1. **Write a two-paragraph essay on distributed computer networking system.**

**Distributed Computer Networking system**

A distributed system is simply any environment where multiple Computer or devices are working on a variety of tasks and components, all spread across a network. The computer that are in a distributed system can be physically close together and connected by local network, or they can be geographically distant and connected by a wide network. A distributed computer system consists of multiple software components that are on multiple computers but run as a single system.

The main goal of a distributed system is to make it easy for users to across remote resources, and share them with other users in a controlled manner. Resources can be virtually anything, typical examples of resources ate printers, storage facilities, data, files, web pages and network that connects all components (machines, hardware, or software) together so they can transfer messages to communicate with each other, the network could be connects with an IP address or use cables or even on a circuit board.

1. **If you were a developer of software. What kind of software package would you develop? Why**

Simply software developer refers to the person who use to write various programs in order to develop or create a software according to the client order. In another word, a software developer is a professional who designs, creates, and maintains software. [They use coding expertise and strong attention to detail to meet user needs](https://www.computerscience.org/careers/software-developer/). [They can work on various types of software, including application software for mobile or web applications, and systems software for enterprise system solutions](https://www.computerscience.org/careers/software-developer/). [Their roles can overlap with programmers and software engineers, and they can be involved in all stages of the software development lifecycle](https://www.computerscience.org/careers/software-developer/). [They typically have a background in fields like software development or computer science](https://www.computerscience.org/careers/software-developer/).

As an BCA students wish to work as a professional software engineer. We have to develop various software based on user/client’s requirement. When I will become a software developer, I wish to develop a software base on idea of inline food system for instead Foodmandu. Foodmandu is an online food delivery software whose strategy is to deliver food through online through use internet or online platform. While talking about Foodmandu I conduct research over it then I realize time taken by Foodmandu to deliver food is the main drawback of it.

So that, to overcome from this drawback I wish to develop another online food delivery software. Which reduces the time taken to deliver food at cheaper price. Some strategy. of my software will be contact with best restaurants over Kathmandu and connect all of them with a simple app and then me and my team will track the food order location and send that order to the nearest return so that people will be able to get good quality of food, fast deliver at cheaper price.

1. **Compose an organized paragraph on E-Learning strategies in education.**

**E-learning Strategies in Education**

[E-learning, short for “electronic learning,” is the use of digital tools and technologies to access educational content, typically outside of a traditional classroom](https://bing.com/search?q=define+e+learning+in+short). E-learning or electronic learning, is the delivery of learning and training through digital resources. E-learning is a mode of learning that takes place electronically, often via the Internet. Typically, e-learning is conducted on the internet, where students can access their learning materials online at any place and time. It most often takes the forms of online courses, online degrees, or online programs.

E-learning play a vital role in education process. It helps students to attempt their regular class using internet or technology. As we know, during the corona pandemic most of the school and university are giving the education through online-class which is an example of e-learning. E-learning provides e-books which help the students to enhance their knowledge. In online platforms or social media many exports share their knowledge toward their specific subject matter which greatly influence in the education of students. Due to E-learning flexible and open learning is possible. Which increase the knowledge of students over a specific topic. E-learning makes the education effective and easier in compare to the physical learning.

1. **Write a paragraph on programming languages todays.**

**Programming Language Today**

[A programming language is a formal language that specifies a set of instructions for a computer to perform specific tasks](https://en.wikipedia.org/wiki/Programming_language). [It’s a system of notation for writing computer programs](https://en.wikipedia.org/wiki/Programming_language). [These languages enable us to communicate with computers, build and organize code, specify functionality and behavior, automate and improve efficiency, collaborate and share code, and solve problems creatively](https://resources.github.com/software-development/what-is-a-programming-language/). [They are used to write software programs and applications, and to control and manipulate computer systems](https://en.wikipedia.org/wiki/Programming_language). [Each programming language has its own unique syntax, structure, vocabulary, and even slang or shortcuts](https://en.wikipedia.org/wiki/Programming_language).

In the past, programming language were not much familiar many people but now days many people use programming language to develop their career as a software developer. Now days programming language are organised as a foundational course in university level which is executed under bachelor of computer application faculty of Tribhuvan University. There are many programming languages with their specific uses in the global market such as C, C++ and more.

In the context of Nepal before Few years ago people have to paid money in private institution in order learn programming languages but now days language is studied as aa programming academic course. Many youths are using programming languages to develop their career in computer field such as for to develop website development, database management and to develop computer application.

1. **Write an essay on Robotics Revolutions at the turn if 20th century regarding its prospect(advantages) and challenges in the 21st century.**

**Robotics Revolution: Prospect and Challenges**

As the term suggest us, it is an automated machine which is use carry out multiple functions in different fields of development and science, for instead to provide security in artillery and ammunition (war weapons), welding the devices, imitation, work under water as well as it surfaces painting, wearing the electric circuit. Robotics is a branch of applied science which involves both the study and application of robots or automated devices, it deals with the design, constructions, operation and application of robots as well as the entire computer system for their control and process information to carried out necessary functions, work. It is a recent advancement in the field of science and technology.

The turn of the twentieth century witnessed the dawn of the Robotics Revolution, a transformative technology marked through the integration of superior technologies into carious industries. Robotics, with its promise of automation and efficiency, has reshaped the manner we stay and work. As we navigate the complexities of the twenty first century, it is crucial to take a look at both the advantage and demanding situations posed via this revolution.

One full-size advantage of robotics in the twenty first century is extended productivity and efficiency. Robots are able to appearing obligations with precision and speed, main to better outputs stages in industries including manufacturing, healthcare, and agriculture. For instance, inside the agricultural zone, robotic harvesters can effectively accumulate vegetation, decreasing hard work charges and growing yield. Moreover, robotics has enables advancements in scientific tactics, with the introduction of surgical roots assisting surgeons in acting minimally invasive surgeries with greater accuracy, leading to quicker healing instances for patients.

However, the substantial adoption of robotics additionally provides challenges within the 21st century. One of primary concerns is the potential displacement of human employees by automation. As robots come to be greater able to acting a huge variety of tasks, there may be a danger of job loss in positive industries. This difficulty highlights the importance of retraining and upskilling the workforce to evolve to the converting task market. Additionally, there are ethical concerns surrounding the use of robotics, specifically in region which include self-reliant weapons and surveillance. Ensuring the rots are programmed with ethical recommendations and policies is crucial to save you misuse and shield human rights.

Conclusion, the robotics revolution on the flip of the 20th century has delivered about extensive blessing and challenges within the 21st. While robotics offers multiplied productiveness and efficiency throughout diverse industries, it also increases worries approve symmetry forces displacement and moral implication foolish stuff embarrassing the capabilities of robotics while addressing those challenges is essential for shaping our future in which generation serves immunity for the betterment of society.

**6. Write a paragraph to show the difference between Analog and digital transmission.**

**Analog Transmission**

Analog transmission is a method of sending information over communication channels in which data is represented by continuously varying signals. These signals can take on an infinite number of values within a specific range, and the variations in amplitude, frequency, or phase of the signal correspond directly to the information being conveyed. Analog transmission is commonly used in older communication technologies such as traditional telephony, radio broadcasting, and analog television.

**Digital Transmission**

Digital transmission is a method of sending information over communication channels by converting data into discrete, binary signals. In digital transmission, information is represented using a finite number of discrete values, typically 0s and 1s, which correspond to specific states or levels. These signals are more resilient to noise and distortion compared to analog signals, as they can be accurately reconstructed at the receiving end. Digital transmission is widely used in modern communication systems such as the internet, digital television, mobile phones, and computer networks.

Analog and digital transmission are two fundamentally different methods of sending information over communication channels. Analog transmission involves representing data as continuous signals, where the amplitude and frequency of the signal vary in direct proportion to the information being conveyed. This method is susceptible to noise and distortion, as any interference during transmission can alter the signal's integrity. In contrast, digital transmission converts data into discrete, binary signals, where information is represented as a series of 0s and 1s. Digital signals are more resilient to noise and distortion, as they can be accurately reconstructed at the receiving end, allowing for clearer and more reliable communication. While analog transmission is used in older technologies such as traditional telephony and radio broadcasting, digital transmission has become prevalent in modern communication systems, offering higher quality, greater efficiency, and more advanced features.

Analog transmission involves sending continuous signals, such as sound or light waves, in a format that varies smoothly over time. This means that the signal is susceptible to degradation and interference, as any noise introduced along the transmission path can distort the original signal. In contrast, digital transmission involves encoding data into discrete, binary signals, where information is represented using combinations of 0s and 1s. Digital signals are more resilient to noise and can be easily processed and transmitted without significant loss of quality. Additionally, digital transmission allows for more efficient compression, error correction, and encryption techniques, making it the preferred method for modern communication systems, including the internet and telecommunications networks.

**7.Write two paragraph one listing benefits, the other listing negative aspects of replacing people with computer**.

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Computers are electronic devices that process data according to a set of instructions called programs. They can perform various tasks such as calculations, data processing, communication, and more, based on input from users or other system.

Replacing humans with computers in certain tasks can bring numerous benefits. Firstly, computers can operate continuously without the need for breaks, ensuring around-the-clock productivity. Secondly, they can perform repetitive tasks with consistent accuracy, minimizing errors and increasing efficiency. Additionally, computers can handle large volumes of data at high speeds, allowing for faster processing and analysis. Moreover, they can be programmed to adhere strictly to protocols and guidelines, reducing the risk of deviations. Lastly, by automating certain tasks, businesses can free up human resources to focus on more creative and strategic endeavors, fostering innovation and growth.

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| |  | | --- | |  |   Replacing humans with computers can lead to several negative consequences. Firstly, it can result in job displacement and unemployment, as automation takes over tasks previously performed by humans. This can lead to economic inequality and social unrest. Secondly, relying too heavily on computers can result in a loss of human skills and creativity, as well as a lack of personal interaction in various aspects of life. Additionally, there are concerns about privacy and security breaches, as well as the potential for algorithmic bias and discrimination. Finally, overdependence on technology can make societies vulnerable to widespread disruptions in the event of system failures or cyberattacks. Therefore, while computers offer many benefits, it's essential to carefully consider their implications and limitations in  replacing human roles. |  |

**8. List as many as Information about protecting your computer from the computer viruses.**

A computer virus is a type of malicious software program designed to replicate itself and spread from one computer to another. It can infect files or the boot sector of a computer's hard drive, causing harm by corrupting data, slowing down system performance, or even rendering the computer inoperable.

Today we use internet-connected devices in all aspects of our lives. We go online to search for information, shop, bank, do homework, play games, and stay in touch with family and friends through social networking. As a result, our devices contain a wealth of personal information about us. This may include banking and other financial records, and medical information—information that we want to protect. If your devices are not protected, identity thieves and other fraudsters may be able to get access and steal your personal information. Spammers could use your computer as a "zombie drone" to send spam that looks like it came from you. Malicious viruses or spyware could be deposited on your computer, slowing it down or destroying files.

By using safety measures and good practices to protect your devices, you can protect your privacy and your family. The following tips are offered to help you lower your risk while you're online.

## Keep your device secure

Make sure to download recommended updates from your device's manufacturer or operating system provider, especially for important software such as your internet browser. Antivirus software, antispyware software, and firewalls are also important tools to thwart attacks on your device.

### Keep up-to-date

Update your system, browser, and important apps regularly, taking advantage of automatic updating when it's available. These updates can eliminate software flaws that allow hackers to view your activity or steal information. Windows Update is a service offered by Microsoft. It will download and install software updates to the Microsoft Windows Operating System, Internet Explorer, Outlook Express, and will also deliver security updates to you. Patching can also be run automatically for other systems, such as Macintosh Operating System. For mobile devices, be sure to install Android or iPhone updates that are distributed automatically.

### Antivirus software

Antivirus software protects your device from viruses that can destroy your data, slow down or crash your device, or allow spammers to send email through your account. Antivirus protection scans your files and your incoming email for viruses, and then deletes anything malicious. You must keep your antivirus software updated to cope with the latest "bugs" circulating the internet. Most antivirus software includes a feature to download updates automatically when you are online. In addition, make sure that the software is continually running and checking your system for viruses, especially if you are downloading files from the web or checking your email. Set your antivirus software to check for viruses every day. You should also give your system a thorough scan at least twice a month.

### Antispyware software

Spyware is software installed without your knowledge or consent that can monitor your online activities and collect personal information while you're online. Some kinds of spyware, called keyloggers, record everything you key in—including your passwords and financial information. Signs that your device may be infected with spyware include a sudden flurry of ads, being taken to websites you don't want to go to, and generally slowed performance.

**9. How can be the computer security be maintained, List the ways of improving computer security in your PCs.**

Maintaining computer security is crucial for keeping your personal and sensitive information safe. Here are some ways to improve computer security on your PCs:

* **Regular Software Updates:**

Ensure that your operating system, software programs, and antivirus software are up to date to patch any security vulnerabilities.

* **Strong Passwords:**

Use complex and unique passwords for your accounts, and consider using a password manager to generate and store them securely.

* **Firewall Protection:**

Enable the built-in firewall on your computer or install a third-party firewall to monitor and control incoming and outgoing network traffic.

* **Antivirus Software:**

Install reputable antivirus software and keep it updated to detect and remove malware, viruses, and other threats.

* **User Account Control:**

Use standard user accounts for everyday tasks and reserve administrator privileges for administrative tasks only to prevent unauthorized changes.

* **Backup Your Data:**

Regularly back up your important files and data to an external storage device or cloud service to prevent data loss in case of a security breach or hardware failure.

* **Secure Wi-Fi Network:**

Secure your wireless network with a strong password, use encryption (such as WPA2) for network traffic, and consider hiding your network name (SSID) to prevent unauthorized access.

* **Browser Security:**

Keep your web browser and plugins up to date, enable popup blockers and ad blockers, and use caution when downloading files or clicking on links from unknown sources.

* **Email Security:**

Enable spam filtering and email scanning to detect and quarantine suspicious emails or attachments, and avoid clicking on links or downloading attachments from unknown or untrusted sources.

* **Physical Security:**

Keep your computer physically secure by locking it when not in use, using cable locks to secure laptops, and ensuring that only authorized individuals have access to your devices.

* **Encrypt Sensitive Data:**

Use encryption for sensitive data stored on your computer or transmitted over the internet to protect it from unauthorized access.

* **Educate Yourself:**

Stay informed about the latest cybersecurity threats and best practices by reading security blogs, attending workshops or webinars, and staying up to date with security news and updates. By implementing these measures, you can significantly improve the security of your PCs and reduce the risk of cyberattacks and data breaches.

**10. What are the benefits of translation software in today’s communication system backed by high technology.**

Translation software refers to computer programs or applications designed to translate text or speech from one language to another. These tools use various techniques such as statistical models, neural networks, or rule-based algorithms to understand and convert text or speech accurately between languages. Examples include Google Translate and Microsoft Translator.

Translation software plays a crucial role in today’s communication system, especially in a world where globalization and multiculturalism are increasingly prevalent. Some benefits include:

1. **Instant Communication:**

Translation software enables instant translation of text or speech, breaking down language barriers and facilitating communication between people who speak different languages.

1. **Efficiency:**

With the help of translation software, individuals and businesses can quickly and efficiently translate documents, emails, websites, and other forms of content, saving time and resources.

1. **Accuracy:**

Advanced translation technologies, such as neural machine translation, strive to provide accurate translations that capture the nuances and context of the original text, enhancing understanding and reducing misunderstandings.

1. **Cost-Effectiveness:**

Using translation software can be more cost-effective than hiring human translators for certain tasks, especially for large volumes of content or routine translation needs. Accessibility: Translation software makes information more accessible to people who may not be proficient in a particular language, thus promoting inclusivity and widening participation in global communication.

1. **Customization:**

Many translation software solutions offer customization options, allowing users to tailor translations to their specific needs, industry jargon, or style preferences.

1. **Integration:**

Translation software can often be integrated into other software applications, websites, or communication platforms, enabling seamless translation within existing workflows and systems.

Overall, translation software enhances communication, fosters collaboration, and facilitates the exchange of ideas across linguistic and cultural boundaries in our increasingly connected world.

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**11) “Paperless office is still a dream”. Justify this statement.**

The vision of a paperless office remains challenging even in this digital era. The idea of transitioning offices to become paperless originated with the adoption of computer devices for office tasks. Initially, computers were primarily used for basic functions like document writing, data storage, and basic design work. However, with the advancement of technology and the introduction of the internet, computers became even more advantageous for office use. Despite this progress, many organizations and industries still heavily rely on paper documentation. From storing information to managing legal contracts, almost every aspect of operations continues to be dominated by traditional paper-based methods.

Though the idea of a paperless office has existed for years, accomplishing it entirely is still difficult due to a range of factors such as:

1. **Tradition and Psychology**

Many individuals still perceive paper as more permanent and trustworthy, finding physical documents more tangible and reliable than digital files, making it crucial to overcome this psychological attachment to fully adopt a paperless approach.

1. **Legal Requirement**

Despite the digital shift in many areas, certain industries and legal contexts still necessitate physical paper documentation. This is particularly true for legal contracts, official certificates, and certain government forms, where tangible signatures hold legal weight. Despite advancements in electronic signatures, physical documentation remains essential for authenticity, security, and compliance with legal requirements.

1. **Cost Consideration**

Going paperless requires an initial investment in technology, software, and training. Some organizations hesitate due to perceived high costs. In addition, there is other overheads in the update and maintenance of digital system.

1. **Technological Issues**

While using technology, there may arise problems regarding security such as data breaching hacking, scams etc. infrastructural hurdles, incompatibility and so on. Sometimes the problem with system can also hinder the office works.

1. **Resistance to change**

Resistance to change is a common challenge organization face when transitioning to paperless systems. This resistance can stem from various factors, including fear of the unknown, concerns about job security, and reluctance to adapt to new technologies and workflows.

**12) “Learning Programming language is like learning any natural language.” Justify this statement.**

Learning a programming language share striking parallels with the process of acquiring proficiency in a natural language. Just as individuals must grasp the syntax, vocabulary, and grammar of a natural language to effectively communicate thoughts and ideas, mastering a programming language involves understanding its syntax rules, terminology, and structure to write functional code and develop software applications.

A programming language serves as a structured means of communication with computers, providing programmers with a set of instructions to perform specific tasks such as data manipulation, algorithm implementation, and user interaction. These languages are characterized by their syntax rules and commands, which dictate how code is written and executed. Similarly, natural languages like English, Spanish, or Mandarin have evolved over time among human communities for communication, exhibiting complexity, flexibility, and ambiguity in expression through speech or writing.

The process of learning both types of languages requires a gradual progression from fundamental concepts to more advanced constructs. Just as individuals learn the basic grammar rules before engaging in complex language usage, programmers start with simple programming concepts such as variables, loops, and conditionals before delving into advanced topics like object-oriented programming or functional programming paradigms.

Moreover, both learning endeavours necessitate practice, patience, and exposure to diverse contexts to achieve fluency. Language learners practice speaking, listening, reading, and writing in various situations to enhance their skills, while programmers engage in coding, debugging, and collaborating on projects to reinforce their understanding and problem-solving abilities.

Proficiency in programming, akin to linguistic fluency, empowers individuals to express intricate ideas, solve problems systematically, and engage in creative pursuits. Just as being fluent in a natural language enables effective communication and interaction within a community, proficiency in programming allows developers to create innovative solutions, collaborate on projects, and contribute to technological advancements.

In conclusion, the journey of learning a programming language shares profound similarity with acquiring proficiency in a natural language. Both require understanding syntax, grammar, and vocabulary to communicate effectively, progressing from basic concepts to complexity through practice and patience. Proficiency in programming, like linguistic fluency, enables problem-solving and creativity, fostering continuous learning and adaptation for effective communication and innovation in software development.

**13) What is desktop publishing? Explain its purposes.**

Desktop publishing (DTP) is the process of creating documents using a personal computer and specialized software. It allows you to combine text, images, and graphics to produce professional-looking publications like:

1. **Producing High-quality Publications**

DTP software allows to create visually appealing and well-structured documents that are comparable to those produced by professional printers. We can control the layout, formatting, and use of graphics to achieve a polished and consistent look.

1. **Increase Accessibility and Affordability**

Before DTP, creating publications required specialized equipment and expertise, making it expensive and inaccessible to many. DTP software allows individuals and businesses to create publications using a personal computer, significantly reducing the cost and technical barriers.

1. **Multiple Formats**

DTP software can be used to create documents for both print and digital formats. It can design publications for printing on paper or export them as digital files like PDFs or eBooks, making them accessible on various devices.

1. **Promotes Business Communication**

DTP enables the creation of visually engaging materials like brochures, flyers, and newsletters, enhancing communication and marketing efforts. By incorporating images and graphics, these documents capture attention, communicate ideas clearly, and leave a lasting impression.

1. **Optimize Publishing Process**

DTP software allows for easy editing and revisions throughout the design process. This allows for quick changes and adjustments before the final publication. In comparison to traditional printing methods, DTP offers a more flexible and efficient workflow.

In gist, **the purpose of DTP is to empower users to create high-quality and professional-looking documents for a wide range of purposes, from marketing materials to presentations to personal projects.** While the rise of digital media has shifted some aspects of publishing, DTP remains a valuable tool for creating visually engaging and informative content.

**14) What is DBMS? Briefly explain the types of database model.**

A DBMS is a software application program designed to create and manage databases for storing information. Using a DBMS, a developer or programmer can define, create, retrieve, update and manipulate data in a database. It manipulates the data format, field name, file structure, data and record structure.

**Types of Data Base model are:**

1. Hierarchical databases.

2. Network databases.

3. Relational databases.

4. Object-oriented databases.

1**. Hierarchical databases**

It is one of the oldest database models developed by IBM for information Management System. In a hierarchical database model, the data is organized into a tree-like structure. In simple language we can say that it is a set of organized data in tree structure.

This type of Database model is rarely used nowadays. Its structure is like a tree with nodes representing records and branches representing fields. The windows registry used in Windows XP is an example of a hierarchical database. Configuration settings are stored as tree structures with nodes.

**Advantages**

• The model allows us easy addition and deletion of new information.

• Data at the top of the Hierarchy is very fast to access.

• It worked well with linear data storage mediums such as tapes.

• It relates well to anything that works through a one-to-many relationships.

**Disadvantages**

• It requires data to be repetitively stored in many different entities.

• Now a day there is no longer use of linear data storage mediums such as tapes.

• Searching for data requires the DBMS to run through the entire model from top to bottom until the required information is found, making queries very slow.

• This model support only one to many relationships, many to many relationships are not supported.

2**. Network databases**

This is looks like a Hierarchical database model due to which many time it is called as modified version of Hierarchical database. Network database model organised data more like a graph and can have more than one parent node. The network model is a database model conceived as a flexible way of representing objects and their relationships.

**Advantage**

• The network model is conceptually simple and easy to design.

• The network model can represent redundancy in data more effectively than in the hierarchical model.

• The network model can handle the one to many and many to many relationships which is real help in modelling the real-life situations.

• The data access is easier and flexible than the hierarchical model.

• The network model is better than the hierarchical model in isolating the programs from the complex physical storage details.

**Disadvantage**:

• All the records are maintained using pointers and hence the whole database structure becomes very complex.

• The insertion, deletion and updating operations of any record require the large number of pointers adjustments.

• The structural changes to the database is very difficult.

3. **Relational Database**

A relational database is developed by E. F. Codd in 1970. The various software systems used to maintain relational databases are known as a relational database management system (RDBMS). In this model, data is organised in rows and column structure i.e., two-dimensional tables and the relationship is maintained by storing a common field. It consists of three major components.

**Advantage**

• Relational model is one of the most popular used database models.

• In relational model, changes in the database structure do not affect the data access.

• The revision of any information as tables consisting of rows and columns is much easier to understand.

• In this we can write complex query to accesses or modify the data from database.

• It is easier to maintain security as compare to other models.

**Disadvantages**

• Mapping of objects in relational database is very difficult.

• Object oriented paradigm is missing in relation model.

• Data Integrity is difficult to ensure with Relational database.

• Relational Model is not suitable for huge database but suitable for small database.

• Hardware overheads are incurred which make it costly.

• Ease of design can lead to bad design.

4**. Object-oriented databases**

An object database is a system in which information is represented in the form of objects as used in object-oriented programming. Object oriented databases are different from relational databases which are table-oriented. The object-oriented data model is based on the object-oriented- programming language concept, which is now in wide use. Inheritance, polymorphism, overloading. object-identity, encapsulation and information hiding with methods to provide an interface to objects, are among the key concepts of object-oriented programming that have found applications in data modelling. The object-oriented data model also supports a rich type system, including structured and collection types.

**Advantages**

• Object database can handle different types of data while relational data base handles a single data. Unlike traditional databases like hierarchical, network or relational, the object-oriented databases can handle the different types of data, for example, pictures, voice video, including text, numbers and so on.

• Object-oriented databases provide us code reusability, real world modelling, and improved reliability and flexibility.

• The object-oriented database is having low maintenance costs as compared to other model because most of the tasks within the system are encapsulated, they may be reused and incorporated into new tasks.

**Disadvantages**

• There is no universally defined data model for an OODBMS, and most models lack a theoretical foundation.

• In comparison to RDBMSs the use of OODBMS is still relatively limited.

• There is a Lack of support for security in OODBMSs that do not provide adequate security mechanisms.

• The system more complex than that of traditional DBMSs.

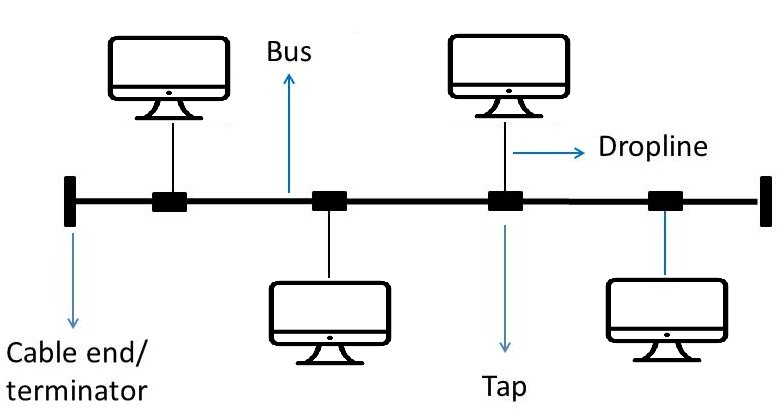
**12. What is Network Topology? Explain its types.**

A Network topology is the arrangement of computers, cables, and other component on a network or a map of geometrical shape of physical network of computer is network topology.

**Types of Network Topology**

**1.Bus Topology**

Bus topology employs a single cable (Bus) to connect all the nodes. The main cable serves as the network’s spine. All nodes in a Bus Topology are linked to the Taps and Drop Lines via the bus. Drop Lines are the connections between the central wire or bus and the nodes in this case. The Taps are the three-way connector that aids in connecting the drop line to the main central cable.



**Advantages of Bus Topology**

1.Less cabling: A common wire connects all nodes in a bus topology.

2.Less Expensive: Bus topology is less expensive because it uses a common wire.

3.Small network: This is best suited for situations where only a few computers are required for connection establishment.

4.Upgradeable: A new node can be added or removed in this topology without affecting the other nodes.

**Disadvantages of Bus Topology**

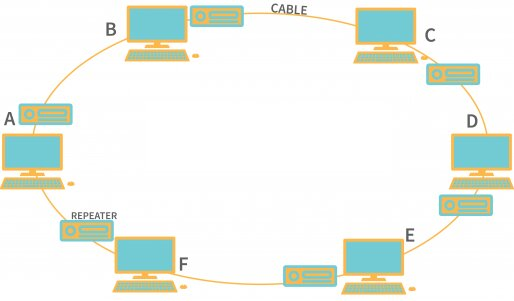
1.Reduced signal strength: To connect a more significant number of nodes, we must increase the number of Taps, Drop Lines, and the central cable. And increasing these things will weaken the signal.

2.Core failure: If the main central cable becomes damaged or faulty, the entire network will fail.

3.Low security: This is a significant security issue because all nodes in the network can hear what data is transmitted to other nodes in the network.

**2.Ring Topology**

Ring Topology is a topology in which each computer is linked to another on both sides. The last computer is linked to the first, forming a ring. This topology enables each computer to have exactly two neighbours.



**Advantages of Ring Topology**

1.Token system: Only nodes that have tokens can transfer data.

2.Less Cabling: As every node manages the cable to its closest neighbour, it requires less cabling.

3.Easier troubleshooting: It is less challenging to manage and install because the nodes or cable flaws are easily discernible.

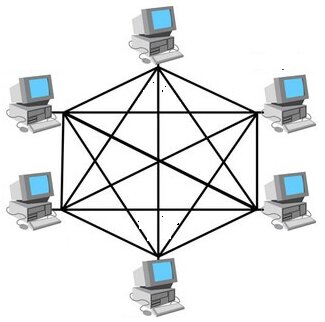
Disadvantages of Ring Topology

1.Difficult to upgrade: Adding or removing nodes is problematic because it disrupts network activity.

2.Failure of a network: When one system crashes, it disturbs the overall network activity.

**3) Mesh Topology**

Mesh technology is a network configuration in which you link the computers via various redundant connections. There are numerous routes from one computer to another. It lacks the switch, hub, or any central computer that serves as a point of communication.



**Advantages of Mesh Topology**

**1.Consistent:** Mesh topology networks are reliable because any link failure does not disrupt interaction among connected computers.

**2.High-speed information exchange:** Communication between nodes is extremely fast.

**3.Easier reconfiguration:** Adding new devices would not interfere with the communication of existing devices.

**Disadvantages of Ring Topology**

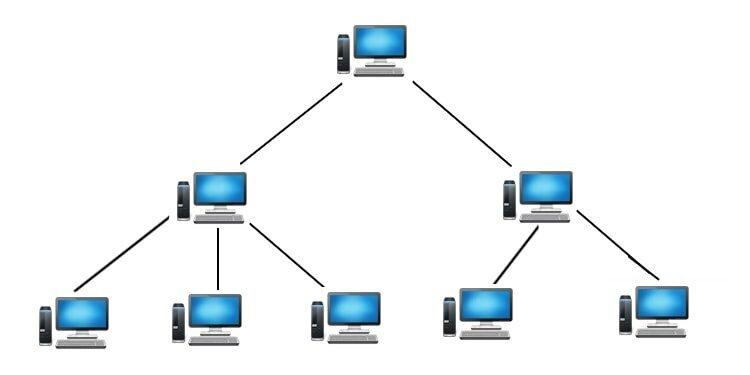
**1.Cost:** A mesh topology has more connected devices, such as a router, and uses more transmission media than other topologies.

**2.High-maintenance**: Mesh topology networks are extensive and challenging to maintain and manage.

**3.Efficiency:** The number of redundant connections in this topology is high, reducing network efficiency.

**4) Tree Topology**

Tree topologies are also known as hierarchical topology, as the root node connects all other nodes to form a hierarchy. This topology is known as a Star Bus topology because it combines several star topologies into a single bus. Tree topology is a standard network topology similar to bus and star topologies.



**Advantages of Tree Topology**

**1.Structuring:** It aids in structuring as the tree-like shape allows any node to hold its child. And this can make it much easier to structure the entire network.

**2.Interconnection:** All nodes can connect to the large and intermediate networks.

**3.Expansion of nodes:** An increase of nodes is possible and easily achievable in this network structure.

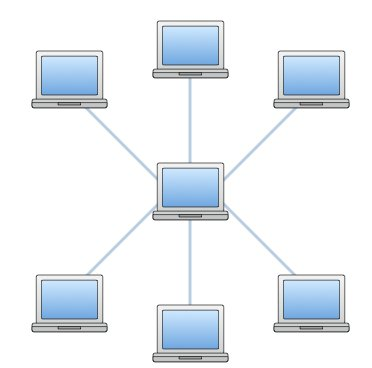
**Disadvantages of Tree Topology**

**1.Expensive:** Managing each node in its child may be inefficient. Cabling costs will rise as well.

**2.Network failure**: If the primary central node or another wire fails, all other nodes may become disconnected.

**5.Star Topology**

A hub connects all computers in this type of network topology. A central node connects all other nodes. You can use this type of network topology on LAN networks due to its low cost and ease of setup.



**Advantages of Star Topology**

**1.Network failure prevention:** Only the affected nodes will fail, while the remaining nodes will continue to function.

**2.Performance:** High performance with a small number of nodes and very little network traffic.

**3.Upgradation:** This topology makes adding, deleting, and moving devices simple.

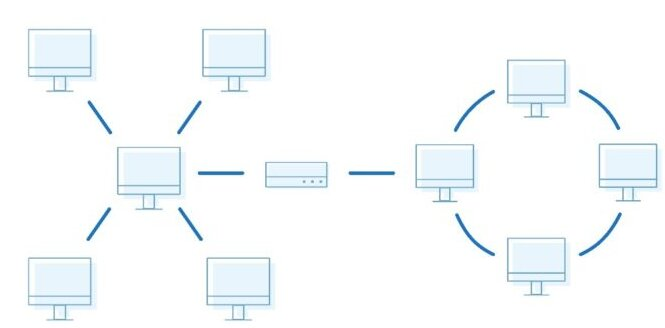
**Disadvantages of Star Topology**

**1.Expensive:** The cost of installing star topology is high.

**2.Slow connection:** Heavy network traffic can sometimes significantly slow the bus.

**6.Hybrid Topology**

Hybrid topology is a combination of two or more of the basic topologies. For example, a star-bus topology is a hybrid topology that combines the star and bus topologies.



**Advantages of Hybrid Topology**

**1.Multiple advantages:** These types of network topology combine the advantages of various topologies into a single topology.

**2.Scalable:** Hybrid networks are easily scalable as you can easily integrate the new hardware components.

**3.Traffic:** These types of network topology can handle a high traffic volume while remaining extremely flexible and dependable.

**Disadvantages of Hybrid Topology**

**1.Expensive:** Because it combines the benefits of multiple topologies into a single topology, this type of topology is quite expensive.

**2.Complex design:** Creating a hybrid topology is a difficult task.

**13. What are the advantages and disadvantages of CALL as a way of learning foreign language?**

The computer technology has been part of our live, especially in the area of education. In all educational system, the use communication and technology has certain place. Therefore, computers play significant role in the learning foreign languages in this globalized context. CALL is a program derived from CAL (Computer-Assisted Learning) which is designed for learning different foreign languages from any place through the access of internet in the computer.

**Advantages of CALL:**

1. Interest and motivation

2. Individualization

3. Immediate feedback

4. A Compatible learning style

**Disadvantages of CALL:**

1.Lack of trained teachers

2. Imperfect current CALL programs

3. Inability to handle unexpected situations

**Conclusion:**

Computers are most popular among students either because they are associated with fun and games or because they are considered to be fashionable. Student motivation is therefore increased. It is agreeable that technological advancement and development has enabled the application of CALL programs in language learning and instruction and it has become a new trend recently.

**15)Discuss some of the applications of AI programs**.

Artificial intelligence (AI) applications are software programs that use AI Techniques to perform specific tasks. These tasks can range from simple, repetitive tasks to complex, cognitive tasks that require human-like intelligence.

AI applications are becoming increasingly common in a wide variety of industries, including healthcare, finance, retail, and manufacturing. As AI technology continues to develop, we can expect to see even more innovative and groundbreaking AI applications in the future.

Applications of artificial intelligence (AI)

There are many different applications of AI, including:

* **Natural Language Processing (NLP):** NLP allows computers to understand and generate human language. This technology is used in a variety of applications, such as machine translation, spam filtering, and sentiment analysis.
* **Computer vision**: Computer vision allows computers to identify and interpret visual content. This technology is used in a variety of applications, such as self-driving cars, facial recognition, and object detection.
* **Machine Learning (ML)**: ML allows computers to learn from data and improve their performance over time. This technology is used in a variety of applications, such as predictive analytics, fraud detection, and recommendation systems.
* **Robotics**: Robotics is the branch of AI that deals with the design, construction, and operation of robots. Robots are used in a variety of applications, such as manufacturing, healthcare, and space exploration.

**Additional AI applications**

In addition to the applications listed above, AI is also being used in a variety of other industries, including:

* **Finance**: AI is being used to detect fraud, manage risk, and make investment decisions
* **Retail**: AI is being used to personalize the shopping experience, recommend products, and manage inventory
* **Transportation:** AI is being used to develop self-driving cars and improve traffic management
* **Energy**: AI is being used to improve energy efficiency and predict energy demand
* **Government**: AI is being used to improve public safety, detect crime, and provide citizen services

**16) What do you mean by virtual reality? How is it going to affect young people’s attitude to violence?**

Virtual reality, or VR, is a simulated three-dimensional (3D) environment that lets users explore and interact with a virtual surrounding in a way that approximates reality, as it's perceived through the users' senses. The environment is created with computer hardware and software, although users might also need to wear devices such as goggles, headsets or bodysuits to interact with the environment.

The more deeply users can immerse themselves in a VR environment -- and block out their physical surroundings -- the more they can suspend their belief and accept it as real, even if it's fantastical in nature.

Virtual reality (VR) has been studied in relation to its effects on violent behavior. Research suggests that immersive ambulatory VR (IA-VR) video games, which are highly immersive, do not increase aggression compared to flat-screen games. However, there is evidence that interactive media, including violent interactive media content, can impact how people think, feel, and behave in the physical world. Studies have also explored the impact of bystander affiliation on helping behavior in violent emergencies, finding that participants are more likely to intervene when bystanders are out-group with respect to the participant. Reflexive reactions to emergency situations have been associated with later helping behavior in violent conflicts, suggesting a complex interplay between intuitive and reflective processes. In terms of the specific effects of VR on violent behavior, one study found that violent content in VR games did not influence hostility or aggressive behavior. Overall, the effects of VR on violent behavior are still being explored, with some studies suggesting potential protective effects and others highlighting the importance of contextual factors.

**17) What is the major function of decision support system?**

A decision support system (DSS) is a computerized program used to support determinations, judgments, and courses of action in an organization or a business. A DSS sifts through and analyses massive amounts of data, compiling comprehensive information that can be used to solve problems and in decision-making.

The major functions of decision support system are:

1. **Model building:**

This allows decision makers to identify the most appropriate model for solving the problem on hand. It takes into' account input variables, interrelationships among the variables, problem assumptions and constraints. For example, a marketing manager of a television manufacturing company is charged with the responsibility of developing a sales forecasting model for colour TV sets. A model builder uses a structured framework to identify variables like demand, cost and profit, analyse the relationships among these, variables, identify the assumptions, if any (e.g. assume the prices of raw materials will increase by 5% over the forecasting period),and identify the Constraints like the production capacity of the plant. All this information is then integrated by a system into a decision-making model, which can be updated and modified whenever required.

1. **'What-if' analysis**

This is the process of assessing the impact of changes to model variables, the values of the variables, or the interrelationships among variables. This helps managers to be proactive, rather than reactive, in their decision making. This analysis is critical for semi-structured and unstructured problems because the data necessary to make such decisions are often either not available or incomplete. Hence, managers normally use their intuition and judgment in predicting the Long-term implications of their decisions. Managers can prepare themselves to face a dynamic business environment by developing a group of scenarios (best-case scenario, worst-case scenario and realistic scenario).

1. **Goal seeking**

 It is the process of determining the input values required to achieve a certain goal. For example, house buyers determine the monthly payment they can afford (say\for example, Rs. 5,000) and calculate the number of such payments required to pay the desired house.

1. **Risk analysis**

It is a function of DSS that allows managers to assess the risks associated with various alternatives. Decisions can be classified as low risk, medium risk, and high risk. A DSS is particularly useful in medium risk and high-risk environments.

1. **Graphical analysis**

 This helps managers to quickly digest large volumes of data and visualize the impacts of various courses-of action. S L Jarvenpaa and G W Dickson studied the relative advantages and disadvantages of tabular and graphic output. They recommended the use of graphs when:

* Seeking a quick summary of data
* Detecting trends over time
* Comparing points and patterns at different variable
* Forecasting activities
* Seeking relatively simple impressions from a vast amount of information.

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