcome students, this program is for Bachelor of Science, third year students for the subject of computer science for Semester 6 having the course code as CSC110 and Course title as Internet of Things.

So in this we will be studying about the Unit 3 that is the cloud technology with the module name as wireless sensor networks, its definitions and limitations; sensor cloud, its definition and the difference with WSN and the actors in sensor cloud and it's architecture.

So the basic outline of this module is wireless sensor networks then sensor cloud and the difference between the sensor cloud and the wireless sensor networks. Then the actors in the sensor cloud and the sensor cloud architecture.

So at the end of the session, the students will be able to learn the different concepts of wireless sensor networks. They'll be able to explain about the sensor cloud and its architecture and the actors in the sensor cloud. They'll be able to explain the difference between the sensor cloud and the wireless sensor cloud.

So first thing we will be studying is the wireless sensor networks. So wireless sensor network is a wireless network which consists of having distributed autonomous devices using these sensors to monitor the physical environment. So this WSN consists of different sensors which are distributed in an ad-hoc manner. So this different sensors work with each other to send some physical event and then the information is gathered and processed to get the relevant result. So this Wireless sensor network transmits the sensed data to a centralized unit known as the sink node, which further processes th data.

So here is the basic architecture of the wireless sensor network. So over here we have a sensing region in which we have the different sensor nodes. So each of these sensor nodes are connected to a to each other and further are connected to the sink node. The sink node is again further connected to the end user.

Next is the different applications of this wireless sensor network. So WSN and can be used in environmental monitoring, in the health care applications. It can be used in traffic control, can be used in industrial applications, different military applications, and the smart home and Smart city.

Next we have the limitations of this wireless sensor network. So it is a less secure, which means the hackers can enter the access point or the sink node and obtain the information. Second is it is more complicated to configure compared to the wired network. Third, it is easily troubled by the different surroundings, like the walls, large distances due to the signal attenuation, etc. It has a comparatively low speed of communication and it is still costly.

Next we will be studying about the sensor cloud. So since the sensor cloud is an integrated version of this wireless sensor network, it thrives in the principle of virtualization of the physical sensor nodes. So sensor cloud is a unique sensor data storage virtualization and remote management platform which can hold all this powerful cloud computing technologies to provide an excellent data scalability, rapid virtualization and user programmable analysis. So a sensor cloud disseminates the use of different physical sensors to the different end users who do not own, deploy, or manage the physical sensor nodes.

So a sensor cloud is a pay per use technology. The different procedures for obtaining this raw sensed data and processing, aggregating it, and fully abstracted to the end users. So physical sensors are virtualized to form these virtual sensors and the data from this is then sent to the different end users. A physical sensor node which serves this multiple end users and it is allocated or deallocated to serve the various end users. Virtualization of a physical sensor nodes enables the end user to imagine the sensors in the form of a service which is called as the sensor as a service.

Then here is the basic difference between the wireless sensor network and the sensor cloud. So in wireless sensor network which is dedicated to a single user which is then aggregated, data is sent to the wireless sensor network user, whereas in sensor cloud all these things are served to the multiple

applications where we have the sensor cloud infrastructure which comprises of the Virtualization technique and then it is sent to the multiple applications or the users. So this is the basic difference between the wireless sensor network and the sensor cloud.

Then we'll be studying about the different actors of this sensor cloud. So sensor cloud infrastructure comprises of these three different actors. So first is an end user. So end user is a person or an organization who possesses its own applications which are then to be fed with the sensor data from the physical sensor networks. So the end user can demand various sensor services at different times from this heterogeneous sensor devices which are offered by the cloud service provider. In return, the end users need to pay according to their usage of this sensor as a service to the cloud service provider.

The second actor of the sensor cloud is the sensor owner. So sensor owner are the business actors of the sensor cloud who can purchase the physical sensor devices and then lend it to the cloud service provider. So this are based on the usage of the sensor devices, since the owners can then own a monthly monitory profit. The third actor in the sensor cloud is the sensor cloud administrator. So he is responsible for managing and controlling all the data processing within the cloud infrastructure. The different activities which includes virtualization of the physical sensors, devices into our virtual sensor and maintenance and monitoring of this physical sensor devices, Organization of unstructured data, executing intensive queries over the datasets and the real time service provisions of sensor as a service.

So this is the basic architecture of a sensor cloud where we have a heterogeneous sensor. Nodes at the bottom which are sensing the Sensed data to the information flow. OK here. Then we have the mapping done of the physical to the logical sensor nodes with the virtual groups. That is, you can see as VG1 to VG3 which is then sent to the different application of the end users.

Next we have the roles architectural roles which are performed by the actors. So the end user performs the role of registering themselves and selecting the templates and requesting the different applications. The sensor owner deploys the heterogeneous or homogeneous physical sensor nodes over the different geographical location and the sensor cloud administrator plays the managerial role.

So these are my references for this module. Thank you so much.