Introduction to Internet and Web Browsers

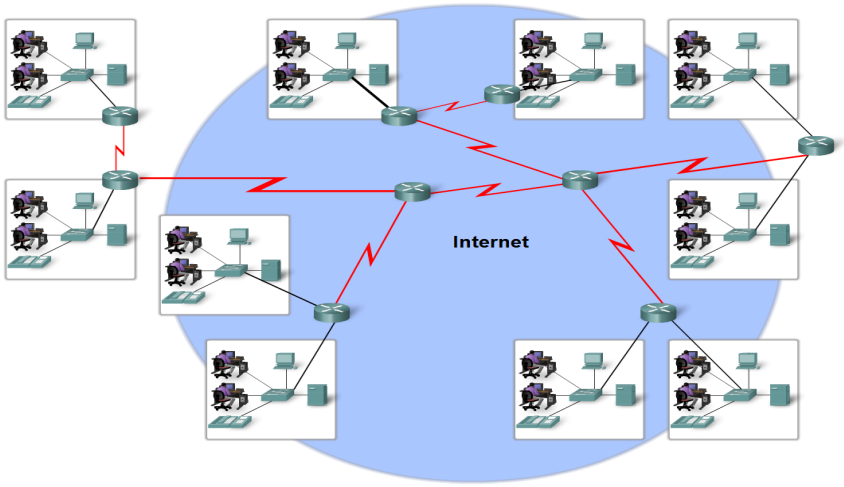
1. Computer Networks – Basic Concepts

The Internet is created by the interconnection of networks belonging to Internet Service Providers (ISPs) to provide access for millions of users all over the world.

A **Network** is a group of computers and devices connected together to share data, resources, and services.

Why Networks Are Important?

- Share files and data
- Share hardware (printers, scanners)
- Communication (email, chat, video calls)
- Access the Internet



Network Topology: it is the arrangement of devices (nodes) and connections (links) in a computer network.

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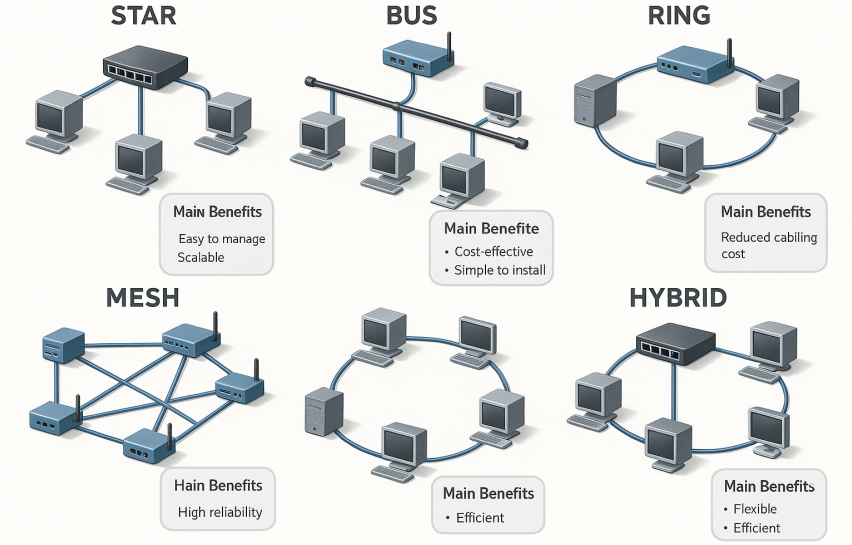

2. Types of Computer Networks

Local Area Network (LAN): a **LAN** connects computers within a small area such as: Home, School, Office, University lab. For **Example:** Computer lab in a university connected via Ethernet or Wi-Fi.

Characteristics:

- Small geographical area
- High data speed
- Low cost
- Usually owned by one organization

Wide Area Network (WAN): A **WAN** covers a large geographical area such as: Cities, Countries, Continents. For example, The **Internet** is the largest WAN in the world.

Characteristics:

- Large distance coverage
- Slower than LAN
- More expensive
- Uses public or leased communication lines

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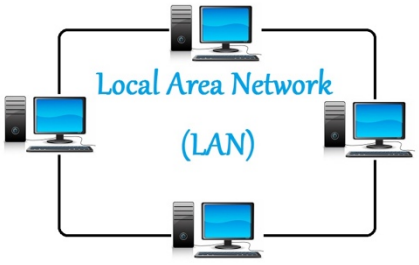
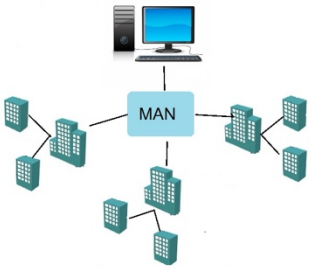
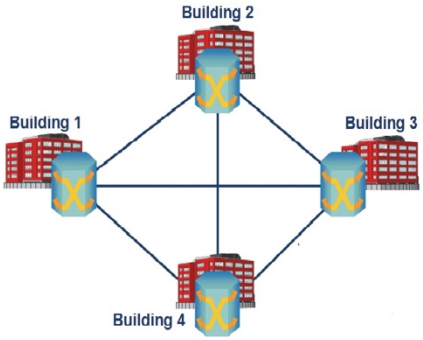


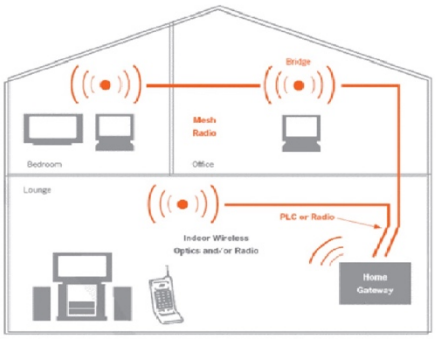
(WAN) Wide Area Network



Metropolitan Area Network



Campus Area Network(CAN)



Home Area Network(HAN)

3. Concept of the Internet

The **Internet** is a global network of networks that connects millions of computers and devices worldwide.

Key Points

- Uses standard communication protocols (TCP/IP)
- Allows global data exchange
- Operates 24/7

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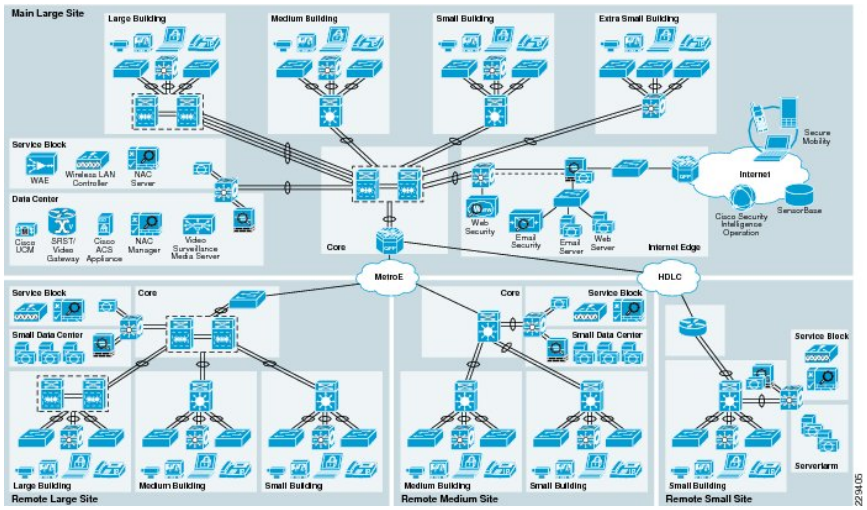


4. Applications of the Internet

Common Internet applications include:

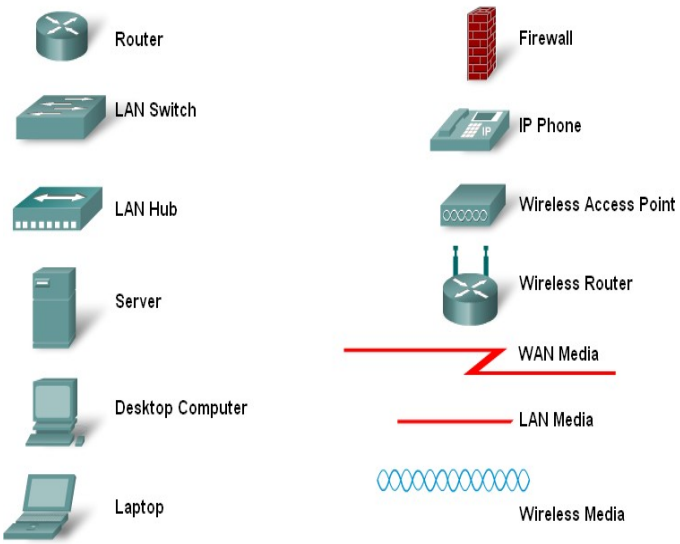
- **Email** – sending and receiving messages
- **Web browsing** – accessing websites
- **Social media** – communication and sharing
- **Online learning** – e-learning platforms
- **E-commerce** – online shopping and banking
- **Cloud services** – Google Drive, OneDrive

5. Connecting to the Internet

To connect to the Internet, we need:

- A device (computer, laptop, smartphone)
- Network interface (Wi-Fi or Ethernet)
- Internet Service Provider (ISP)
- Modem or router

Common Connection Types are Wi-Fi, Mobile data (4G/5G), DSL and Fiber optic.



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6. World Wide Web (WWW)

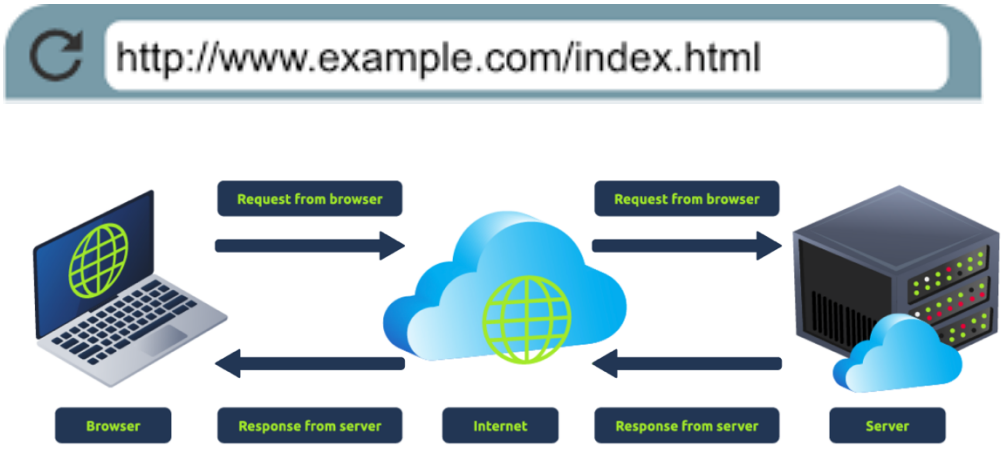
The **World Wide Web (WWW)** is a system of interconnected web pages accessed through the Internet.

Important Notes

- The Internet ≠ WWW
- Internet is the infrastructure
- WWW is a service running on the Internet

WWW uses:

- Hypertext Transfer Protocol (HTTP) / Hypertext Transfer Protocol Secure (HTTPS) protocols
- Web browsers to access content



7. Web Browsing Software (Web Browsers)

A **web browser** is software used to access and display web pages. The **Common Web Browsers** are Google Chrome, Mozilla Firefox, Microsoft Edge, Safari and Opera.

The Functions of a Web Browser are:

- Open websites

- Display text, images, videos
- Download files
- Store bookmarks and history

8. Search Engines

A **search engine** is a tool that helps users find information on the web.

Popular Search Engines

- Google
- Bing
- Yahoo
- DuckDuckGo

How Search Engines Work

- Crawl websites
- Index content
- Display results based on keywords

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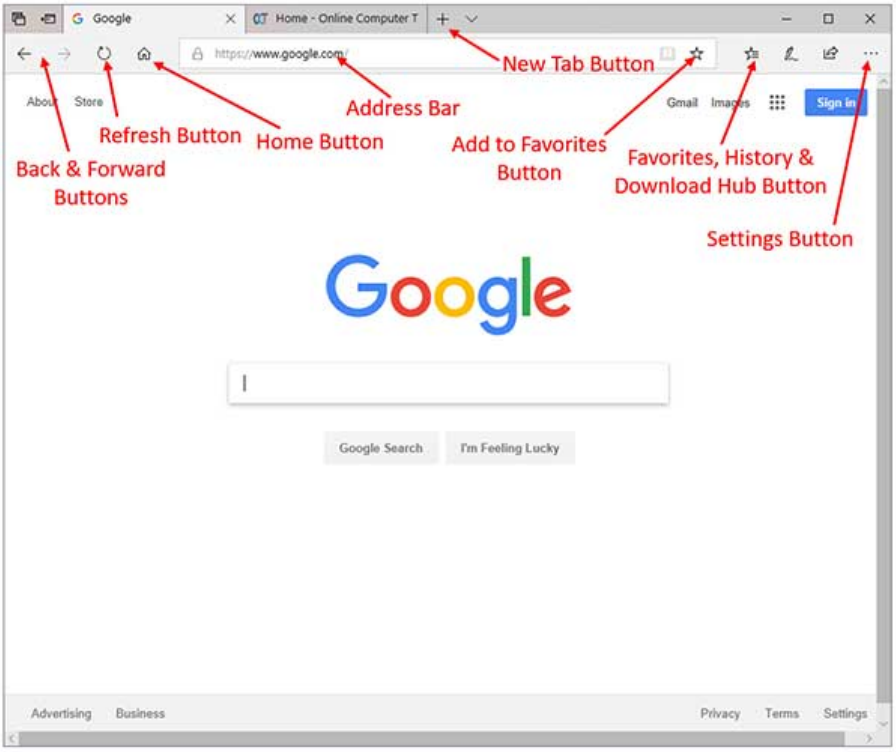

9. Understanding URL

A **URL (Uniform Resource Locator)** is the address of a web resource on the Internet.

Example URL

```
https://www.example.com/index.html
```

Parts of a URL

- **Protocol:** https
- **Domain name:** www.example.com
- **Path:** /index.html

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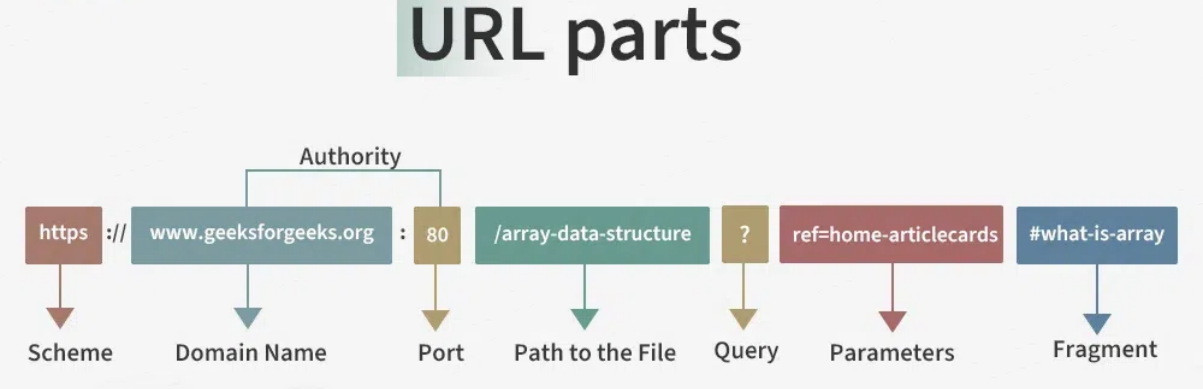
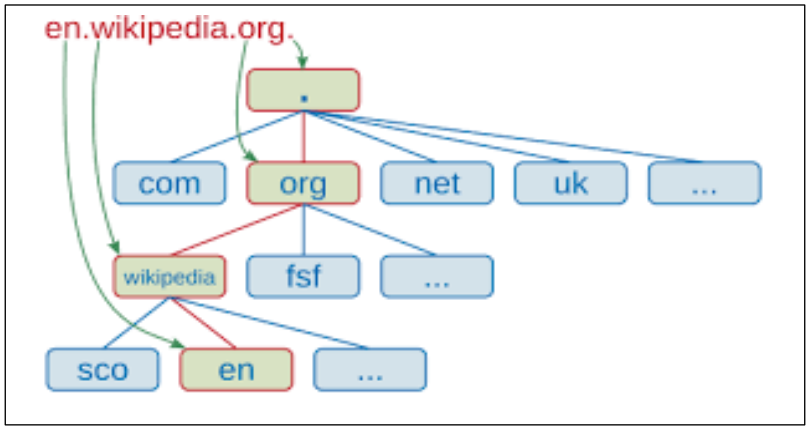


10. Domain Name

A **domain name** is a human-readable name used to identify a website.

Examples

- google.com
- wikipedia.org
- university.edu



Types of Domain Extensions

- `.com` – commercial
- `.org` – organization
- `.edu` – education
- `.gov` – government

11. IP Address

An **IP Address** is a unique numerical identifier assigned to each device connected to a network.
Example: `192.168.1.1`

Why IP Addresses Are Important

- Identify devices on a network
- Enable data routing

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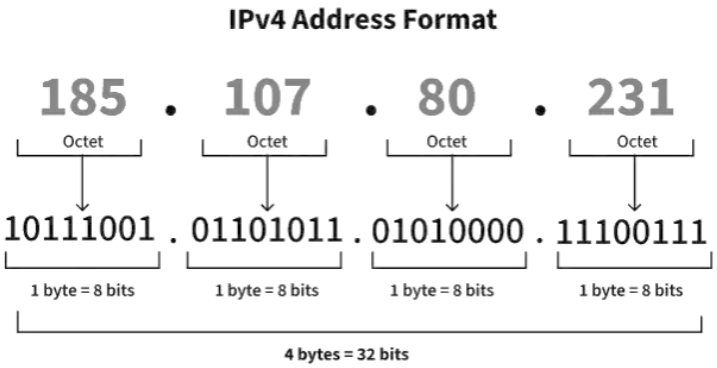
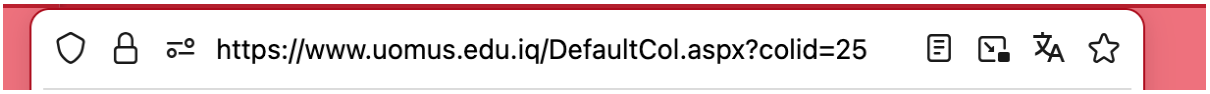
Note: **Domain names are converted into IP addresses using DNS (Domain Name System).**



12. Relationship Between Domain Name and IP Address

- Humans use **domain names**
- Computers use **IP addresses**
- DNS acts as a translator between them

Example: www.google.com → 142.250.190.78
www.uomus.edu.iq → 172.67.69.129



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