UNIT 4
Networking

Picture 4.1

Revani Nanda Putri
SIB-1B (24)

Learning Outcomes:

By the end of the lesson, the students are expected to be able to use appropriate English to:

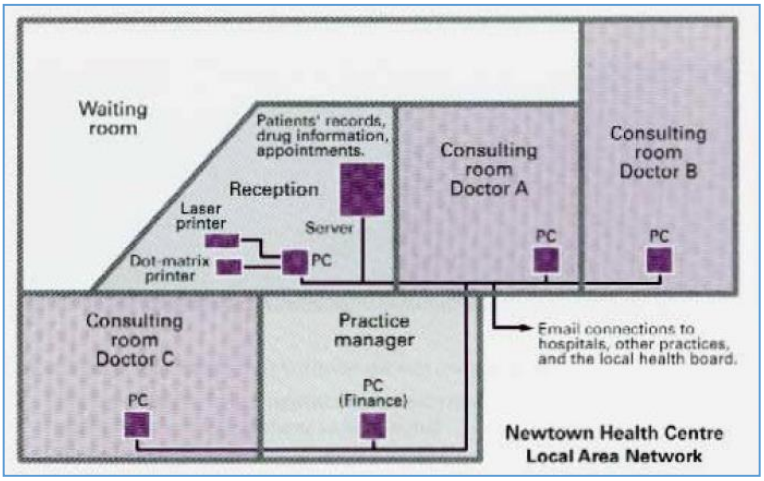
- identify and explain kinds of network hardware and its function
- explain the definition of network and its hardware components
- identify and explain kinds of network topologies
- identify and make sentences using if-clause type 1

1.1 Explaining a network and network hardware

Exercise 1: Below are hardware components used in creating a network. Match thewords 1-8 to the descriptions a-g.

1. A modem (D)	a. is an entrance to another network
2. A repeater (B)	b. channels incoming data but maintains the bandwidth speed.
3. A bridge (H)	c. allows wireless devices to connect to the network
4. A router (G)	d. modulates and demodulates the data into a digital or an analog signal
5. A gateway (A)	e. channels incoming data but shares the bandwidth among the devices present on a network
6. A switch (E)	f. sends the digital signal further on in the network
7. A hub (F)	g. connects networks and sends packages of data between them
8. A wireless access point (C)	h. connects networks that use the same protocol

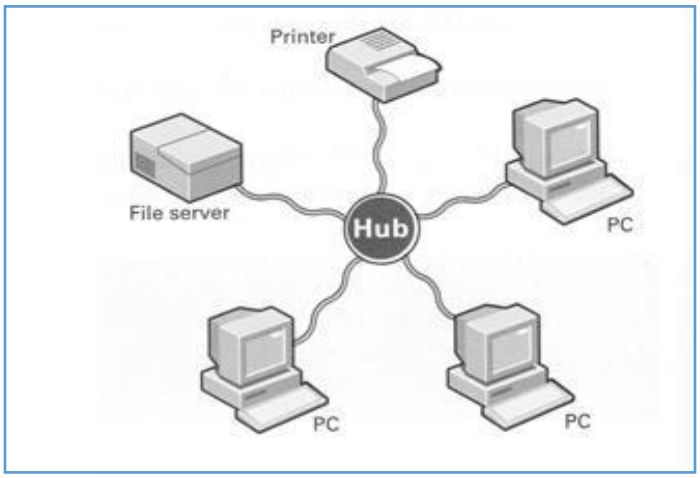
Exercise 2: Look at the sample of a Local Area Network (LAN). Then, answer thefollowing questions.



Picture 4.2

1. Who are the users? Receptionist, Doctor A, Doctor B, Doctor C, Practice manager
2. What kind of hardware is used? PC, Server, Dot-Matrix printer, Laser printer
3. What do the doctors use it for? To receive emails
4. What do the receptionists use it for? Record patients data like drug info, appointments etc
5. What does the practice manager use it for? Financial emails

Exercise 3: With the help of this diagram, answer the following questions.



Picture 4.3

1. What is a *network*? A network is a system where computers and devices are connected to share information and resources. It enables communication and collaboration among these devices, allowing them to exchange data and access shared services.

2. What are its hardware components? File server that connects to the hub that connects to PC's, and printer

3. What is the difference between a *local area network* and *wide area network*?
   LAN: Small geographical area, high-speed, single organization.
   WAN: Large geographical area, lower speed, multiple organizations

4. What advantages do you think networks have? Networks facilitate efficient resource sharing and communication, enabling quick access to shared resources and fostering collaborative work. Their advantages include cost efficiency, data security, centralized management, and scalability to accommodate growth.

Exercise 4: Read the following text and do the following exercise.

Networks

Local Area Networks (LANs)

Networking allows two or more computer systems to exchange information and share resources and peripherals.

LANs are usually placed in the same building. They can be built with two main parts of architecture: **peer-to-peer**, where two computers have the same capabilities, or client server, where one computer acts as the **server** containing the main hard disk and controlling the other **workstations** or **nodes**, all the devices linked in the network (e.g. printers, computers, etc.).

Computers in a LAN need to use the same protocol, or standard of communication. Ethernet is one of the most common protocols for LANs.

A router, a device that forwards data packets, is needed to link a LAN to another network, e.g. to the Net.

Most networks are linked with cables or wires but new **Wi-Fi**, **wireless fidelity**, technologies allow the creation of **WLAN**s, where cables or wires are replaced by radio waves.

To build a WLAN you need **access points**, radio-based receiver-transmitters that are connected to the wired LAN, and **wireless adapters** installed in your computer to link it to the network.

Hotspots are WLANs available for public use in places like airports and hotels, but sometimes the service is available outdoors (e.g. university campuses, squares, etc.).

Wide Area Networks (WLANs)

WANs have no geographical limit and may connect computers or LANs on opposite sides of the world. They are usually linked through telephone lines, fiber-optic cables or satellites. The main transmission paths within a WAN are high-speed lines called **backbones**.

Wireless WANs use mobile telephone networks.

The largest WAN in existence is the Internet.

Professional English on the Use ICT (2007:50)

Read and correct the following statements.

1. LANs link computers and other devices that are placed far apart.
   - Correction: LANs are usually placed in the same building.

2. In a client-server architecture, all the workstations have the same capabilities.
   - Correction: In a client-server architecture, one computer acts as the server containing the main hard disk and controlling the other workstations or nodes. All workstations don't necessarily have the same capabilities.

3. The word protocol refers to the shape of the network.
   - Correction: The word protocol refers to the standard of communication, not the shape of the network.

4. Routers are used to link two computers.
   - Correction: Routers are needed to link a LAN to another network, not just two computers.

5. Access points don’t need to be connected to a wired LAN.
   - Correction: Access points are connected to the wired LAN to build a WLAN, where cables or wires are replaced by radio waves.

6. Wireless adapters are optional when you are using WLAN.
   - Correction: Wireless adapters are necessary to link a computer to the WLAN.

7. Hotspots can only be found inside a building.
   - Correction: Hotspots can be found in various locations, including outdoors (e.g., university campuses, squares, etc.).

8. The Internet is an example of a LAN.
   - Correction: The Internet is an example of a WAN, not a LAN.

9. Wireless WANs use fiber and cable as linking devices.
   - Correction: Wireless WANs usually use mobile telephone networks, not fiber and cable.

Exercise 5: Use the words in the box to complete sentences.

LAN	**nodes**	**hub**	**backbones**
WLAN	**peer-to-peer**	**server**	

1. All the PCs on a LAN are connected to one Server, which is a powerful PC witha large hard disk that can be shared by everyone.
2. The style of peer-to-peer networking permits each user to share resources such as printers.

3. The star is a topology for a computer network in which one computer occupies thecentral part and the remaining nodes are linked solely to it.

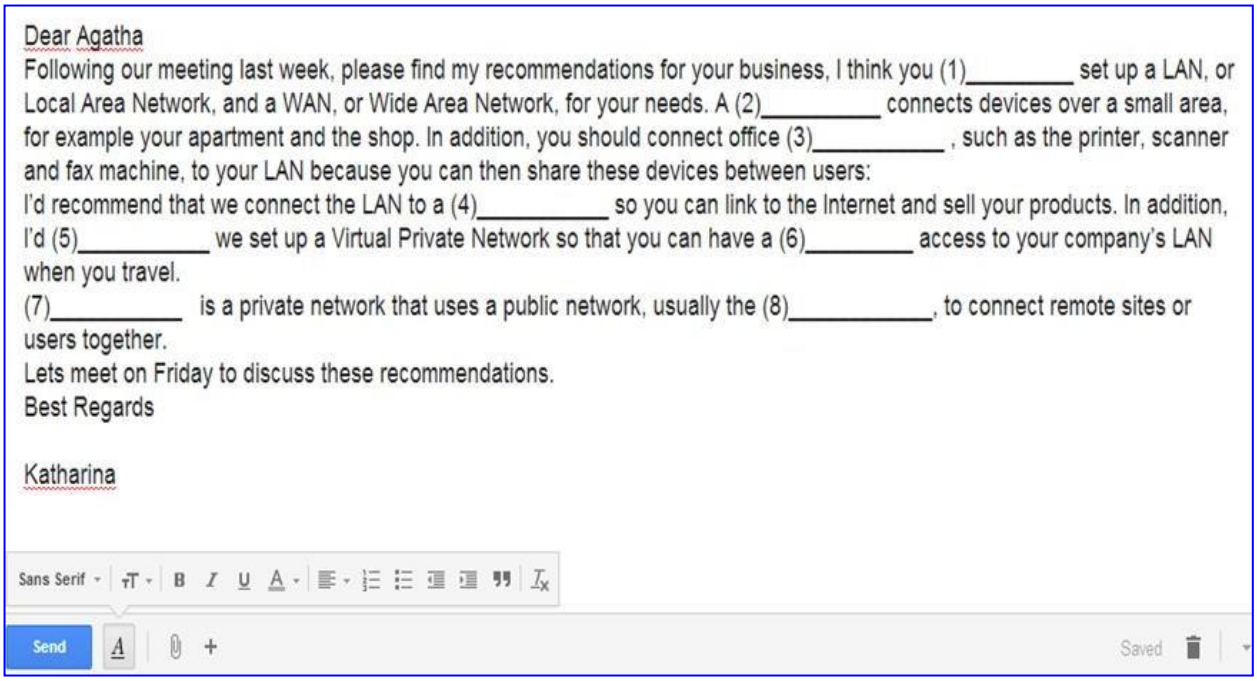
4. At present Wi-Fi systems transmit data at much more than 100 times the rate of a dial-up modem, making it an ideal technology for linking computers to one anotherand to the Net in a WLAN.

5. All of the fiber-optic backbones of the United States, Canada, and Latin America cross Panama.

6. A hub joins multiple computers (or other network devices) together to form asingle network segment, where all computers can communicate directly with each other.

Exercise 6: Read Katharina's email to Agatha. Complete this email with the words in the box.

equipment	internet	LAN	recommend
remote	should	VPN	WAN


Dear Agatha
Following our meeting last week, please find my recommendations for your business, I think you (1)_____ set up a LAN, or Local Area Network, and a WAN, or Wide Area Network, for your needs. A (2)_____ connects devices over a small area, for example your apartment and the shop. In addition, you should connect office (3)_____ , such as the printer, scanner and fax machine, to your LAN because you can then share these devices between users:
I'd recommend that we connect the LAN to a (4)_____ so you can link to the Internet and sell your products. In addition, I'd (5)_____ we set up a Virtual Private Network so that you can have a (6)_____ access to your company's LAN when you travel.
(7)_____ is a private network that uses a public network, usually the (8)_____, to connect remote sites or users together.
Lets meet on Friday to discuss these recommendations.
Best Regards

Katharina

Sans Serif
Send
Saved

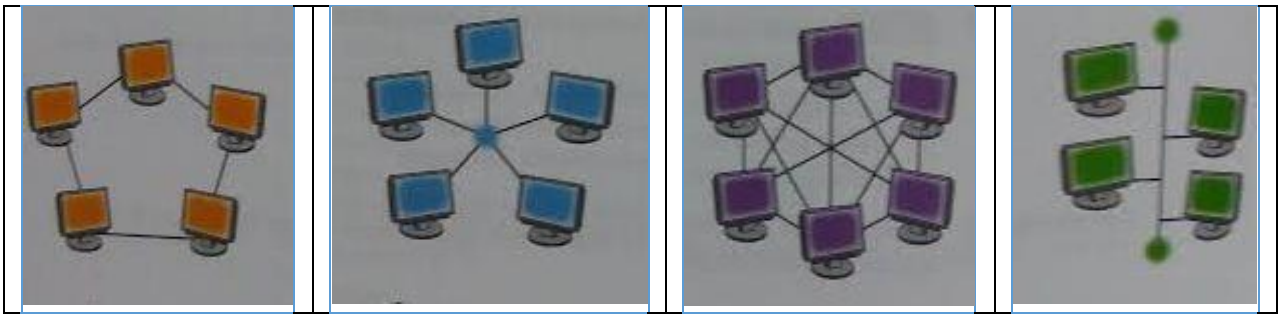
1. Should
2. LAN
3. Equipments
4. Internet
5. Recommend
6. Remote

7. VPN
8. WAN

1.2 Identifying Network Topologies

Exercise 7: These following diagrams show four network topologies. Match each with the correct name.

ring	bus	star	mesh



1.RING	2. STAR	3.MESH	5. BUS

Picture 4.3

Exercise 8: Read this following text to check your answer for exercise 7.

NETWORK TOPOLOGY

Topology refers to the shape of a network. There are three basic physical topologies. One is a **star** system. In this topology, there is a central device to which all the computers/workstations are directly connected. This central position can be occupied by a server, or a hub, a connection point of the elements of a network that redistributes the data. Another type is a **ring** system. This is a network that has each workstation linked to two others. In a **bus** system there is a central or main cable which is called a bus, and each workstation is linked to it. There are also mixed topologies, like the **tree**, a group of stars connected to a central bus. Some large networks use a **mesh**. In this topology, each workstation is linked to several others. This has one big advantage: if one connection breaks, the data can use other connections. Therefore, it is difficult to break a mesh network.

Exercise 9: Refering to exercise 7 and 8 above. Identify which topologies these statements refer to.

1. If one of the computer fails, the whole network will be affected. (BUS)
2. If we remove a computer from the network, it won't affect the other computers. (STAR)
3. If the main cable fails, the whole network will fail. (BUS)
4. If the central server fails, the whole network will fail. (STAR)
5. If a cable breaks, the whole network will be affected. (BUS)
6. If a computer fails, it won't affect the other computers. (STAR)

Exercise 10: Refering to exercise 9. You see that If-Clause Type 1 are used the the sentences above. Here are more explanation on the If-Clause Type 1.

Note	Description	Examples
Formula	If + simple present, simple future **If clause (condition), Main clause (result)** **Meaning:** If this thing happens, that thing will happen.	▪ If the main cable fails, the whole network will fail. ▪ The whole network will fail if the main cable fails. ▪ If a cable breaks, the whole network will be affected. ▪ The whole network will be affected if a cable breaks.
The Order	The order of the clauses is not fixed. When you change the order of the clauses, you need to pay attention to the punctuation and pronoun, but the meaning is identical.	
Function	These sentences are based on facts, and they are used to make statements about the real world, andabout particular situations. In type 1 conditional sentences, the time is the **present** or **future** and the situation is **real**.	
If-Clause Type 1 with Modals	In type 1 conditional sentences, youcan also use modals in the main clause instead of the future tense toexpress the degree of certainty, permission, or a recommendation about the outcome.	▪ If a computer fails, it won't affect the other computers. ▪ It won't affect the other computers if a computer fails.

Exercise 11: Refering to the If-Clause Type 1 that you learned, complete the following sentences.

1. If she (need) needs a computer, her brother (give) will give her hiscomputer.
2. If she (read/not) wont read____the Computer Networking module and her notes,she (pass/not) wont pass the test.
3. If they (invite/not)wont invite me to the computer workshop, I (go/not) I wont go ____.
4. The administration staff (accept) accepts his thesis draft if Rama (turn in) _____turns in his thesis draft on time.
5. If you (want) want a remote access to your company's LAN, you (set up) _____Needs to set up a Virtual Private Network.
6. If Anugrah (need) needs to connect devices over a small area, he (need) Needs to set up a LAN.

Exercise 12: Link each action (1-10) with a suitable consequence (a-j). Then, combine them using if-clause.

Example: ***If*** *you place a floppy disk near magnet, you will destroy the data*.

1. You place a floppy disk near a magnet	a. The cursor moves to the left
2. You press print screen	b. The computer hangs
3. You input the correct password	c. It is not lost when you switch off
4. You add memory to a computer	d. You damage the drive
5. You move the mouse to the left	e. You copy the screen
6. You store data in RAM	f. You have access to the network
7. You use a faster modem	g. You destroy the data
8. There is a memory fault	h. It runs faster
9. You press the arrow key	i. Your phone bills are lower
10. You move a CD-ROM drive with the disk in place	j. The cursor moves accross the screen

Exercise 13: Now make a short dialog that uses the If-Clause Type 1 that you learned.

Perform the dialog in front of the class.

Sure, here's an example of a dialogue that uses If-Clause Type 1 about networks:

Teacher: "What will happen if you don't secure your network?"

Student: "If I don't secure my network, hackers will be able to access my personal information and steal my identity."

Teacher: "That's correct. What can you do to secure your network?"

Student: "If I install a firewall and use a strong password, I can protect my network from unauthorized access."

Teacher: "Excellent! You're on your way to becoming a network security expert.!