

Unit 1.2 Basic Concepts

ICT A/L 2022



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Manual and Computerized Data Processing

Manual Systems	Computerized systems (IS)
<ul style="list-style-type: none">○ Flexible but slow	<ul style="list-style-type: none">○ Not flexible but fast
<ul style="list-style-type: none">○ Low cost	<ul style="list-style-type: none">○ High cost but more accurate
<ul style="list-style-type: none">○ Need more space	<ul style="list-style-type: none">○ High security and more backups
<ul style="list-style-type: none">○ No power requirement	<ul style="list-style-type: none">○ Need power
<ul style="list-style-type: none">○ More errors	<ul style="list-style-type: none">○ Can be accessed from anywhere at anytime therefore easy to share
<ul style="list-style-type: none">○ Data Duplication	
<ul style="list-style-type: none">○ Difficult to create backups	<ul style="list-style-type: none">○ Data will not be inconsistent

ICT

- ICT Stands for "Information and Communication Technologies."
- Technology behind the creation of information is known as information technology.
- Technology incorporates with dissemination of information from place to place is known as communication technology.
- ICT refers to technologies that can convert the data into information and exchange through telecommunications

ICT Advantages and Disadvantages

Advantages of ICT:

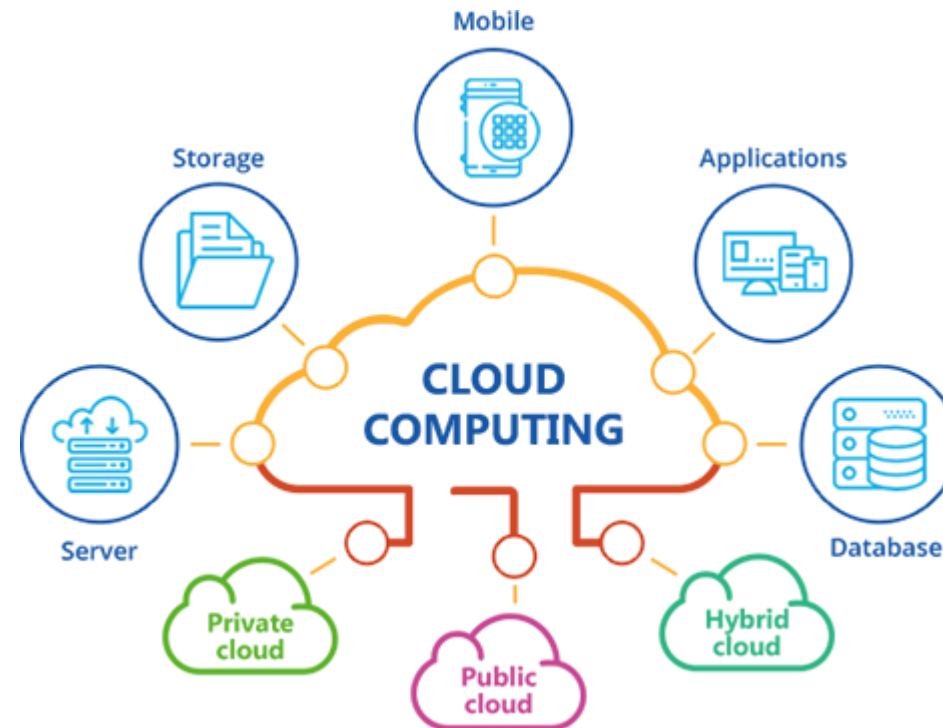
- Speeds the sending of information
- Reduces the cost of communications
- Access the information from anywhere at any time
- Provide the 24 hours services
- Reduces the space requirements
- Improve the quality of the product and services
- Reduces the paper work
- Searching the information is very faster
- High reliability and security

Disadvantages of ICT:

- Information hacking
- Virus spreading
- Hardware failure
- Difficulty in training Employees
- High cost for resources

ICT and Technology Advancements

- Internet
- WWW
- Mobile communication
- Mobile computing
- Cloud computing



The Internet



- The U.S. Department of Defense laid the foundation of the Internet with a network called ARPANET in 1969.
- ARPANET was a network that connected major computers at the Universities and other educational and research institution
- In response to the threat of nuclear attack, ARPANET was designed to allow continued communication if one or more sites were destroyed.
- The Internet is a global system of interconnected computer networks that use the standard Internet protocol suite (TCP/IP) to link several billion devices worldwide.
- A protocol is an agreement or law behind the data transmission over networks. TCP is a reliable transmission protocol.

Services of the Internet

- World Wide Web (WWW)
- File Transfer (FTP)
- Email
- Video conferencing
- Telnet
- File sharing

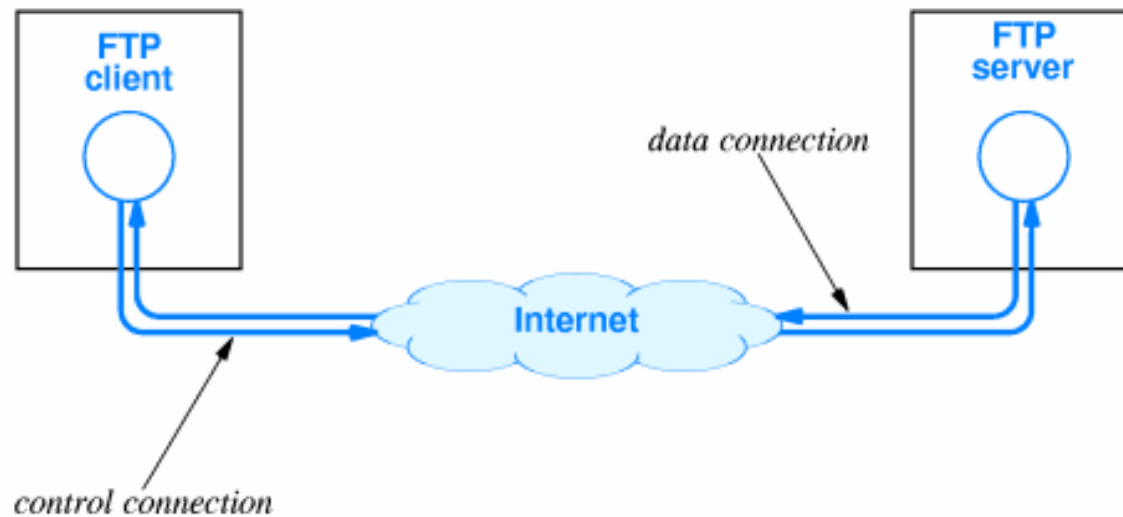
WWW

- It is the main service which is running on the Internet.
- Developed in 1991
- Tim Berners-Le is the developer of the WWW
- HTTP is the set of rules for exchanging files (text, graphic images, sound, video, and other multimedia files) on the World Wide Web.



File Transfer Protocol (FTP)

- The **File Transfer Protocol (FTP)** is a standard network **protocol used for the transfer** of computer files between a client and server on a computer network.
- **FTP** is built on a client-server model architecture using separate control and data connections between the client and the server.
- It uses the TCP.



Email

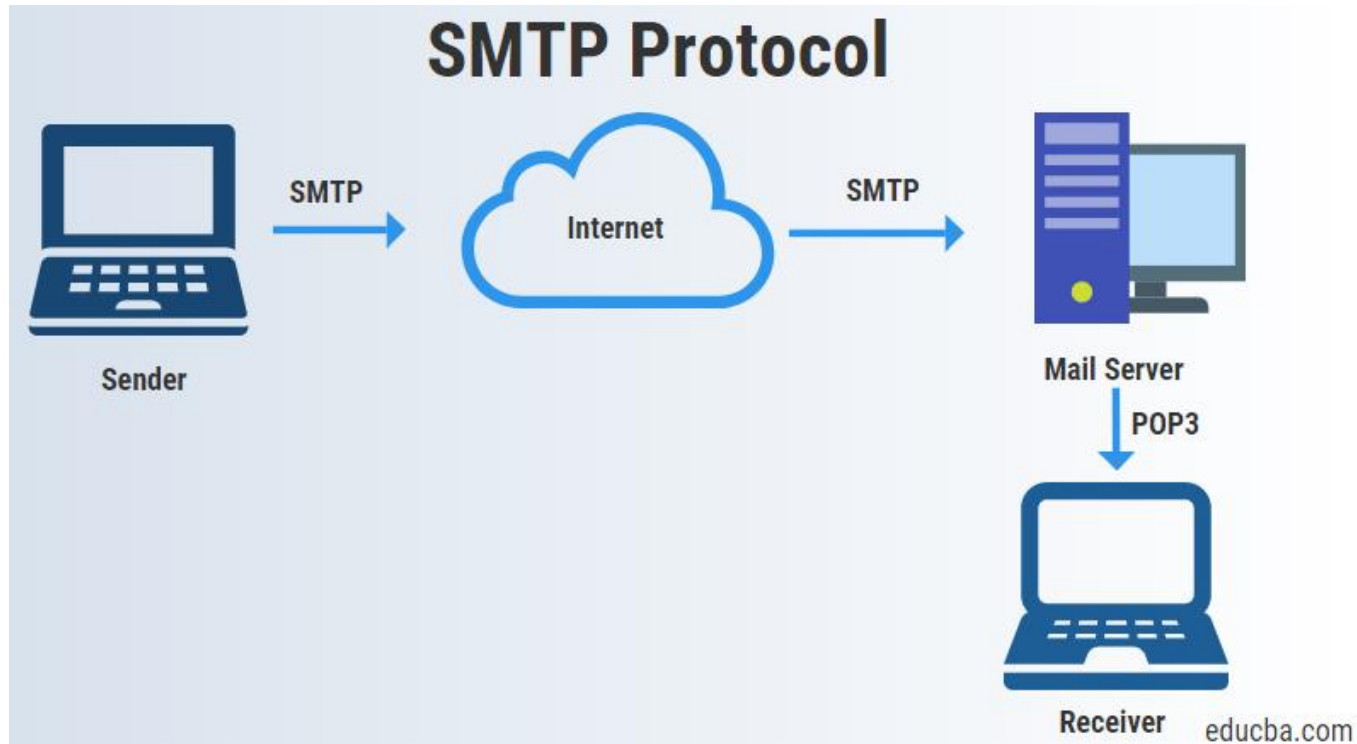
- Short for **electronic mail**, **e-mail** or **email** is information stored on a computer that is exchanged between two users over telecommunications.
- More plainly, **e-mail** is a message that may contain text, files, images, or other attachments sent through a network to a specified individual or group of individuals.
- The first e-mail was sent by Ray Tomlinson in 1971.
- An e-mail must have a [username](#) followed by **@**

Email server

A **mail server** (or **email server**) is a computer system that sends and receives **email**.

In many cases, web **servers** and **mail servers** are combined in a single machine.

Email client is a desktop application that enables configuring one or more **email** addresses to receive, read, compose and send emails from that **email** address(s) through the desktop interface.



Email Protocol

- Mail Transfer Agent's (MTAs) communicate with each other over the internet using SMTP protocol (SMTP servers)
- SMTP (**Simple Mail Transfer Protocol**) is a TCP/IP protocol used in sending and receiving e-mail.
- **POP** is short for Post Office **Protocol**, a **protocol used** to retrieve e-mail from a mail server.

IMAP

- IMAP allows you to access your email wherever you are, from any device.
- When you read an email message using IMAP, you aren't actually downloading or storing it on your computer; instead, you're reading it from the email service.
- For most users, **IMAP** is a better choice than **POP**. **POP** is a very old way of receiving mail in an email client.
- It only lets you download your Inbox on your computer, and not any other folders.
- When an email is downloaded using **POP**, it is usually then deleted

Advantages of e-mail

- Free delivery
- Global delivery
- Instant delivery
- File attachment
- Long-term storage
- Environmentally friendly

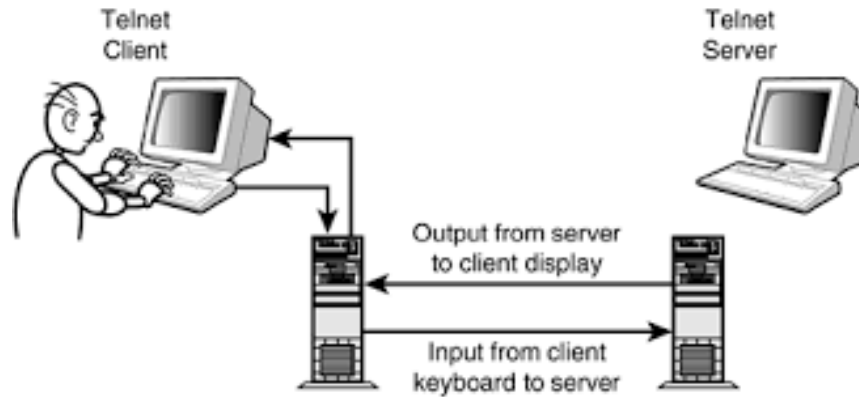
Video Conferencing

Videoconferencing (or **video conference**) means to conduct a **conference** between two or more participants at different sites by using computer networks to transmit audio and **video** data.

- Displays: laptop, desktop monitor, television screen.
- Microphones and cameras: built-in microphones and webcams, USB microphones and webcams.
- Speakers: built-in computer speaker, external speaker, VoIP (voice over IP) conferencing phone.
- Internet Connection: WiFi, ethernet.



Telnet



- **Telnet** is a simple, text-based network protocol that is **used for** accessing remote computers over TCP/IP networks like the Internet.
- Telnet is an application that operates using the **TCP protocol**.
- Typically, this protocol is used to establish a connection to Transmission Control Protocol (TCP) **port** number **23**.
- Start your command prompt.
 - Type *ipconfig*
 - Next type *netstat -a* for a list of your various port numbers.

Mobile Communication

- Mobile communication describes the use of various technological systems in order to communicate while one is away from a fixed location.
- A cell phone offers full Duplex Communication and transfer the link when the user moves from one cell to another.

Cloud Computing

- **Cloud Computing** is the use of hardware and software to deliver a service over a network (typically the Internet).
- With **cloud computing**, users can access files and use applications from any device that can access the Internet.
- Cloud Computing refers to manipulating, configuring, and accessing the applications online.
- It offers online data storage, infrastructure and application. Cloud Computing provides access to applications as utilities, over the Internet

Cloud Services

- Infrastructure as a Service (IaaS) - provides access to fundamental resources such as physical machines, virtual machines, virtual storage, etc.

Ex - Customer Relationship Management, games, virtual desktop applications

- Platform as a Service (PaaS) - provides the runtime environment for applications, development & deployment tools, etc.

Ex - Database, web server, deployment tools

- Software as a Service (SaaS) - allows to use software applications as a service to end users.

Ex - Virtual machines, servers, storage, networks



Cloud Computing

- **Gmail** is a SaaS **cloud computing** service. When you use **Gmail**, you are not hosting your own email server. Google **Cloud Platform** host **gmail**. Google keep **gmail** up and running, track and report accurate billing and facilitate a secure environment data

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