



Al-Mustaqbal University
Department of Artificial Intelligence Techniques
Engineering
Class one - first semester
Lecture 8-9

Internet and Web Browsers Communications and Emails

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INTRODUCTION TO COMPUTER NETWORKS:

A **computer network** is a collection of interconnected computers and devices that communicate with each other to share data, resources, and services using communication protocols.

Network classifications in terms of:

01

Size

Local Area Network
Wide Area Network
Intranet
Extranet
Internet

02

Delivery method

Bus Network
Token Ring Network
Star Network

Local Area Network – LAN

It is the connection of a group of computers to a mainframe in geographically close locations—a single room, a single building, or several adjacent buildings—through direct wired or wireless connections. These networks are used in small businesses, schools, homes, and more.

Local network features

- 1- It is limited in location and is dedicated to a specific purpose, such as a school or university laboratory or a company.
- 2- It has a high transmission speed due to the short distance between devices.
- 3- It is used by a limited number of users.
- 4- This network is managed by schools, universities, companies, and private institutions.



Wide Area Network - WAN

It is the connection of a distant group of computers or a group of local networks to a main computer, which may be in the same country or in another country or another continent, and the main computer is usually of the large type.

These networks are used by government agencies, institutions, and large companies that have widely distributed branches.

WAN features:

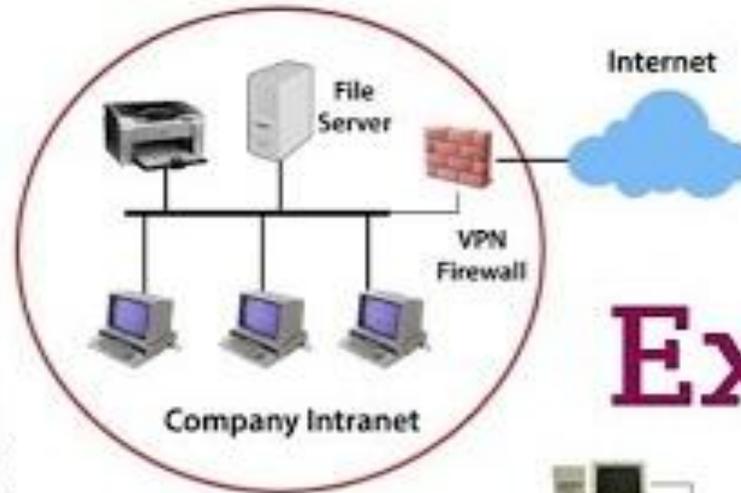
- 1- It extends between cities.
- 2- Its transmission speed is limited due to the long distances between the different units.
- 3- It is used by a large number of users.
- 4- This network is managed by a public entity or government agency.

نقاش جماعى داخل الصف :-وضح مفهوم الصورة ادناه!

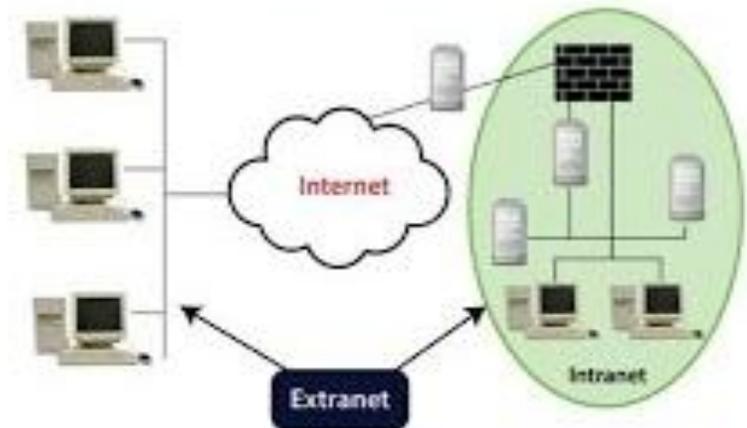
Internet



Intranet



Extranet



Intranet:

A private internal network confined within an organization or company. It is used to exchange information and files within the organization. It is often protected by passwords and firewalls.

Extranet:

It is a private network used to connect an organization with its partners using a username and password that facilitates collaboration and secure sharing of information.

Internet:

A large global network that connects millions of computers around the world, allowing users to exchange information and communicate with each other anywhere. Examples include Google and YouTube.





*The difference between the intranet, the Internet, and the extranet

Extranet	Intranet	Internet
It is a private network similar to an intranet, but with broad access to external users, such as global businesses.	A private network used within a specific system or institution.	A global network available to everyone that connects millions of networks and devices around the world.
It can be accessed over the Internet, but access is secured using a password or other security techniques.	It allows users within the same network (within the network or system) to communicate and access shared data and resources.	Allows users to access websites, email services, etc.
It enables the exchange of information and resources between systems and external parties in a secure manner.	It is usually protected by firewalls or security systems to maintain privacy. It cannot be accessed from outside the system.	Protocols such as TCP are used to communicate between devices.

مخصص للمستخدمين الخارجيين
المحددين ولكن مع تحكم في الامان

مخصص للمستخدمين
الداخليين فقط

مفتوح للجميع



UNDERSTANDING THE INTERNET AND ITS APPLICATIONS

The Internet is a global system of interconnected computer networks that use the TCP/IP protocol suite to enable communication between devices worldwide.

Key Characteristics of the Internet:

- Decentralized structure
- Uses standard communication protocols
- Supports data exchange across different platforms and systems

Major Internet Applications:

Email: Sending and receiving electronic messages

World Wide Web (WWW): Accessing hypertext documents

File Transfer: Uploading and downloading files (FTP, cloud storage)

Communication Services: Video conferencing, instant messaging

E-commerce: Online shopping and banking

E-learning: Online education platforms

WEB BROWSING: USING BROWSERS EFFECTIVELY

A web browser is a software application used to access, retrieve, and display web pages from the World Wide Web.

Common Web Browsers:

- Google Chrome
- Mozilla Firefox
- Microsoft Edge
- Safari

Main Functions of a Web Browser:

- Interprets HTML, CSS, and JavaScript
- Displays text, images, audio, and video
- Enables navigation using hyperlinks
- Stores data such as cookies and cache

Effective Use of Browsers:

- Using tabs for multitasking
- Managing bookmarks for frequently visited websites
- Clearing cache and cookies to improve performance
- Using private/incognito mode for secure browsing
- Installing extensions to enhance functionality

Search Engines: Techniques for Efficient Searching

A search engine is a software system designed to search for information on the World Wide Web.

Examples of Search Engines:

- Google
- Bing
- DuckDuckGo

Understanding URLs, Domain Names, and IP Addresses

Uniform Resource Locator (URL)

A URL is the address used to access resources on the Internet.

Structure of a URL: <https://www.example.com/path>

Components:

- Protocol (https)
- Domain name (www.example.com)
- Path to the resource

Domain Names

A domain name is a human-readable name that identifies a website on the Internet.

Examples:

google.com

wikipedia.org

IP Addresses

An IP address is a unique numerical identifier assigned to each device connected to a network.

Types of IP Addresses:

- IPv4 (e.g., 192.168.1.1)
- IPv6 (e.g., 2001:0db8:85a3::8a2e)

The Domain Name System (DNS) translates domain names into IP addresses so computers can locate each other on the network.

COMMUNICATIONS AND EMAILS

Definition of Electronic Mail

Electronic Mail (Email) is one of the most widely used Internet communication services. It allows users to send and receive digital messages over computer networks, primarily the Internet. Email supports not only text messages but also multimedia content such as images, documents, audio, and video files.

Key Features of Email

Asynchronous Communication: Users do not need to be online at the same time to communicate.

Speed and Efficiency: Messages are delivered within seconds or minutes.

Attachment Support: Files such as documents, spreadsheets, and presentations can be attached.

Global Accessibility: Email can be accessed from anywhere with an Internet connection.

Record Keeping: Emails can be stored, archived, and searched easily.

Security Options: Encryption, authentication, and spam filtering enhance data protection.

Email Protocols

Email communication relies on standard network protocols:

SMTP (Simple Mail Transfer Protocol)

Used to send emails from a client to a mail server and between mail servers.

POP3 (Post Office Protocol version 3)

Downloads emails from the server to the user's device, usually removing them from the server.

IMAP (Internet Message Access Protocol)

Allows users to access and manage emails directly on the server, synchronizing across multiple devices.

These protocols ensure reliable transmission, storage, and retrieval of email messages.

Setting Up an Email Account

Steps to Create an Email Account

- 1. Choose an Email Service Provider** (e.g., Gmail, Outlook, Yahoo Mail).
- 2. Register with Personal Information**, such as name and username.
- 3. Create a Secure Password** using a combination of letters, numbers, and symbols.
- 4. Configure Security Settings**, including recovery options and two-factor authentication.
- 5. Access the Email Interface**, either through a web browser or an email client application.

Email Account Configuration

When using desktop or mobile email clients, users must configure:

- Incoming mail server (POP3 or IMAP)
- Outgoing mail server (SMTP)
- Port numbers and encryption methods (SSL/TLS)

Sending and Receiving Emails

Sending Emails

The process of sending an email involves:

1. Composing a message (recipient address, subject, and body).
2. Attaching files if necessary.
3. Sending the email via an SMTP server.
4. The server routes the message to the recipient's mail server.

Receiving Emails

Incoming emails are stored on the recipient's mail server.

The user retrieves messages using POP3 or IMAP.

Email clients display messages in the inbox.

Email Components

To / CC / BCC: Specify recipients.

Subject Line: Brief summary of the email content.

Message Body: Main content of the email.

Attachments: Additional files sent with the email.

Managing Email Correspondence

Effective email management improves productivity and communication efficiency.

Email Organization Techniques

Folders and Labels: Categorize emails by topic or priority.

Filters and Rules: Automatically sort incoming emails.

Archiving: Store important emails without cluttering the inbox.

Search Functions: Quickly locate specific emails.

Spam Management: Identify and block unwanted or malicious emails.

Email Etiquette (Netiquette)

- Use clear and professional language.
- Write meaningful subject lines.
- Avoid unnecessary attachments.
- Respond in a timely manner.
- Respect privacy and confidentiality.

Document Collaboration Tools

Definition

Document collaboration tools are software applications that allow multiple users to create, edit, share, and manage documents simultaneously over a network.

Common Collaboration Tools

- Google Docs, Sheets, and Slides
- Microsoft Word Online and OneDrive
- Dropbox Paper
- Microsoft Teams and SharePoint

Key Features

Real-Time Editing:

Multiple users can edit the same document simultaneously.

Version Control:

Track changes and restore previous versions.

Commenting and Feedback:

Users can leave comments and suggestions.

Cloud Storage:

Documents are stored online and accessible from any device.

Access Control:

Permissions define who can view or edit documents.