**COMPUTER NETWORKS (VOCABULARY PRACTICE) \_LESSONS 1-2**

**Task 1. Match the words to make common collocations about networks. Explain their meaning.**

|  |  |
| --- | --- |
| 1. D Communication | 1. networks |
| 1. F Fibre-optic | 1. browser |
| 1. A Cellular | 1. topology |
| 1. C Network | 1. channel |
| 1. G Cloud | 1. packet |
| 1. B Web | 1. cable |
| 1. E Data | 1. computing |

**Task 2. Decrypt the following abbreviations. Explain their essence.**

ATM

PAN

LAN

MAN

WAN

ISP

WAP

TCP

HTTP

HTML

URL

DSL

ATM:

PAN: Personal Area Network

Essence: A PAN is a network formed around an individual person within a relatively small space, typically within a range of a few meters. It connects personal devices like computers, smartphones, tablets, and peripherals for personal use, such as file sharing, printing, or internet access.

LAN: Local Area Network

Essence: A LAN is a network that connects computers and devices in a limited geographical area, such as a home, office, or building. It allows for the sharing of resources like files, printers, and internet connections among connected devices.

MAN: Metropolitan Area Network

Essence: A MAN is a network that spans a larger geographical area than a LAN but smaller than a WAN, typically covering a city or metropolitan area. It connects multiple LANs and other networks to facilitate communication and resource sharing within the metropolitan area.

WAN: Wide Area Network

Essence: A WAN is a network that spans a large geographical area, such as a country, continent, or even the whole world. It connects multiple LANs, MANs, and other networks using long-distance communication technologies like leased lines, satellites, or optical fibers to enable data transfer over long distances.

ISP: Internet Service Provider

Essence: An ISP is a company or organization that provides access to the internet and related services to individuals, businesses, and other organizations. ISPs typically offer internet connectivity, web hosting, email services, and domain registration to their customers.

WAP: Wireless Access Point

Essence: A WAP is a hardware device that allows wireless devices to connect to a wired network using Wi-Fi or other wireless communication standards. It acts as a bridge between wireless devices and the wired network, providing access to network resources and the internet.

TCP: Transmission Control Protocol

Essence: TCP is a core protocol of the internet protocol suite. It provides reliable, ordered, and error-checked delivery of data packets over a network. TCP is responsible for establishing and maintaining connections between devices, ensuring data integrity, and handling flow control and congestion avoidance.

HTTP: Hypertext Transfer Protocol

Essence: HTTP is an application protocol used for transmitting hypertext documents, such as web pages, over the internet. It defines the rules and conventions for communication between web browsers and web servers, enabling the retrieval and display of web content.

HTML: Hypertext Markup Language

Essence: HTML is the standard markup language used to create and design web pages. It defines the structure and layout of web documents by using tags and attributes to format text, images, links, and other elements for display in web browsers.

URL: Uniform Resource Locator

Essence: A URL is a reference or address used to locate a resource on the internet. It specifies the protocol, domain name or IP address, and optional path or parameters needed to access a specific resource, such as a web page, file, or service.

DSL: Digital Subscriber Line

Essence: DSL is a technology that provides high-speed internet access over traditional telephone lines. It uses digital modulation techniques to transmit data over existing copper telephone lines, allowing for faster internet speeds than dial-up connections while still using the existing infrastructure.

**Task 3. Match the synonyms.**

|  |  |
| --- | --- |
| 1. E Node | 1. Disturbance |
| 1. A Interference | 1. Isolation |
| 1. H Distribute | 1. Distance |
| 1. B Sandboxing | 1. Transfer |
| 1. G Twisted | 1. Host |
| 1. C Range | 1. Enlarge |
| 1. F Extend | 1. Twined |
| 1. D Transmit | 1. Spread |
| 1. I Channel | 1. Medium |

**Task 4. Give the opposites. Explain the difference between two concepts.**

1. Broadband connection
2. Wired network
3. Full mesh topology
4. Data encryption
5. Client-server network architecture
6. WAN
7. Data recipient
8. Upload data
9. Dial-up connection
10. Reverse chronological order

Broadband connection vs Narrowband connection:

Broadband connection refers to a high-speed internet connection that can transmit large amounts of data simultaneously. It allows for faster downloads and uploads compared to traditional narrowband connections.

Narrowband connection, on the other hand, refers to a low-speed internet connection with limited bandwidth. It is slower and less efficient in transmitting data compared to broadband connection

Wired network vs Wireless network:

Wired network is a type of network where devices are connected to each other using physical cables, such as Ethernet cables. It provides a stable and reliable connection with consistent data transmission speeds.

Wireless network is a type of network where devices communicate with each other using radio signals instead of physical cables. It offers more flexibility and mobility but may have slower speeds and potential interference issues compared to wired networks.

Full mesh topology vs Partial mesh topology:

Full mesh topology is a network topology where each network node is directly connected to every other node in the network. It offers high redundancy and fault tolerance but requires a large number of connections, making it expensive and complex to implement.

Partial mesh topology is a network topology where only some nodes are directly connected to every other node in the network. It provides less redundancy and fault tolerance compared to a full mesh but is more cost-effective and easier to manage.

Data encryption vs Data decryption:

Data encryption is the process of converting data into a code or cipher to prevent unauthorized access. It ensures that only authorized parties can access and read the data by using encryption algorithms and keys.

Data decryption is the process of converting encrypted data back into its original, readable form. It requires the use of decryption algorithms and keys that match the encryption process to unlock the encrypted data.

Client-server network architecture vs Peer-to-peer network architecture:

Client-server network architecture is a network architecture where clients (user devices) request services or resources from a central server. The server manages and provides resources or services to multiple clients simultaneously.

Peer-to-peer network architecture is a network architecture where all devices in the network have equal abilities to initiate communication and share resources. Each device can act as both a client and a server, allowing for decentralized communication and resource sharing.

WAN vs LAN:

WAN (Wide Area Network) is a network that spans a large geographical area, connecting multiple LANs and other networks together using long-distance communication technologies, such as leased lines or satellites.

LAN (Local Area Network) is a network that covers a relatively small area, such as a home, office, or building. It connects computers and other devices within the same physical location using wired or wireless connections.

Data recipient vs Data sender:

Data recipient refers to the entity or device that receives data from a data sender. It processes or consumes the received data for further use or storage.

Data sender refers to the entity or device that initiates and sends data to a data recipient. It generates or collects data and transmits it to the intended recipient.

Upload data vs Download data:

Upload data refers to the process of transferring data from a local device to a remote server or another device over a network. It involves sending data upstream, typically from a client device to a server.

Download data refers to the process of transferring data from a remote server or another device to a local device over a network. It involves receiving data downstream, typically from a server to a client device.

Dial-up connection vs Broadband connection:

Dial-up connection is an older form of internet connection that uses a telephone line and a modem to establish a connection to the internet. It offers slower speeds and ties up the phone line during use.

Broadband connection is a high-speed internet connection that provides faster data transmission rates compared to dial-up connections. It uses technologies like DSL, cable, or fiber optics to deliver high-speed internet access.

Reverse chronological order vs Chronological order:

Reverse chronological order arranges events, items, or data from the most recent to the oldest. It is the opposite of chronological order, where items are arranged from the oldest to the most recent.

Chronological order arranges events, items, or data in the order in which they occurred or were created, from the earliest to the latest. It provides a historical timeline or sequence of events.

**Task 5. Choose one word/concept from the list below and explain it English so that your groupmates can guess it.**

ISP

Bandwidth

Bluetooth

Network protocol

Data centre

Network node

Web browser

Web site

HTML

Hub

ISP (Internet Service Provider):

An ISP is a company or organization that provides access to the internet and related services to individuals, businesses, and other organizations. ISPs typically offer internet connectivity, web hosting, email services, and domain registration to their customers.

Bandwidth:

Bandwidth refers to the maximum amount of data that can be transmitted over a network connection in a given period of time. It represents the capacity or "pipe size" of a network connection and is measured in bits per second (bps), kilobits per second (kbps), megabits per second (Mbps), or gigabits per second (Gbps).

Bluetooth:

Bluetooth is a wireless technology standard used for exchanging data over short distances between devices, such as smartphones, tablets, laptops, and peripherals like keyboards, mice, and headphones. It enables devices to communicate and share information without the need for cables.

Network protocol:

A network protocol is a set of rules and conventions that govern how data is transmitted and received over a computer network. Protocols define standards for communication, addressing, error detection and correction, routing, and data formatting, ensuring compatibility and interoperability between different devices and systems.

Data centre:

A data center is a facility used to house computer systems, servers, storage devices, networking equipment, and other infrastructure components for storing, processing, and managing large amounts of data. Data centers provide secure and reliable environments for hosting applications, websites, databases, and other critical IT services.

Network node:

A network node is a device or connection point in a computer network where data can be transmitted, received, or processed. Nodes can be computers, servers, routers, switches, gateways, or other network devices that enable communication and data transfer between different parts of a network.

Web browser:

A web browser is a software application used to access and view information on the World Wide Web (WWW). It interprets and renders HTML documents, along with other web technologies like CSS and JavaScript, to display web pages as visual content on computer screens or other devices.

Web site:

A website is a collection of related web pages and multimedia content that are typically identified by a common domain name and hosted on a web server. Websites serve various purposes, such as providing information, entertainment, e-commerce, communication, collaboration, and online services.

HTML (Hypertext Markup Language):

HTML is the standard markup language used to create and design web pages. It defines the structure and layout of web documents by using tags and attributes to format text, images, links, and other elements for display in web browsers.

Hub:

A hub is a simple networking device that connects multiple computers or devices in a local area network (LAN) by broadcasting data to all connected devices. Hubs operate at the physical layer of the OSI model and do not perform any packet switching or filtering, resulting in lower efficiency compared to switches. They are less commonly used in modern networks, with switches being preferred for their improved performance and scalability.

**Task 6. Make the correct word forms to make true sentences.**

1. **Wireless** networks may not provide as much security as **Wired** Internet connections. (WIRE)
2. When creating a site, you can immediately place it on a protected hosting or **dedicated** server. (DEDICATE)
3. Your service provider may charge for the data **transmission**. (TRANSMIT)
4. йIn this network **arrangement**, all computers have equal status. (ARRANGE)
5. They also keep themselves updated on the new technology so that the company's network is **equipped** with the best and the latest security systems. (EQUIPMENT)
6. While some software applications offered data **conversion** capabilities, it was emphasized that there was a need for the development of standards in this particular field. (CONVERT)
7. The reason why we don't worry as much about software **compatibility** anymore is the popularization of instant play or "no download" sites. (COMPATIBLE)
8. We use computer safeguards such as firewalls and data **encryption**. (ENCRYPT)
9. Hardware **virtualization** refers to the creation of a virtual machine that acts like a real computer with an operating system. (VIRTUAL)
10. If you've ever spent an hour or five on Facebook, you know how **addictive** social media sites are. (ADDICTION)

**Task 7. Translate into Russian/Belarusian.**

1. Sandboxing
2. Wavelength
3. Recipient
4. Bandwidth
5. Broadband connection
6. Signal interference
7. Frequency
8. Range
9. Medium
10. Latency

Изоляция

Длина волны

Получатель

Пропускная способность

Широкополосное подключение

Помеха сигнала

Частота

Диапазон

Среда передачи

Задержка (латентность)

**Task 8. Agree or disagree with the following statements. Comment on your ideas.**

1. A network node is a device that helps to extend a network by adding more ports.

2. Cellular networks are used in cable TV connection.

3. Ethernet cables are used to connect computers in many homes.

4. Fibre-optic cables are used to send data over short distances.

5. In a star topology all the devices are connected to a common backbone.

6. A communication channel is the medium used to transport data from one network device to another.

7. The types of network architecture are broadband and narrowband.

8. Wired networks are less secure than wireless ones.

9. Any network consists of 4 main components.

10. Network interface is used to connect the protocol to the medium.

1 Disagree: A network node is a device or connection point in a network where data can be transmitted, received, or processed. While some network nodes, such as switches or hubs, may have multiple ports to facilitate connectivity between devices, the primary function of a network node is not necessarily to extend a network by adding more ports. Network nodes can perform various functions, including routing, switching, and hosting services.

2 Disagree: Cellular networks are used for wireless communication between mobile devices, such as smartphones and tablets, via cellular towers. Cable TV connections typically utilize coaxial cables or fiber-optic cables to deliver television signals to homes. These are different technologies serving different purposes, so cellular networks are not used in cable TV connections.

3 Agree: Ethernet cables are commonly used to connect computers and other devices within homes, offices, and other local area networks (LANs). Ethernet cables provide a reliable and high-speed wired connection between devices, making them suitable for connecting computers in many homes.

4 Disagree: Fiber-optic cables are typically used to send data over long distances due to their ability to transmit data signals using light pulses through optical fibers. While fiber-optic cables can also be used for short-distance communication, they are particularly well-suited for long-distance transmission due to their high bandwidth and low signal loss characteristics.

5 Agree: In a star topology, all devices are connected to a central hub or switch, which serves as a common backbone for the network. Each device connects directly to the central hub, and communication between devices typically occurs through the hub. This arrangement forms a star-shaped network topology, where the central hub acts as a focal point for data transmission.

6 Agree: A communication channel refers to the medium or pathway used to transport data from one network device to another. This can include physical mediums such as cables (e.g., Ethernet cables, fiber-optic cables) or wireless mediums such as radio waves (e.g., Wi-Fi, cellular networks). Communication channels play a crucial role in establishing connections and facilitating data transfer within a network.

7 Disagree: The types of network architecture are not typically categorized as broadband and narrowband. Broadband and narrowband refer to the width of the frequency band used to transmit data rather than architectural designs. Network architectures include various topologies (e.g., star, bus, ring) and technologies (e.g., client-server, peer-to-peer) used to organize and structure networks.

8 It depends: The security of a network depends on various factors, including the implementation of security measures, network configuration, and potential vulnerabilities. Both wired and wireless networks can be secured using encryption, authentication mechanisms, firewalls, and other security protocols. However, wireless networks may be more susceptible to certain types of attacks, such as eavesdropping or unauthorized access, if not properly secured.

9 Disagree: While many networks may consist of components such as devices, communication channels, protocols, and services, there is no strict rule stating that any network must consist of exactly four main components. The components of a network can vary depending on the specific requirements, technology, and architecture of the network in question

10 Agree: A network interface is a hardware or software component that connects a device to a network medium, such as Ethernet cables, Wi-Fi signals, or fiber-optic cables. It provides the interface between the device's network protocol stack and the physical medium through which data is transmitted and received.

**Task 9. Name all the network classifications that you know. Give details.**

**Here are several network classifications along with brief details for each:**

1. \*\*By Size or Geographic Scope\*\*:

- \*\*LAN (Local Area Network)\*\*: A network that covers a small geographical area, typically within a single building or campus. LANs are commonly used in homes, offices, schools, and small businesses.

- \*\*MAN (Metropolitan Area Network)\*\*: A network that spans a larger geographical area than a LAN but smaller than a WAN, typically covering a city or metropolitan area. MANs may connect multiple LANs and other networks within the same region.

- \*\*WAN (Wide Area Network)\*\*: A network that spans a large geographical area, such as a country, continent, or the entire world. WANs connect multiple LANs, MANs, and other networks using long-distance communication technologies like leased lines, satellites, or fiber optics.

2. \*\*By Ownership and Administration\*\*:

- \*\*Public Network\*\*: A network owned and operated by a service provider or organization and made available for use by the general public. Examples include the internet and public Wi-Fi networks.

- \*\*Private Network\*\*: A network owned and operated by an individual, business, or organization for private use. Private networks are often used for internal communication, data sharing, and resource access within an organization.

3. \*\*By Connection Method\*\*:

- \*\*Point-to-Point Network\*\*: A network configuration where two devices are directly connected to each other for communication, without the need for intermediate devices or connections.

- \*\*Multipoint Network\*\*: A network configuration where multiple devices are connected to each other, allowing communication between multiple endpoints simultaneously. Examples include LANs, WANs, and the internet.

4. \*\*By Topology\*\*:

- \*\*Star Network\*\*: A network topology where all devices are connected to a central hub or switch, forming a star-shaped structure. Communication between devices typically occurs through the central hub.

- \*\*Mesh Network\*\*: A network topology where each device is connected to every other device, creating multiple paths for data transmission. Mesh networks offer high redundancy and fault tolerance but require more complex infrastructure.

- \*\*Bus Network\*\*: A network topology where all devices are connected to a single shared communication line, called a bus or backbone. Devices communicate by transmitting data onto the bus, and all devices on the network receive the transmitted data.

- \*\*Ring Network\*\*: A network topology where devices are connected in a closed loop or ring configuration. Data travels around the ring from one device to the next until it reaches its destination. Ring networks offer fault tolerance and equal access but may suffer from network disruption if one device fails.

These are some of the common classifications of networks, each with its own characteristics, advantages, and applications.

**Task 10. Think of 5 questions related to the topics ‘Network types’ and ‘Internet Technology’ and address them to your groupmates. Discuss the questions together.**

Sure, here are five questions related to network types and internet technology:

1. What are the main differences between LANs, MANs, and WANs, and what are some common examples of each type of network?

2. How does a mesh network differ from a star network in terms of topology, performance, and scalability?

3. Can you explain the concept of bandwidth and how it affects internet speed and performance? What are some factors that can impact bandwidth?

4. What are some of the key protocols used in internet technology, such as TCP/IP, HTTP, and DNS, and what roles do they play in facilitating communication and data transfer over the internet?

5. How do network security measures, such as firewalls, encryption, and VPNs, help protect data and ensure the privacy and security of users when accessing the internet?

These questions can spark a discussion among groupmates about various aspects of network types and internet technology, including their characteristics, applications, challenges, and best practices for optimization and security.