



ISO 9001:2008
Certificate No. TUV 100 05 1782

The Internet and the World Wide Web

Introduction to Computing

AY 2024-2035



Topics

- Introduction to the Internet
- History of the Internet
- Introduction to the World Wide Web
- How the Web Works
- Internet Protocols and Technologies
- Evolution of the Web
- Key Applications of the Internet and the Web
- Security on the Internet and the Web

Introduction to the Internet

Q: In your own terms, how would you describe the Internet?

An internet is:

- A global network of interconnected devices and computers
- With the Internet, it's possible to access almost any information, communicate with anyone else in the world, and do much more
- A network is a group of two or more computer systems which are related through a couple of channels for the motive of sending and receiving data in a shared environment.



Introduction to the Internet

- The World Wide Web—usually called the **Web** for short—is a collection of different websites you can access through the Internet
- WWW is NOT synonymous with the internet. Rather, the World Wide Web is part of the internet.
- A **website** is made up of related text, images, and other resources
Websites can resemble other forms of media—like newspaper articles or television programs—or they can be interactive in a way that's unique to computers
- Once you are connected to the Internet, you can access and view websites using a type of application called a **web browser**

Introduction to the Internet

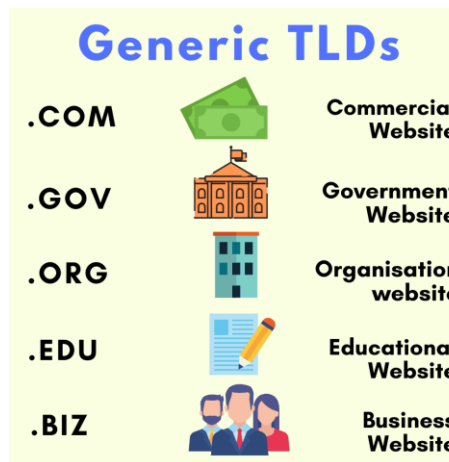
- **Web pages** are the primary component or building blocks of the WWW and are linked through hyperlinks, which provide access from one specific spot in a hypertext or hypermedia document to another spot within that document or a different one.
- **Hyperlinks** are another defining concept of the WWW and provide its identity as a collection of interconnected documents.
- **Hypertext** is a method for instant information cross-referencing that supports communications on the web. It makes it easy to link content on one web page to content on another web page or site.

Introduction to the Internet

- **Domain name** is a string that identifies a realm of administrative autonomy, authority or control. These are often used to identify services provided through the Internet, such as websites, email services and more
- It identifies a network domain or an Internet Protocol (IP) resource, such as a personal computer used to access the Internet, or a server computer.

example.com

second-level domain (SLD) top-level domain (TLD)



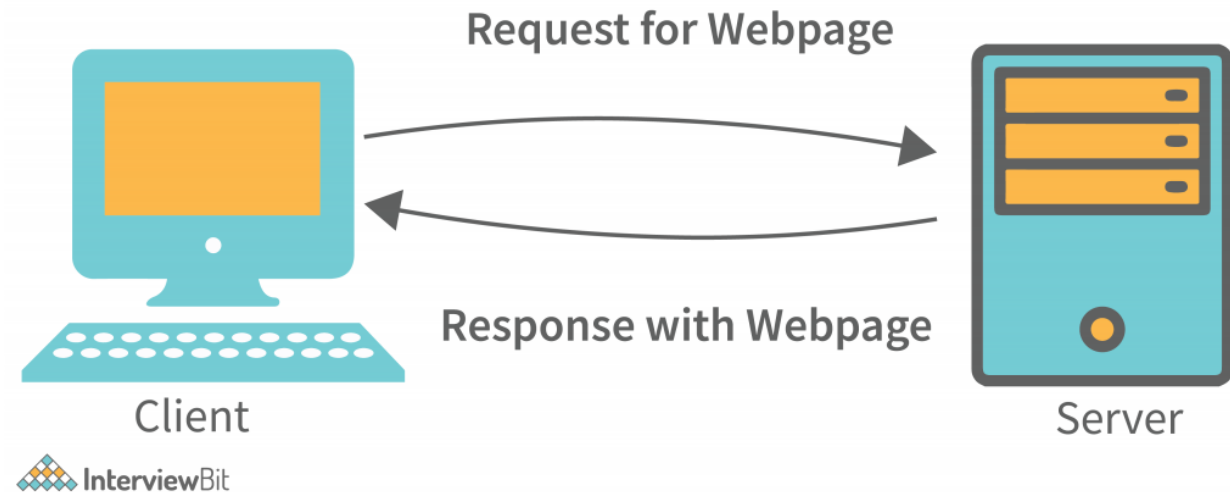
TLD	Country
.de	Germany
.uk	UK
.nl	Netherlands
.fr	France
.eu	European Economic Area
.it	Italy
.ch	Switzerland
.pl	Poland
.be	Belgium
.se	Sweden

Basic components of the Internet

Q: If you had to describe how the Internet works to a young child, what would you say?

Basic components of the Internet:

- Client
- Server
- Protocols



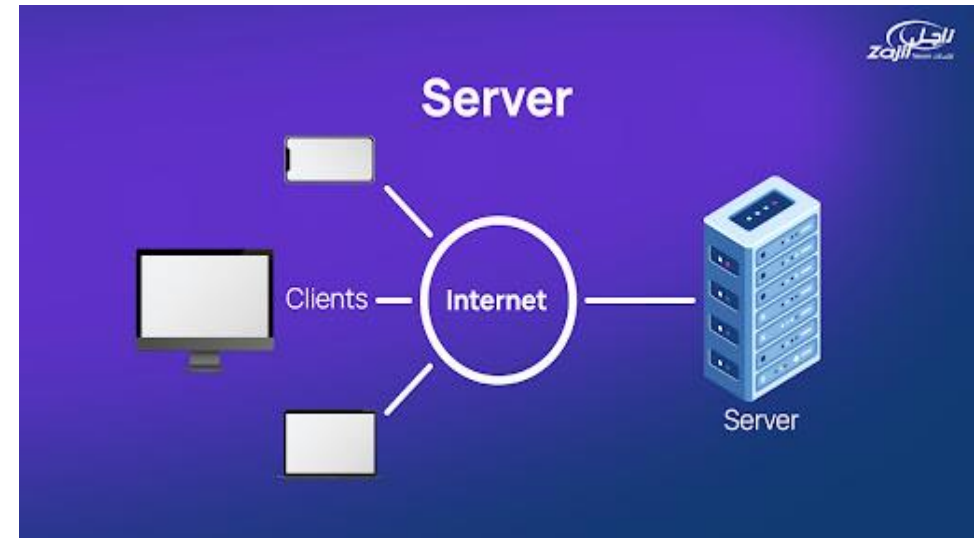
The Client

- The data interaction primarily occurs between the client and the server.
- The **client** requests data from the server.
- The client and server may be situated very far from each other but are linked via a network



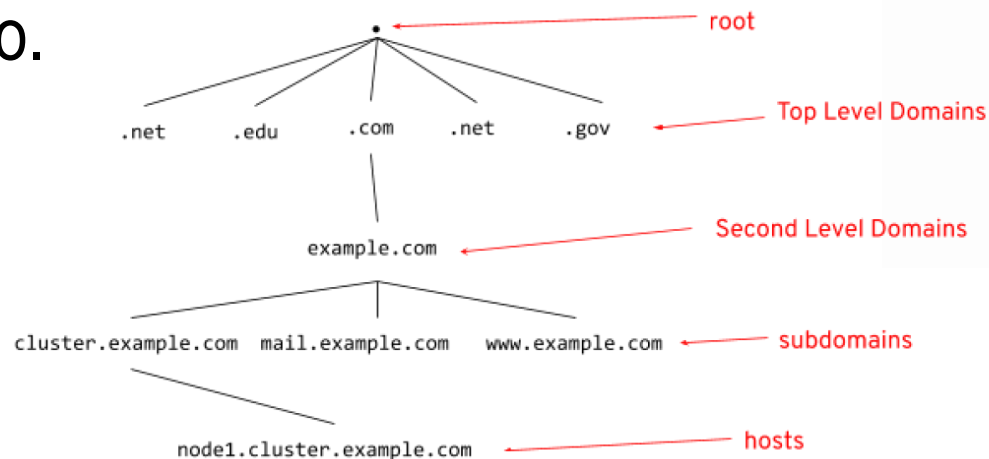
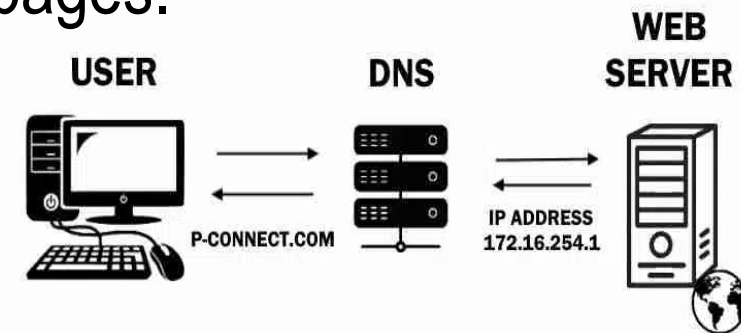
The Server

- The main job of a **server** is to respond to the request of the client. The device is set up in the way that they provide the appropriate information to the client. This functionality of client and server works on a model called – *call and response*
- the server performs so many functions within seconds



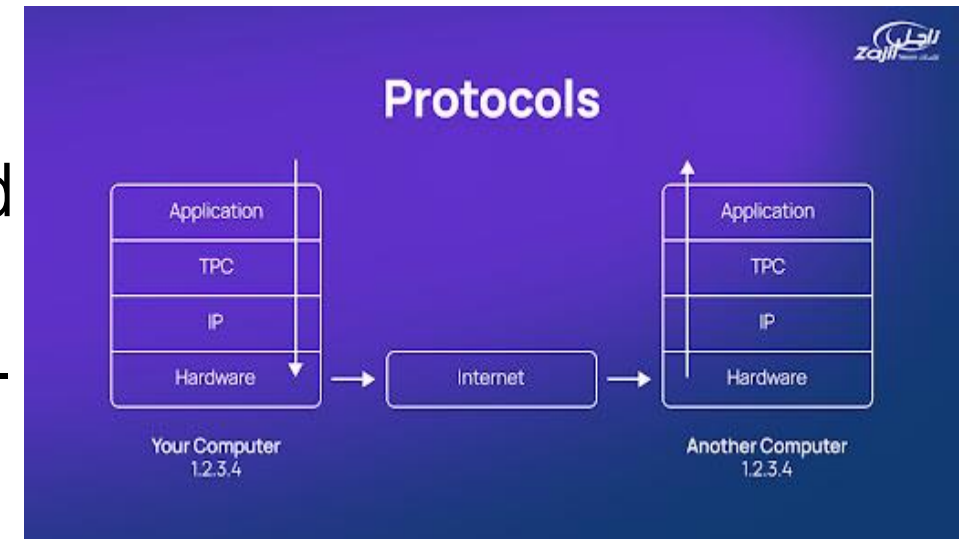
Domain Name System

- The **Domain Name System (DNS)** turns domain names into IP addresses, which browsers use to load internet pages.
- A **DNS server** is a computer with a database containing the public IP addresses associated with the names of the websites an IP address brings a user to.



The Protocols

- set of rules that guide data transmission between computing devices. These rules make sure that the data request is sent and received by the client without any problem.
- The most important internet protocols are – **Transmission Control Protocol (TCP)** and **Internet Protocol (IP)**.
- Every single commuting device has its own unique **IP address** which make it easier for computers to recognize each other. The TCP/IP protocols make the data request and receiving possible between two computers via server.



The Protocols

- Hypertext and **Hyper Text Transfer Protocol (HTTP)** enables users to access web pages by standardizing communications and data transfer between the internet's servers and clients.
- Most web documents and pages are created using **Hypertext Markup Language (HTML)**, a text-based way of describing how content within an HTML file is structured. HTML describes the structure of web pages using elements or tags and displays the content of these pages through a web browser.
- To access one of these pages, a user and their client machine supply a universal identifier to the web server via a browser using **uniform resource locator (URL)** or **uniform resource identifier (URI)** and is unique to each web page.



Watch these:

- How the Internet Works:

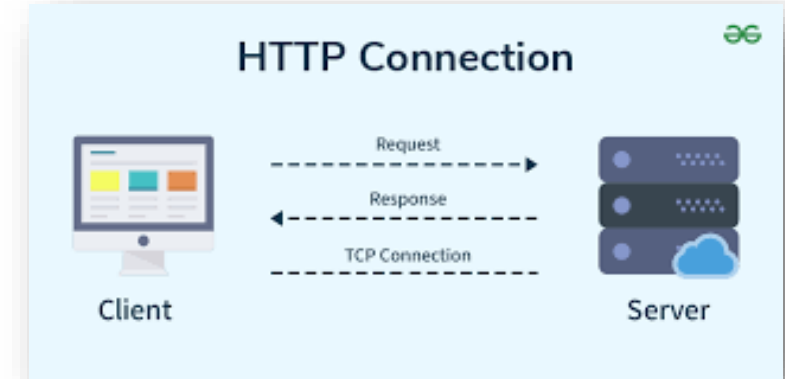
<https://www.youtube.com/watch?v=x3c1ih2NJEg>

- History of the Internet:

<https://www.youtube.com/watch?v=U5zHadHP7nM>

HTTP and HTTPS (Hypertext Transfer Protocol/Secure)

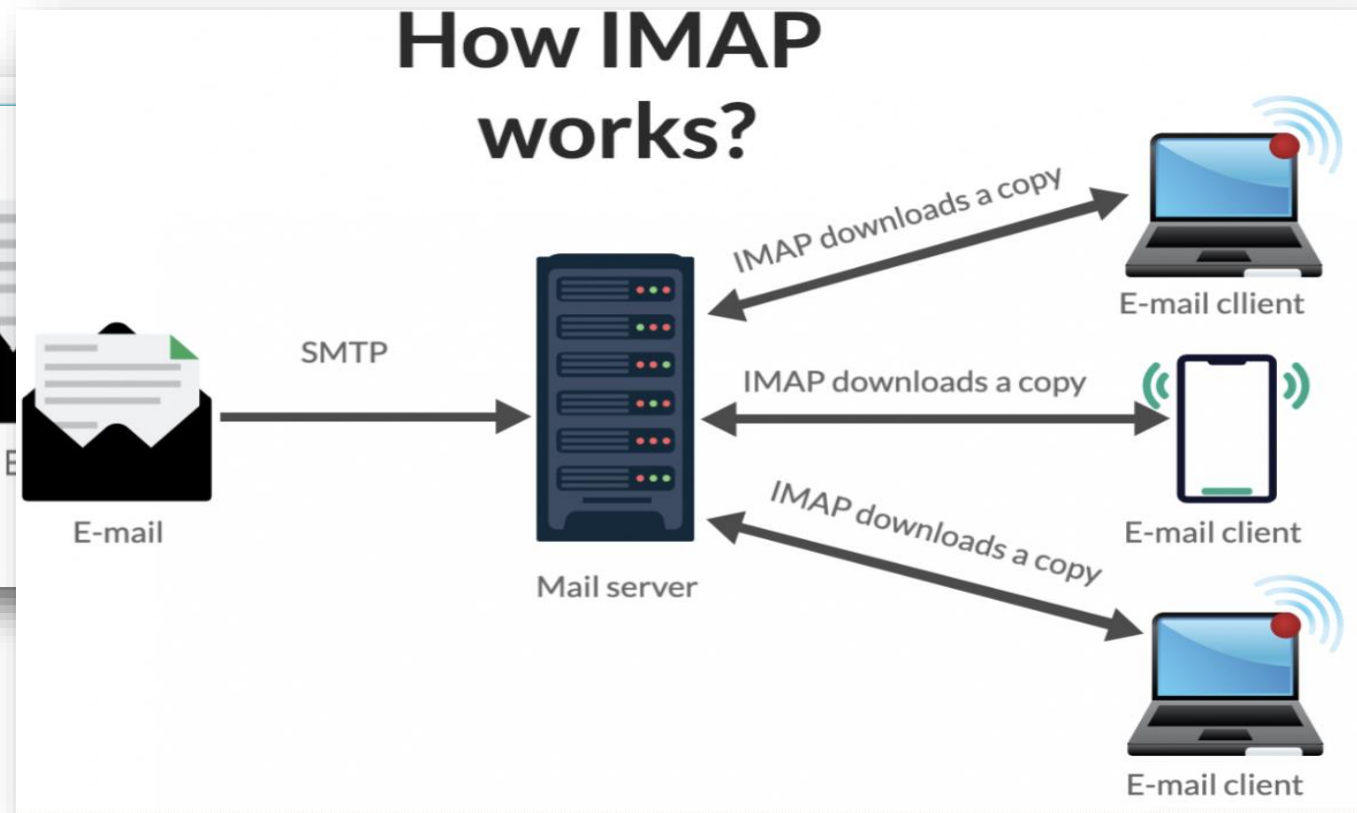
- HTTP is the protocol used for transmitting web pages (designed for communication between web browsers and web servers)
- HTTPS is Secured version of HTTP that encrypts data
- uses encryption for secure communication over a computer network, and is widely used on the Internet
- Importance: Ensures data security and privacy



SMTP and POP/IMAP (Email Protocols)

The standard email protocol list includes:

- SMTP (Simple Mail Transfer Protocol)
- POP3 (Post Office Protocol version 3)
- IMAP (Internet Message Access Protocol)



VoIP (Voice over Internet Protocol)

- Voice over Internet Protocol (VoIP), is a technology that allows you to make voice calls using a broadband Internet connection instead of a regular (or analog) phone line.



FaceTime



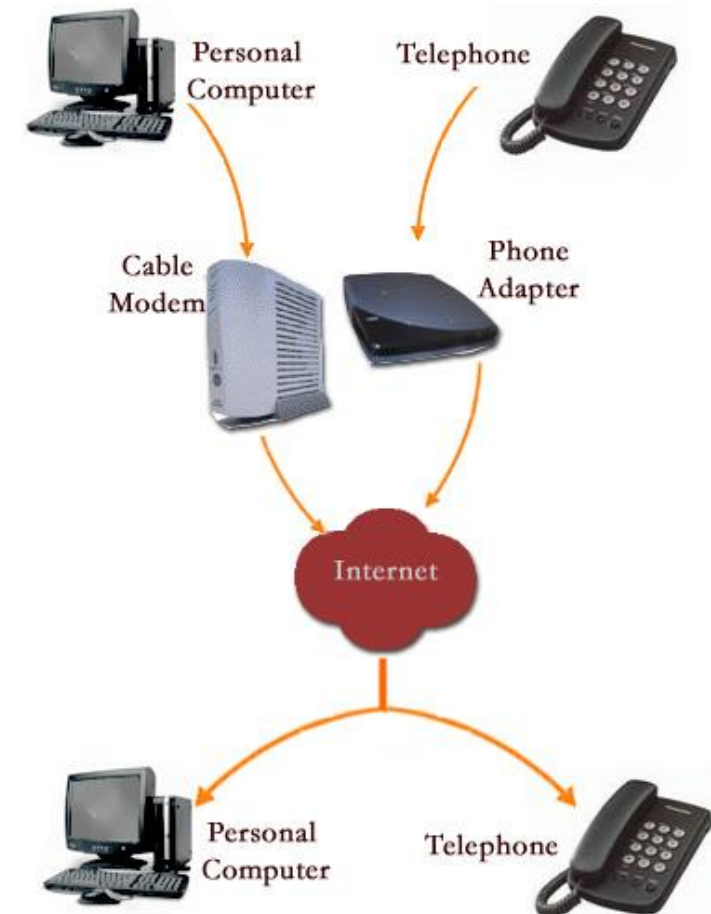
Telegram



WhatsApp

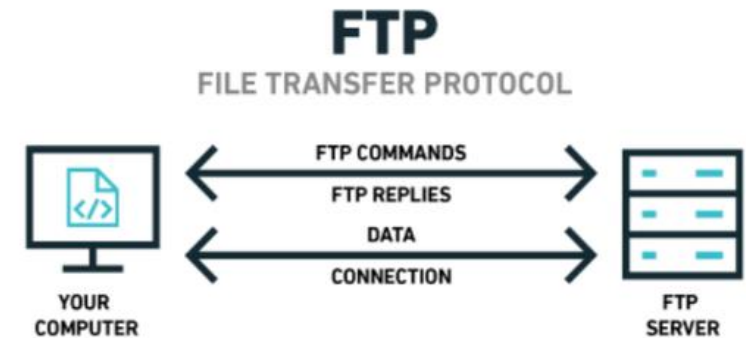


Messenger

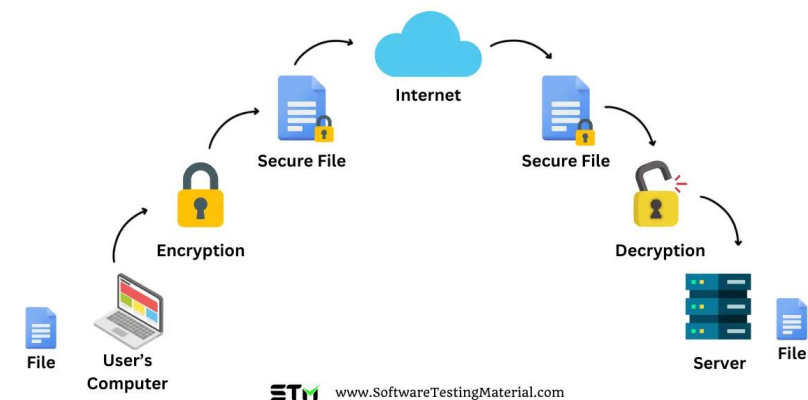


FTP (File Transfer Protocol)

- a standard communication protocol used for the transfer of computer files from a server to a client on a computer network.
- FTP users may authenticate themselves with a plain-text sign-in protocol, normally in the form of a username and password, but can connect anonymously if the server is configured to allow it.



SFTP (SECURE FILE TRANSFER PROTOCOL)





Watch these:

- HTTP vs HTTPS

https://www.youtube.com/watch?v=nOmT_5hqqPk

- VOIP

<https://www.youtube.com/watch?v=SYJfO99nOmo>

- FTP

<https://www.youtube.com/watch?v=kKxSiJPQ2kg>

- Facebook Data Center:

https://www.youtube.com/watch?v=4A_A-CmrqpQ&t=10s

- Youtube Data Center:

<https://www.youtube.com/watch?v=kNoh9t2oNRg>