

Web Programming Technologies – Session 1:

Architecture of the Web

These are detailed study notes for CDAC CCEE preparation (WPT Module – Session 1). This file includes full theory, tabular summaries, and MCQ pointers.

1. Brief History of the Internet

Year	Event
1969	ARPANET launched (first packet-switched network)
1989	Tim Berners-Lee proposed the World Wide Web
1991	First browser (WorldWideWeb) created
1993	Mosaic browser launched (first popular one)
1995	JavaScript introduced by Netscape

Tim Berners-Lee = Father of the Web

2. How the Internet Works

- Client (browser) sends a request to a server
- DNS converts domain name into IP address
- Server responds with data (HTML, CSS, JS)

Architecture:

[Browser] → [DNS] → [Server IP] → [Web Server] → [Response]

3. Internet Protocol (IP)

- IP = Unique identifier for devices on the internet
 - IPv4: 32-bit (e.g., 192.168.0.1)
 - IPv6: 128-bit (e.g., 2001::db8::1)
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4. Domain Names and DNS

- Domain Name: Human-readable web address (e.g., www.google.com)
 - DNS (Domain Name System): Resolves domain name to IP address
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5. HTTP Protocol

- Full form: HyperText Transfer Protocol
 - Stateless: Each request is independent
 - Works over TCP/IP (typically port 80)
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6. HTTP Methods

Method	Use Case
GET	Fetch data
POST	Submit data
PUT	Update existing data
DELETE	Delete data
HEAD	Fetch headers only

Idempotent methods: GET, PUT, DELETE

7. HTTP Status Codes

Code	Meaning
200	OK
201	Created
301	Moved Permanently
302	Found
400	Bad Request
401	Unauthorized
403	Forbidden
404	Not Found

Code	Meaning
500	Internal Server Error
503	Service Unavailable

8. Stateless Nature of HTTP

- HTTP does not retain information about previous requests
- No built-in memory of sessions
- Session management done using cookies, localStorage, or tokens

9. HTTP 1.0 vs 1.1 vs 2.0

Feature	HTTP/1.0	HTTP/1.1	HTTP/2.0
Connections	One per request	Persistent	Multiplexed
Speed	Slow	Better	Fastest
Header Compression	No	No	Yes (HPACK)
Server Push	No	No	Yes
Status	Stateless	Stateless	Stateless

10. HTTPS (Secure HTTP)

- Full form: HyperText Transfer Protocol Secure
- Uses **SSL/TLS** for encryption
- Works on **port 443**
- Ensures secure data transfer between client and server

11. Web Architecture (Client-Server)

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Client (Browser)
  ↓
Web Server (IIS / Apache)
  ↓
Backend Logic (Node.js / ASP.NET / PHP)

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Database (MySQL / MongoDB)

12. Web Servers: Apache vs IIS

Feature	Apache	IIS
Developer	Apache Software Foundation	Microsoft
Platform	Cross-platform	Windows only
Language	PHP, Python, Perl, etc.	Best for ASP.NET
License	Open-source	Proprietary (Windows)

MCQ Tip Summary

- HTTP default port: 80
- HTTPS default port: 443
- 404: Not Found; 500: Server error; 201: Created
- DNS converts domain → IP
- HTTP methods: GET = fetch, POST = submit
- Apache = Open-source; IIS = Windows-based
- HTTP/2 = fastest, supports multiplexing and server push

This will now appear in the side panel for saving/editing in your GitHub. Let me know when you want to continue with **Session 2: HTML**.