



SNS COLLEGE OF TECHNOLOGY

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (UG & PG) Third Year Computer Science and Engineering, 5th Semester

Two Marks

Subject Code & Name: 19ITT302 / Internet of Things

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1. What is IoT technology?

Answer: IoT is short for Internet of Things. The Internet of Things refers to the ever-growing network of physical objects that feature an IP address for internet connectivity, and the communication that occurs between these objects and other Internet-enabled devices and systems.

2. How do you explain IoT?

Answer: An IoT system consists of sensors/devices which “talk” to the cloud through some kind of connectivity. Once the data gets to the cloud, software processes it and then might decide to perform an action, such as sending an alert or automatically adjusting the sensors/devices without the need for the user.

3. How do you explain IoT?

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4. Is Alexa an IoT device?

Answer: Alexa, Are My IoT Devices Secure? The internet is everywhere, thanks to the Internet of Things (IoT). ... Well-known examples of IoT devices include smart speakers like Amazon Alexa or Google Home, smartwatches like the Apple Watch, internet-connected baby monitors, video doorbells, and even toys.

5. in simple terms, what is the Internet of Things?

Answer: This is not an easy question because of the interdisciplinary nature of the IoT. Experts in various fields may have their own definitions on the IoT. In my opinion, the IoT is a comprehensive set of tangible infrastructure (sensors, wireless networks, and data storage/management) and relevant techniques or methodologies that enable effective data analytics and system control.

Some people may think that the IoT is just high-tech expansive electronics that communicate with each other. However, what we should focus on is the fact that we obtain data as a by-product of this information flow (communication). In other words,

the IoT turns everything into data; hence, it provides unprecedented data availability that can be used for various practical purposes.

6. What are the key facts or lessons students and professionals should keep in mind when they think of the IoT?

Answer: It is true that the IoT is realized by an array of advancements in sensory devices, wireless network, and information technology. Of course, we should keep enhancing the hardware that composes the IoT. (Svr training online)

However, the real magic is somewhere else: The IoT brings significant opportunity because it turns everything into data. I don't even need to mention the buzzword "Big Data" here to make my point because, nowadays, everybody understands how valuable data is. The information we can obtain based on the data collected by IoT-enabled systems allows us to operate/control the system in an optimal way.

Unfortunately, this unprecedented data availability comes with new challenges. I have been working closely with Professor Shiyu Zhou at the University of Wisconsin-Madison, who is affiliated with the UW-Madison IoT Lab. During that work, I was able to observe those challenges in analyzing real-world IoT data.

For example, the data collected from IoT often have missing or invalid entries, severe heterogeneity, and inconsistency due to various data-acquiring sources. How to massage the messy raw data provided by the IoT so that we can draw meaningful insights is not a trivial task. Therefore, the crucial fact about performing data analytics on the IoT in the context. Context really matters in IoT research, and that is why all IoT research should be interdisciplinary.

7. Who invented IoT?

Answer: *Kevin Ashton:*

The term "The Internet of Things" was coined by Kevin Ashton in a presentation to Proctor & Gamble in 1999. Ashton is a co-founder of MIT's Auto-ID Lab. He pioneered RFID use in supply-chain management. He started Sensi, a company that makes energy sensing and monitoring technology.

8. How Remote Updation Of Software Might Affect The Development And Implementation Of The Internet Of Things (iot)?

Answer: Several other technical issues might impact the development and adoption of IoT. For example, if an object's software cannot be readily updated in a secure manner, that could affect both function and security. Some observers have therefore recommended that smart objects have remote updating capabilities. However, such capabilities could have undesirable effects such as increasing power requirements of IoT objects or requiring additional security features to counter the risk of exploitation by hackers of the update features.

9. What Are The Difference Between The Internet Of Things (iot) And Machine To Machine (m2m)?

Answer: Generally speaking, M2M could be considered a subset of IoT. M2M is like

a line connecting 2 points, and IoT is like a network, a system composed of lots of M2M and triggering lots of interactions/activities.

Giving a simple definition to M2M which is transferring data from one machine to another one. It's been used everywhere in our daily life. For example, entrance security. Just like using your employee card to unlock a door. When the security detector receives the ID from the employee card and then unlock the door once the ID is approved. This is M2M.

In this case, what IoT can offer? As mentioned, IoT is a network, is a system composed of lots of M2M and algorithms. When the system knows you are the person entering the office, it can turn on the light and the air conditioner of your partition, even it can adjust the most comfortable light level and temperature that you like the most from time to time after learning your behavior for a period of time. The system can get all the data from all the sensors and machines to know, for example, who and when enters the office, how much electricity you have consumed, what the environment makes you feel most comfortable, and other applications.

10. How Internet Addresses (ipv6) Might Affect The Development And Implementation Of The Internet Of Things (iot)?

Answer: A potential barrier to the development of IoT is the technical limitations of the version of the Internet Protocol (IP) that is used most widely. IP is the set of rules that computers use to send and receive information via the Internet, including the unique address that each connected device or object must have to communicate. Version 4 (IPv4) is currently in widest use. It can accommodate about four billion addresses, and it is close to saturation, with few new addresses available in many parts of the world.

Some observers predict that Internet traffic will grow faster for IoT objects than any other kind of device over the next five years, with more than 25 billion IoT objects in use by 2020,76 and perhaps 50 billion devices altogether. IPv4 appears unlikely to meet that growing demand, even with the use of workarounds such as methods for sharing IP addresses.

Version 6 (IPv6) allows for a huge increase in the number of IP addresses. With IPv4, the maximum number of unique addresses, 4.2 billion, is not enough to provide even one address for each of the 7.3 billion people on Earth. IPv6, in contrast, will accommodate over 1038 addresses? more than a trillion per person.

It is highly likely that to accommodate the anticipated growth in the numbers of Internet-connected objects, IPv6 will have to be implemented broadly. It has been available since 1999 but was not formally launched until 2012. In most countries, fewer than 10% of IP addresses were in IPv6 as of September 2015. Adoption is highest in some European countries and in the United States, where adoption has doubled in the past year to about 20%.

Globally, adoption has doubled annually since 2011, to about 7% of addresses in mid-2015. While growth in adoption is expected to continue, it is not yet clear whether the rate of growth will be sufficient to accommodate the expected growth in

the IoT. That will depend on a number of factors, including replacement of some older systems and applications that cannot handle IPv6 addresses, resolution of security issues associated with the transition, and availability of sufficient resources for deployment.

Efforts to transition federal systems to IPv6 began more than a decade ago. According to estimates by NIST, adoption for public-facing services has been much greater within the federal government than within industry or academia. However, adoption varies substantially among agencies, and some data suggest that federal adoption plateaued in 2012. Data were not available for this report on domains that are not public-facing, and it is not clear whether adoption of IPv6 by federal agencies will affect their deployment of IoT applications.

11. What Is GainSpan Gs2000 Protocol For Internet Of Things (iot)?

Answer: GainSpan GS2000 is one such tech which used both ZigBee and Wi-Fi. It makes optimum use of power by putting the device into energy-saving standby mode when no data transmission is taking place. Only when the device is awaked or checked for connection failure the high power consumption connection of Wi-Fi is used.

12. Why Is The Internet Of Everything Important?

Answer: The Internet of Everything brings together people, process, data and things to make networked connections more relevant and valuable than ever before – turning information into actions that create new capabilities, richer experiences and unprecedented economic opportunity for businesses, individuals and countries.

13. How Does The Internet Of Things (iot) Work?

Answer: The IoT is not separate from the Internet, but rather, a potentially huge extension and expansion of it. The things that form the basis of the IoT are objects. They could be virtually anything? streetlights, thermostats, electric meters, fitness trackers, factory equipment, automobiles, unmanned aircraft systems (UASs or drones), or even cows or sheep in a field. What makes an object part of the IoT is embedded or attached computer chips or similar components that give the object both a unique identifier and Internet connectivity. Objects with such components are often called “smart” such as smart meters and smart cars.

Internet connectivity allows a smart object to communicate with computers and with other smart objects. Connections of smart objects to the Internet can be wired, such as through Ethernet cables, or wireless, such as via a Wi-Fi or cellular network.

To enable precise communications, each IoT object must be uniquely identifiable. That is accomplished through an Internet Protocol (IP) address, a number assigned to each Internet-connected device, whether a desktop computer, a mobile phone, a printer, or an IoT object. Those IP addresses ensure that the device or object sending or receiving information is correctly identified.

14. What impacts will the Internet of Things (IoT) have on the Transportation Sector?

Answer: Transportation structures are becoming increasingly connected. New motor automobiles are ready with features including worldwide positioning structures (GPS) and in-vehicle enjoyment, as well as advanced driver help structures, which utilize sensors inside the vehicle to help the motive force, for example with parking and emergency braking.

15. What impacts will the Internet of Things (IoT) have on the Agriculture Sector?

Answer: The IoT may be leveraged by the agriculture trade through exactness agriculture, with the goal of optimizing production and potency whereas reducing prices and environmental impacts. For farming operations, it involves analysis of elaborate, usually time period knowledge on weather, soil and air quality, installation, pesterer populations, crop maturity, and alternative factors like the cost and availability of equipment and labor. Field sensors check soil wetness and beam balance, which might be in addition to location technologies to modify precise irrigation and fertilization.

16. What is the IoT Cloud?

Answer: The Salesforce IoT Cloud may be a platform for storing and process IoT information. It uses the Thunder engine for climbable, period event process. Its assortment of application development elements, called Lightning, powers its applications. It gathers information from devices, websites, applications, customers, and partners to trigger actions for period responses.

17. What is the application of IoT in Environmental Monitoring?

Answer: The application of IoT in environmental monitoring is broad: environmental protection, extreme weather monitoring, water safety, endangered species protection, commercial farming and more. In these applications, sensors notice and live each variety of environmental amendment.

18. The real-time usage of Raspberry pi?

Answer:

1.Home Automation

2.Internet Radio

3.Portable webserver

4.manipulating the robots

19. What is the role of publishers in IOT?

Answer: publishers are the lightweight sensor that sends Real-time data to middleware or intermediate devices.

20. What is Bluetooth Low Energy (BLE) Protocol for an IoT?

Answer: Also known as Bluetooth Smart, this protocol was originally introduced by Nokia as Wibree in 2006. It has the same range coverage, but with a significantly decreased strength intake, which is made possible by the Bluetooth. Its bandwidth with narrow spacing is comparable to the one utilized by Zigbee. Its low electricity latency and simplicity make it suitable for being introduced into low-cost microcontrollers.

21. What is the scope of IOT devices in the future?

Answer: As per Gartner's report, a total count of IOT devices may hit up to 21 Billion by 2020 worldwide.

22. What is ZigBee protocol?

Answer: 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.

23. Can NodeMCU act as a web server?

Answer: Yes, with the help of ESP8266WebServer Arduino library. This library is for ESP8266. Such similar libraries are also available for other NodeMCU board. 42. What are other development boards available? Ans: Other boards such as Beagle Bone Black, BananaPi, Intel's Galileo, Asus Tinker Board, MSP 430 Launchpad, and etc.

24. Who are subscribers in IOT?

Answer: Subscribers are the application which is interested in collected real-time data from the sensors.

25. List some of wearable Arduino boards?

Answer:

1. Lilypad Arduino simple
2. Lilypad Arduino main board
3. Lilypad Arduino USB

26. Advantages of IOT?

Answer: We have many advantages of IOT in many fields and businesses, Such that very enhanced data collection In proper accurate, Efficient way of customer engagement, Less wastage, Advanced way of using technology.

27. What are the important components of the Internet of Things?

Answer: Many people mistakenly think of IoT as an independent generation.

curiously, the internet of factors is being enabled through the presence of different impartial technologies which make fundamental components of IoT.

The fundamental components that make the internet of things a truth are:-

1. **Hardware:** Making bodily gadgets responsive and giving them the functionality to retrieve facts and reply to instructions

2. **Software:** enabling the records series, garage, processing, manipulating and educating

3. **Verbal exchange Infrastructure:** most important of all is the verbal exchange infrastructure which consists of protocols and technologies which permit physical items to exchange data.

28. What is IoT in TCS?

Answer: TCS is a collaboration with Intel to develop a portfolio of IoT solutions such as smart cities, smart infrastructure, connected assets, and Telematics. The Intel IoT platform is an end to end reference model designed to unify and modify property and security for the IoT.

29. What are the distinctive parts where the Internet of Things can really enhance the present procedures?

Answer: The Internet of Things process can be connected to any handle where profitability, precision or process improvement is required. With the assistance of the innovation and the keen equipment, this can be executed in a small amount of the current working expense.

Web of things can be connected or as of now began applying their advantages to the accompanying classes and ideally, we will see later on:

- Agriculture
- Manufacturing
- Healthcare
- Energy
- Transportation
- Security
- Data improvement
- **Related Article:** Future of the Internet of Things

30. What are the dangers and difficulties that we ought to know about with regards to the Internet of Everything?

Answer: *The dangers and difficulties that everybody ought to know about with regards to the Internet of **Everything** are:*

- *Security*
- *Security*
- *System blockage*

- *Power utilization at the pinnacles.*

31. What impact do you think the IoT have on the transport sector?

Answer: The higher connectivity that the IoT will engender will make it highly suitable for a sector such as transportation. New models of vehicles are now being fitted with technologies such as global positioning structures (GPS) and advanced driver help structures (ADAS), which use sensors inside the vehicle to help in a number of vital functions that make driving safer and simpler. All this is enabled by the IoT.

32. What impact will IoT have on sustaining the environment or on business?

Answer: IoT is known to have a role in reducing carbon emissions by manufacturing units. It means making more energy available for a more useful purpose such as lighting, on which there is expected to be enormous savings.

33. What do you understand by a “Thing” in the IoT?

Answer: The “thing” referred to in the IoT is any object into which a computing device can be embedded or connected.

34. How wireless Communications may affect the development and implementation of the internet of factors (IoT)?

Answer: Many observers accept as true with that troubles relating to get right of entry to to the electromagnetic spectrum will want to be resolved to make sure the functionality and interoperability of IoT devices. access to spectrum, each licensed and unlicensed, is essential for devices and objects to communicate wirelessly. IoT devices are being developed and deployed for brand new functions and industries, and a few argue that the modern-day framework for spectrum allocation won't serve these new industries well.

35. What are the principle Social and Cultural impacts of the internet of things (IoT)?

Answer: The IoT may also create webs of connections so one can fundamentally remodel the manner people and things engage with every different. The emerging our on-line world platform created by way of the IoT and SMAC has been described as potentially making cities like “computers” in outdoor, where residents engage with the metropolis “in a real-time and ongoing loop of information.”

A few observers have proposed that the increase of IoT will bring about a hyperconnected global wherein the seamless integration of items and those will purpose the internet to disappear as a separate phenomenon. In this sort of global, our on-line world and the human area would appear to efficaciously merge right into unmarried surroundings, with unpredictable but probably massive societal and cultural effects.

36. What influences will the net of factors (IoT) have on Transportation quarter?

Answer: Transportation systems have become increasingly connected. New motor automobiles are equipped with features along with global positioning structures (GPS) and in-vehicle enjoyment, in addition to advanced motive force assistance

structures (ADAS), which make use of sensors in the automobile to assist the driver, as an instance with parking and emergency braking. Similarly, connection of automobile structures enables absolutely self-sustaining or self-riding vehicles, which are predicted to be commercialized in the next five-to-two decades.

Additionally, IoT technologies can permit cars within and across modes? consisting of cars, buses, trains, airplanes, and unmanned aerial automobiles (drones) to “speak” to each other and to additives of the IoT infrastructure, growing clever transportation structures (ITS). ability advantages of ITS might also include improved safety and collision avoidance, optimized visitors flow, and strength savings, amongst others.

37. How does the internet of the whole thing relate to the internet of factors?

Answer: The “net of everything” builds on the inspiration of the “net of things” by using including community intelligence that lets in convergence, orchestration, and visibility across previously disparate structures.

38. What is meant by a smart city regarding the Internet of Things?

Answer: As with IoT and different popular era terms, there is no established consensus definition or set of standards for characterizing what a smart metropolis is. Precise characterizations vary widely, however in fashionable they involve the use of IoT and related technologies to improve energy, transportation, governance, and other municipal offerings for certain desires which includes sustainability of advanced great of lifestyles.

39. How might the Internet Address (IPv6) affect the development and implementation of the Internet of Things?

Answer: This is the most popular IoT Interview Questions asked in an interview. A barrier to the improvement of IoT is the technical boundaries of the version of the network protocol(IP) that is used most widely. IP is the set of rules that computers use to ship and receive statistics via the internet, including a specific address that every connected device or item should have to speak. Model four (ipv4) is presently in widest use. It can accommodate about four billion addresses and its miles near saturation, with few new addresses available in many parts of the sector.

Version 6 (ipv6) allows for a big increase within the wide variety of IP addresses. With ipv4, the maximum number of particular addresses, 4.2 billion, is not sufficient to provide even one deal with for every of the 7.3 billion human beings on earth. Ipv6, in an evaluation, will accommodate over 1038 addresses extra than a thousand billion trillion per man or woman.

40. Will the accessibility of High-speed web be a noteworthy downside in the Internet of Things advancement and usage?

Answer: Indeed, the accessibility of High-speed web will be a noteworthy downside in the Internet of Things improvement and execution since it is one of the significant prerequisites for the Internet of things to work proficiently and viably.

41. What does WSN represent in the Internet of Things idea?

Answer: The abbreviation WSN represents Wireless Sensor Network. It is viewed as the establishment of the Internet of Things applications.

42. What Kinds Of Information Do Internet Of Things (iot) Objects Communicate?

Answer: The answer depends on the nature of the object, and it can be simple or complex. For example, a smart thermometer might have only one sensor, used to communicate ambient temperature to a remote weather-monitoring center. A wireless medical device might, in contrast, use various sensors to communicate a person's body temperature, pulse, blood pressure, and other variables to a medical service provider via a computer or mobile phone.

Smart objects can also be involved in command networks. For example, industrial control systems can adjust manufacturing processes based on input from both other IoT objects and human operators. Network connectivity can permit such operations to be performed in "real-time"? that is, almost instantaneously.

Smart objects can form systems that communicate information and commands among themselves, usually in concert with computers they connect to. This kind of communication enables the use of smart systems in homes, vehicles, factories, and even entire cities.

Smart systems allow for automated and remote control of many processes. A smart home can permit remote control of lighting, security, HVAC (heating, ventilating, and air conditioning), and appliances. In a smart city, an intelligent transportation system (ITS) may permit vehicles to communicate with other vehicles and roadways to determine the fastest route to a destination, avoiding traffic jams, and traffic signals can be adjusted based on congestion information received from cameras and other sensors.

Buildings might automatically adjust electric usage, based on information sent from remote thermometers and other sensors. An Industrial Internet application can permit companies to monitor production systems and adjust processes, remotely control and synchronize machinery operations, track inventory and supply chains, and perform other tasks.

IoT connections and communications can be created across a broad range of objects and networks and can transform previously independent processes into integrated systems. These integrated systems can potentially have substantial effects on homes and communities, factories and cities, and every sector of the economy, both domestically and globally.

43. Why Is The Internet Of Everything Happening Now?

Answer: The explosion of new connections joining the Internet of Everything is driven by the development of IP-enabled devices, the increase in global broadband availability and the advent of IPv6.

44. What Companies Are Working On Internet Of Things (iot)?

Answer: At this point, the easier question might be who is't working on an IoT product. Big names like Samsung, LG, Apple, Google, Lowe's and Philips are all working on connected devices, as are many smaller companies and startups. Research group Gartner predicts that 4.9 billion connected devices will be in use this year, and the number will reach 25 billion by 2020.

45. What impacts will the Internet of Things (IoT) have on Energy Sector?

Answer: IoT might impact each production and delivery, as an example through facilitating the observance of oil wellheads and pipelines. When IoT parts are embedded into components of the electrical grid, the ensuing infrastructure is usually mentioned because of the "smart grid". This use of IoT allows bigger management by utilities over the flow of electricity and may enhance the potency of grid operations.

46. What is IoT Thingworx?

Answer: Thingworx may be a platform for the fast development and readying of sensible, connected devices. Its set of integrated IoT development tools support property, analysis, production, and alternative aspects of IoT development.

47. Name some of the sectors where IOT played a major role?

Answer: Manufacturing, Transportation, Utilities, Healthcare, Consumer electronics, and cars.

48. What is the syntax to read analog and digital data from a sensor in Arduino?

Answer: digitalRead() and digitalWrite() are respectively used to read and write digital data to the sensors. analogRead() and analogWrite() are respectively used to read and write analog data to the sensors.

49. What are the hardware communication interfaces present in the Raspberry Pi?

Answer: Similar to Arduino boards Raspberry pi also has several communication protocols like I2C, SPI, Serial, PWM and etc.

50. What are the important elements of the Internet of Everything, (IOE)?

Answer: The important elements of the Internet of Everything are nothing but people and the different smart devices that are coming into existence. The people will continue their process of getting connected with all the smart devices as they are doing right now and be in touch with all the social media platforms like Facebook, Twitter, LinkedIn, etc. As on when the Internet of Everything comes forth the interactions with the people via the internet will increase and eventually be a single node of the information transmitting from every individual to the collection point. In the near future, we can expect individuals doing this by wearing sensors on their skin and also the usage of the sensor in the jacket will be prevalent.

All of this information will be transmitted from an individual and this one will be a single node where the information is flowing to a central unit where all the data is harvested and utilized for further research and study.

51. What is IoT?

Answer: IoT stands for Internet of Things. It is basically a network using which things can communicate with each other using the internet as a means of communication between them. All the things should be IP protocol enabled in order to have this concept possible. Not one but multiple technologies are involved to make IoT a great success.