

Q1. Compare and analyze any 5 web browsers.

Comparison between Google Chrome, Mozilla Firefox, Microsoft Edge, Apple Safari, Brave :

1) Google Chrome

- Uses Blink rendering engine
- Supports HTTP/3 and QUIC for network connectivity
- Excellent support for Progressive Web Applications, WebRTC, WebAssembly
- Offers in built phishing and malware protection
- Consumes significant amount of RAM impacting performance

2) Mozilla Firefox

- Uses Gecko for rendering
- Implements DNS over HTTPS
- Strong support for WebXR
- Focuses on privacy with tracking protection
- Lightweight compared to chrome

3) Microsoft Edge

- Based on Blink rendering engine
- Integrated with Microsoft's cloud services
- Optimized for PWA
- Offers SmartScreen for phishing protection
- Faster than chrome due to better memory optimization

4) Apple Safari

- Uses WebKit, designed specially for MacOS and iOS
- Optimized for low latency but lacks HTTPS support
- Limited support for PWA and API's like WebRTC
- Strong privacy with Intelligent Tracking protection
- Highly optimized for apple hardware

5) Brave

- Built on Blink ensuring compatibility with modern websites
- Includes built-in TOR for anonymous browsing

Full support for WebRTC, WebAssembly and other modern web standards
Emphasizes privacy with ad-blocking, HTTPS and anti-tracking
Lightweight and fast

Q2. Difference between Web server and server.

Server -

Provides resources, data, services, programs to other computers(clients).
Supports multiple protocols like FTP, SMTP, etc
Handles various types of services like databases, files, etc
Used for applications much more advanced than web hosting
Supports multiple type of client server interaction

Web Server -

It is a specific type of server.
Stores processes and delivers web pages to other computers(clients).
Primarily supports protocols like http and https
Primarily handles and serves only static and dynamic web content
Used primarily for hosting websites
Supports interaction majorly with web clients and/or browsers

Q3. What is the difference between programming language and scripting language?

Scripting language :

They are used to create dynamic web applications.
Example -: Bash, Ruby, Python, JavaScript etc.
Do not create a .exe file.
Most of the scripting languages are interpreted languages.
It is less code intensive when compared with programming languages.

Programming languages :

Programming languages are used to write computer programs.
Example -: C++, Java, PHP High-level etc.
These generate .exe files.
Most of the programming languages are compiled languages.

Q4. Explain the working of DNS.

The full form of DNS is Domain Name System.

It translates domain names into IP addresses.

It is used by computers to identify websites.

It is like a phonebook or directory for websites and their IP addresses.

Working :

When we type a URL into the browser, the browser goes to the DNS server and obtains the IP address of that browser.

The DNS server tries to locate that website's IP address in its directory or contacts other DNS servers to find the IP.

Once the IP address is found it returns the value to the browser, which in turn loads the content of that website by converting the IP address of the website into the domain name again.

Q5. Explain the importance of URLs.

Identification: URLs uniquely identify resources on the internet.

Navigation: Enable users to access websites and web pages directly.

Organization: Help organize content in a structured and accessible way.

Searchability: Improve visibility in search engines for better discoverability.

Linking: Facilitate linking between related pages or resources.

Tracking: Enable analytics and monitoring of website traffic and user behavior.

Security: Can include protocols (e.g., HTTPS) ensuring safe communication

Q6. Explain TCP/IP 3 way handshake protocol.

The TCP/IP 3-way handshake is a process used to establish a reliable connection between a client and a server.

1. SYN (Synchronize):

The client sends a SYN (synchronize) packet to the server to initiate the connection, indicating the client's sequence number

2. SYN-ACK (Synchronize-Acknowledge):

The server responds with a SYN-ACK packet. It acknowledges the client's SYN request by sending an acknowledgment number and also includes its own sequence number to establish its side of the connection

3. ACK (Acknowledge):

The client sends an ACK packet to the server, confirming the server's sequence number. The connection is now established, and data transmission can begin.