Introduction TO WEB_Lecture 1.1.pdf (1 - 84)

Key Terms

ARPANET

ARPANET was the precursor to the internet, developed by the United States Department of Defense, connecting research institutions for communication and data exchange.

- ARPANET began in the late 1960s, with UCLA, Stanford Research Institute, UC Santa Barbara, and University of Utah as the initial nodes.
- Email was one of the first communication tools on ARPANET.
- ARPANET was instrumental in the development of TCP/IP protocols.
- The first message sent over ARPANET was 'LO'.

Common Gateway Interface

Common Gateway Interface (CGI) defines how web servers interact with external programs to generate dynamic content on a website.

- CGI scripts are often written in languages like Perl or Python to process form data and perform other server-side tasks.
- CGI programs can be used to generate web pages dynamically based on user input or other parameters.
- CGI scripts must be located in a specific directory on the server for the web server to execute them.
- CGI programs facilitate the connection between a web server and external resources or applications for enhanced website functionality.

Domain Name System

The Domain Name System (DNS) is a decentralized system that translates human-readable domain names into numerical IP addresses to locate resources on the Internet.

- DNS helps in the efficient and accurate retrieval of data across the Internet.
- It consists of hierarchical domain structures with different levels like TLDs (Top Level Domains), domains, and subdomains.
- DNS servers cache information to reduce response time and improve efficiency.
- It plays a crucial role in ensuring seamless communication and connectivity on the Internet.

HTTP

HTTP, Hypertext Transfer Protocol, is a communication protocol used for sending and receiving data across the internet.

- It operates on a client/server model, where a client initiates a request and a server responds with the requested data.
- HTTP messages consist of a request line, headers, an empty line, and an optional message body.
- The protocol uses methods like GET for retrieving data, POST for submitting data, and HEAD for fetching metadata.
- HTTP status codes indicate the outcome of the request, such as 200 for successful, 404 for not found, and 500 for server errors.

Hypertext Markup Language

Hypertext Markup Language (HTML) is a standard language used to create and design the structure of web pages, consisting of elements enclosed in tags.

- HTML uses a markup structure with tags to define the elements and content of a webpage.
- It provides the basic framework for displaying content such as text, images, links, and multimedia on a web page.
- HTML documents are written in plain text format and can be created using simple text editors.
- Understanding the structure and syntax of HTML is essential for building and formatting web content effectively.

Internet

The Internet is a global network connecting computers worldwide, allowing communication and access to information through various protocols like HTTP and FTP.

- The Internet's backbone is made up of high-speed fiber optic cables connecting continents.
- Websites are hosted on servers and accessed by users through web browsers using URLs.
- Web pages are built using languages like HTML, CSS, and JavaScript to create interactive online experiences.
- Cybersecurity measures such as firewalls and encryption protocols are crucial to protect sensitive data transmitted over the Internet.

IP address

An IP address is a unique numeric label assigned to each device connected to a network to facilitate communication and identification.

- It consists of a series of four numbers separated by periods, with each number ranging from 0 to 255.
- There are two types of IP addresses: IPv4 (32-bit) and IPv6 (128-bit) addressing schemes.
- IP addresses help in locating devices on a network and enabling data exchange between

them.
- IP addresses can be dynamic (changing) or static (fixed) based on assignment methods and network configurations.

JavaScript

JavaScript is a high-level programming language commonly used for client-side scripting, allowing interactivity and dynamic content on websites.

- It is an essential skill for front-end development.
- JavaScript can also be used for server-side development with Node.js.
- Common frameworks include React, Angular, and Vue.
- JavaScript code is executed by the browser.

TCP/IP

TCP/IP is a standard communication protocol that enables devices to connect and communicate over networks, ensuring reliable data transmission.

- TCP/IP stands for Transmission Control Protocol/Internet Protocol.
- The TCP layer manages data packets to ensure they are delivered error-free and in the correct order.
- The IP layer is responsible for routing data packets to their intended destination over the network.
- TCP/IP is a fundamental component of internet connectivity and is used in various networked applications.

Uniform Resource Locator

A Uniform Resource Locator (URL) is the address used to identify resources, such as websites, on the internet.

- Consists of multiple parts like scheme, domain, path, and query parameters.
- Uses prefixes like 'http://' or 'https://' to specify the protocol for accessing the resource.
- May include port numbers to identify different services on a server.
- Can contain anchor tags ('#') to navigate to specific sections within a webpage.

Web server

A server that stores and serves website content to users requesting to view a website.

- It processes requests from clients, such as web browsers, by sending the requested files over the internet.
- Common web server software includes Apache, Nginx, and Microsoft IIS.

- Websites are hosted on web servers, making them accessible to users worldwide.
- Web servers use protocols like HTTP and HTTPS to communicate with clients and deliver web content securely.

World Wide Web

The World Wide Web is a system of interconnected hypertext documents accessed through the internet, revolutionizing communication and information sharing.

- The World Wide Web was created by Sir Tim Berners-Lee in 1989.
- It consists of web pages containing text, images, videos, and hyperlinks.
- Hypertext Transfer Protocol (HTTP) is used to access and transfer data on the World Wide Web.
- Web browsers like Chrome and Firefox are used to navigate and interact with content on the World Wide Web.