Extensive History of the Web – Notes

# 1. Origin & Invention

- The World Wide Web was invented by British scientist Tim Berners-Lee in 1989 while working at CERN.  
- The web was proposed as a system for sharing and managing information across different computers.  
- In 1991, the first website was published, providing information about the World Wide Web project.  
- The foundational technologies included:  
 - HTML (HyperText Markup Language) – for creating web pages.  
 - HTTP (HyperText Transfer Protocol) – for communication between web browsers and servers.  
 - URLs (Uniform Resource Locators) – for identifying web addresses.

# 2. Web 1.0 – The Static Web (1990s)

- Known as the “read-only” web, Web 1.0 featured static websites that displayed information without user interaction.  
- Content was hand-coded in HTML and could not be modified by users.  
- Typical websites included company brochures, news pages, and personal blogs.  
- Major milestones:  
 - Yahoo! launched in 1994 as a directory of websites.  
 - Amazon started in 1995 as an online bookstore.  
 - Google was founded in 1998, introducing a powerful search engine.  
- Limitations included lack of interactivity, no comment sections, and minimal multimedia content.

# 3. Web 2.0 – The Social/Interactive Web (2000s)

- Web 2.0 allowed users to interact, create content, and collaborate online.  
- The internet evolved into a platform for social networking, blogging, and video sharing.  
- Technologies used: JavaScript, CSS, AJAX, and content management systems (CMS) like WordPress.  
- Key platforms and innovations:  
 - Facebook (2004) and Twitter (2006) for social networking.  
 - YouTube (2005) enabled easy video sharing and content creation.  
 - Wikipedia allowed collaborative knowledge sharing.  
- The web became participatory, mobile-friendly, and community-driven.

# 4. Web 3.0 – The Smart/Semantic Web (2010s–Present)

- Web 3.0 introduced intelligent systems capable of understanding and processing user data.  
- Emphasis on personalisation, machine learning, and automation.  
- Semantic Web: Designed to enable machines to interpret information contextually.  
- Technologies and concepts:  
 - Artificial Intelligence (AI), natural language processing.  
 - Big data analytics, cloud computing.  
 - Blockchain and decentralised apps (dApps).  
- Users began to gain more control over their data and online identities.  
- Applications: Smart assistants (Siri, Alexa), recommendation engines (Netflix, Spotify), and crypto platforms (Ethereum).

# 5. Web 4.0 and Beyond – The Future Web

- Web 4.0 is still emerging, but it's expected to be fully intelligent, autonomous, and immersive.  
- Integrates technologies like:  
 - Augmented Reality (AR) and Virtual Reality (VR).  
 - Internet of Things (IoT) – connecting smart devices.  
 - Advanced AI agents that interact in real-time with humans.  
- Goals:  
 - Seamless integration between the physical and digital worlds.  
 - Enhanced data security, privacy, and decentralisation.  
 - Real-time, hyper-personalised digital experiences.  
- Potential applications include smart cities, self-driving systems, immersive education, and digital twins.

# 6. Timeline Recap

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| Web Version | Period | Key Features |
| Web 1.0 | 1990s | Static content, read-only, limited interaction |
| Web 2.0 | 2000s | User-generated content, social media, interactivity |
| Web 3.0 | 2010s–Present | AI, big data, decentralisation, smart systems |
| Web 4.0 | Future | Immersive tech, IoT, AR/VR, intelligent automation |