

# Chapter 1

## Basics in Website Design

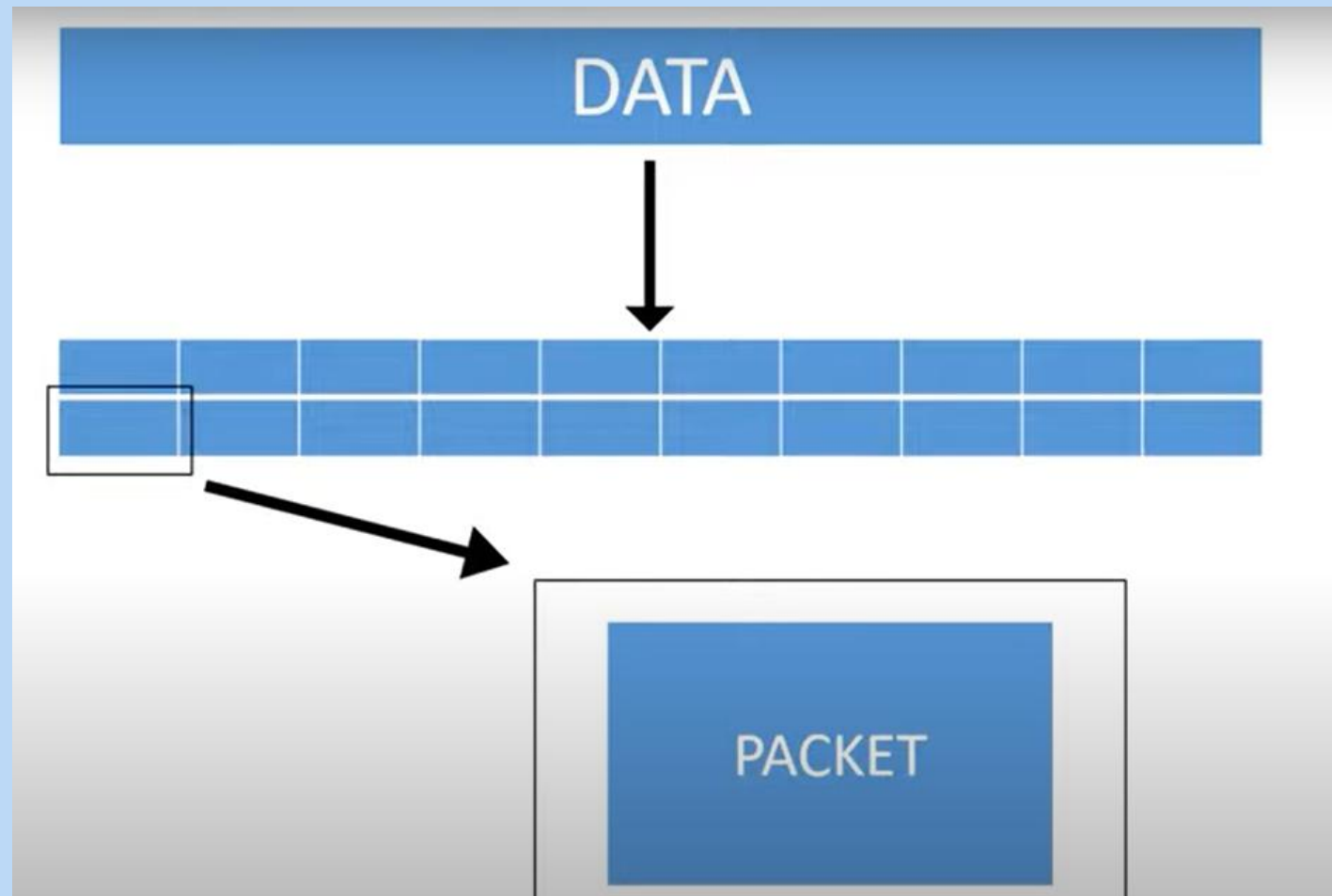
By: Shreejan Pandit

# What is internet?

- The internet is a global network of computers and other devices that are connected together to share information and communicate with each other. It allows people all over the world to connect with each other, access information, and share resources.
- The internet is made up of many different technologies, including routers, switches, servers, and cables, which work together to ensure that data can travel from one device to another quickly and efficiently.
- Through the internet, people can send emails, access websites, stream videos, play games, and much more.
- The internet has become an essential part of modern life, connecting people and businesses across the world and transforming the way we communicate and share information.

# How was the internet created?

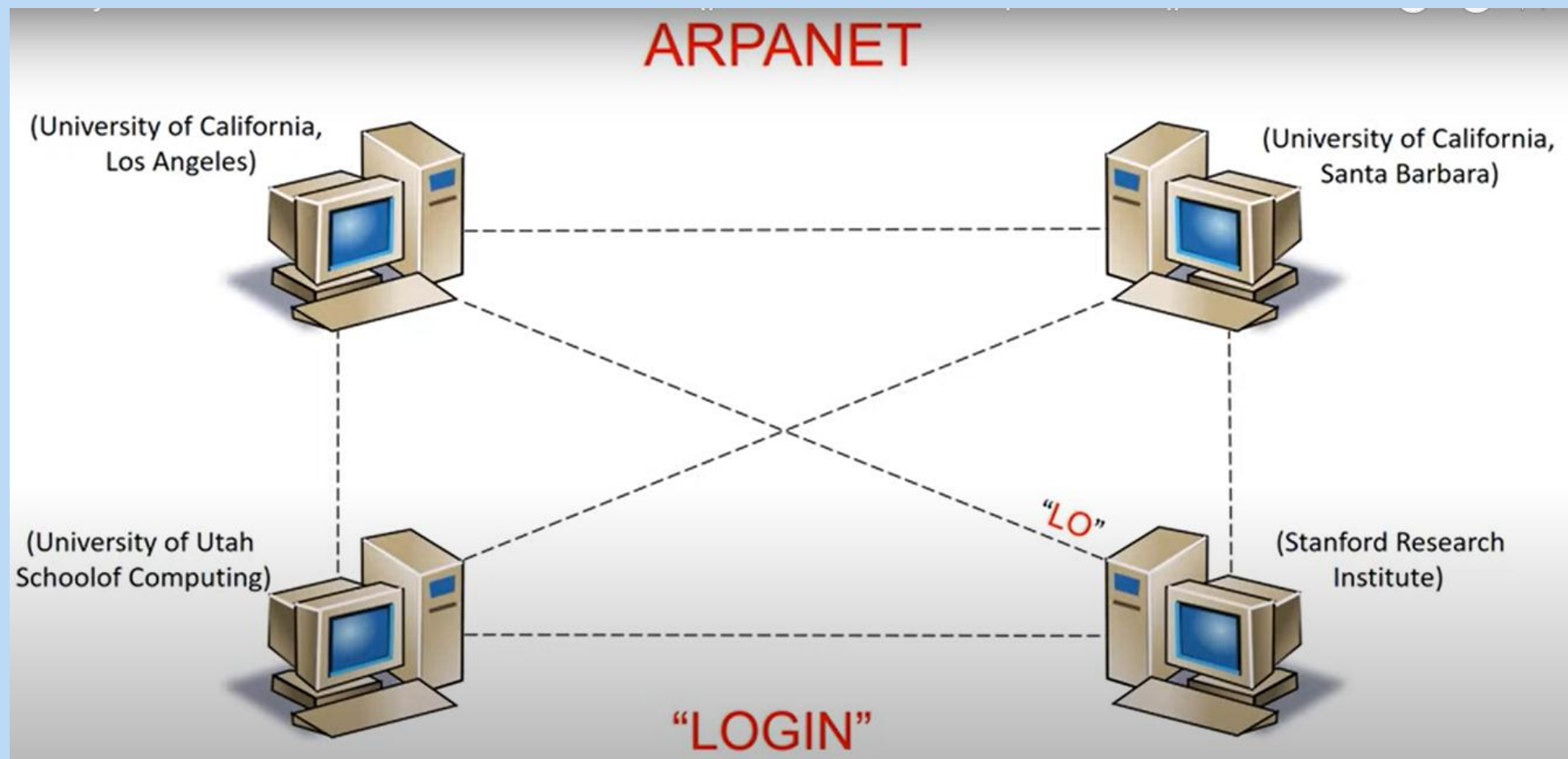
- The internet was created because people needed a way for computers to talk to each other without being interrupted. Before the internet, computers used a slow method called circuit switching, where all the data had to be sent at once. If something went wrong during the transfer, the whole thing would fail.
- So, scientists came up with a new way called packet switching. With packet switching, data is broken into smaller pieces called packets, and each packet is sent separately. If something goes wrong, only that packet is affected, not the whole transfer. Once all the packets arrive, they are put back together to create the original message. This is how the internet works!



# Evolution of Internet

- The internet evolved from packet switching, allowing computers to connect through a network called ARPANET( Advanced Research Projects Agency Network ).
- Then, the World Wide Web (WWW) was developed, which is an internet-based global information system that allows people to view web pages containing text, images, videos, and other multimedia and navigate between them by using hyperlinks.

# Evolution of Internet



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# Evolution of Internet

- Here is a timeline of the important events in the history of the internet:
  - 1965: First two computers are connected via packet switching at MIT.
  - 1969: ARPANET, the first widely used computer network, is launched.
  - 1971: Email is developed, allowing electronic messages to be sent between computers.
  - 1973: Nodes in Norway and Great Britain are connected to ARPANET, making it a global network.
  - 1974: The first ISP, Internet Service Provider, is launched. The initial design for TCP is published.
  - 1981: The National Science Foundation establishes CSNET, a network for computer scientists at research universities.
  - 1982: ARPANET computers switch to the TCP/IP protocols.

- 1983: The Domain Name System (DNS) establishes the naming conventions for websites, such as .com, .org, .edu, and .gov.
- 1988: IRC, Internet Relay Chat, was launched, a precursor (ancestor) of our current instant messaging apps.
- 1990: Tim Berners-Lee develops HTML, which has a huge impact on how people interact with the internet.
- 1991: The World Wide Web is introduced to the public.
- 1993: The first browser accessible for the general user, Mosaic, is launched. The White House and the United Nations create web pages.
- 1995: Commercial businesses begin operating on the internet, including eBay and Amazon.
- 1996: Hotmail, the first web-based email service, is launched.
- 1998: Google goes online, revolutionizing the way users locate resources on the internet.
- 2004: Web 2.0 becomes popular, which refers to websites that are user-driven and interactive. Facebook launches.
- 2005: YouTube and Reddit launch.
- 2010: The internet records 400 million active users for the first time.



# WWW

- The World Wide Web (WWW) (Also known as w3 and the Web) is a global information system that operates on the Internet.
- It is a system of interlinked hypertext documents contained on the internet. With the help of a web browser, you can access web pages that may contain text, images, videos, and other multimedia, and navigate between them by using hyperlinks.
- The main purpose behind the development of the World Wide Web was to create a platform for sharing and accessing vast amounts of information on a global scale which would allow collaborators in remote sites to share their ideas and all aspects of a common project.
- In simple terms, the web is the most popular Internet service, which can access a higher variety of data like text, image, audio, video, and many more service on the internet. It has revolutionized the way we share and access information, and has made it possible for people from all over the world to collaborate on projects and ideas.

# WWW's features

The World Wide Web has several features that make it a powerful tool for accessing and sharing information:

1. **Hypertext Technology:** The WWW is built on Hypertext technology, which makes it easy to access linked documents on the Internet and navigate between them.
2. **Efficient Connection:** Each time you access a new document through a link, a connection is made with the web server that the document is on, and once the appropriate document is retrieved, the connection is broken. This makes the WWW efficient and fast.
3. **Browser Interface:** The interface for the WWW is a browser, which allows users to search, traverse, and use many types of information at numerous sites and in multiple forms.

- 4. Operating System Compatibility:** The WWW is accessible on multiple operating systems, including Apple, UNIX, Macintosh, DOS, and Windows.
- 5. Hypertext Transfer Protocol:** The WWW has a protocol called Hypertext Transfer Protocol (HTTP), which acts as an interface between a Web Client Software like Netscape Navigator. HTTP helps to facilitate the transfer of data between web servers and clients.
- 6. URLs:** To access different types of information on the Internet, you use different kinds of URLs. Most URLs begin with `http://` , which indicates a file at an actual web site. If you want to get to a file on the Web using FTP, you would use a URL that looks like `ftp://name_of_site/directory/f1_name`.

# Advantages of WWW

- 1)**Easy accessibility:** The WWW is accessible to anyone with an internet connection and a browser, making it easy to access information from anywhere in the world.
- 2)**Wide range of information:** The WWW contains a vast amount of information on virtually every topic, making it a valuable resource for research, learning, and entertainment.
- 3)**Easy navigation:** The use of hyperlinks on the WWW makes it easy to navigate between different pages and websites, allowing users to quickly find the information they need.
- 4)**Universal access:** The WWW is designed to be accessible to anyone, regardless of their location or the device they are using, making it a powerful tool for global communication and collaboration.

# Advantages of WWW

**5)Interactive content:** The WWW allows for the creation of interactive content, such as videos, animations, and games, which can engage and entertain users in new ways.

**6)User-generated content:** The WWW enables users to create and publish their own content, such as blog posts, videos, and social media updates, allowing for greater participation and collaboration in online communities.

**7)Cost-effective:** The WWW is a relatively low-cost way to share information and promote products and services, making it an important tool for businesses and organizations of all sizes.

**8)Real-time communication:** The use of instant messaging, chat rooms, and video conferencing on the WWW enables real-time communication between individuals and groups, regardless of their location.

# Components of web

- URL (Uniform Resource Locator): It is a web address that specifies the location of a resource (such as a webpage, image, or video) on the internet. A URL consists of several components, including the protocol (such as HTTP or HTTPS), the domain name or IP address of the server hosting the resource, and the path to the resource on the server.
- HTTP (Hypertext Transfer Protocol): It is the protocol used for transferring data over the World Wide Web. It defines the rules for how web clients (such as web browsers) and web servers communicate with each other. HTTP is responsible for requesting resources from web servers and transmitting the response data back to the client.
- HTML (Hypertext Markup Language): It is the standard markup language used to create web pages. HTML defines the structure and content of a webpage, including headings, paragraphs, images, links, and other elements. Web browsers use HTML to render web pages and display them to users.

# Comparision between internet and www

Basis for comparision	Internet	WWW
Definition	A huge network which is a collection of several networks.	A system of interconnected hypertext documents and resources accessed via the internet
Invention	Late 1960's	1989
Nature	Physical infrastructure	Software oriented
Protocols used	IP (Internet Protocol)	HTTP (Hypertext Transfer Protocol)
Identefication	Thorough IP address	Through URL (Uniform Resource Locator)
1st version	APRANET(Advanced Research Projects Agency Network)	NSFNET(National Science Foundation Network)
Dependency	Independent existance	Existence depends on the internet
Users/website	Over 4.9 billion users (as of 2021)	Over 1.8 billion websites (as of 2021)
Accessiability	Through various software and devices	through internet browser

# Web Standards

Web standards are defined as **guidelines** developed by the **World Wide Web Consortium W3C** to **promote consistency** in design code used to built website. This standard exist as long technical document called specification, which details exactly how the technology should work.

- web standards is a set of standardized "**best practices**" for building websites.
- Web Standard are created by standard bodies. W3C is best known standard bodies.



# Why we need standards?

## **Benefits of Web Standards:**

There are many benefits in designing website that meet webstandards, some of them are:

- I. Faster downloading times
- II. Lower maintenance costs
- III. More accesible to wider range of user, including people with disabilities
- IV. Less time consuming to update
- V. Lower bandwidth cost
- VI. More search engine friendly
- VII. More adaptable to future technology

# Web standards..

## **The most common W3C standards**

- HTML (Hyper Text Markup Language)
- XML (Extensible Markup Language)
- XHTML (Extensible Hypertext Markup Language)
- CSS (Cascading Style Sheet)
- WCAG (Web Content Accessibility Guidelines)

Five important and revolutionary ideas were produced that would lead standards to where they are today.

- i. Decentralization
- ii. Nondiscrimination
- iii. Bottom-up design
- iv. Universality
- v. Consensus(agreement)