1. What is the Internet? Explain the importance of web technology. [2080 Baisakh QN. 1]

Ans. The **Internet** is a globally connected network system that links millions of computers and electronic devices worldwide. It facilitates communication and data services across private, public, business, academic, and government networks.

The importance of web technology is given below:

1. **Information Accessibility**:

Provides instant access to a wealth of information and knowledge from anywhere in the world. Facilitates educational resources and research.

1. **Communication**:

Emails, social media, messaging apps, and video calls enable instant communication.

Bridges geographical distances, allowing global collaboration.

1. **Economic Impact**:

Drives e-commerce, allowing businesses to reach global markets. Supports online services such as banking, shopping, and digital marketing.

1. **Innovation and Development**:

Fosters innovation in technology, education, and industry through collaboration and information sharing. Enables the development of new technologies like cloud computing, IoT, and AI.

1. **Social Interaction**:

Connects people through social media platforms, forums, and online communities. Enhances social engagement and cultural exchange.

1. What are the Internet and the web? Differentiate web1.0, web2.0, and web3.0. [2079 Bhadra QN. 1]

Ans. The Internet is a global network of interconnected computers and servers that use standardized protocols to facilitate the exchange of data and access to various online resources and services.

The web, or World Wide Web, is a vast information system of interlinked hypertext documents and multimedia content, which can be accessed over the Internet through web browsers, enabling users to navigate and interact with a diverse range of websites and online resources.

|  |  |  |  |
| --- | --- | --- | --- |
| Aspect | Web 1.0 | Web 2.0 | Web 3.0 |
| Communication | Broadcast | Interactive | Engaged / Invested |
| Information | Static / Read-only | Dynamic | Portable & Personal |
| Focus | Organization | Community | Individual |
| Personal | Home Pages | Blogs / Wikis | Livestreams |
| Content | Ownership | Sharing | Curation |
| Interaction | Web Forms | Web Applications | Smart Applications |
| Search | Directories | Keywords / Tags | Context / Relevance |
| Metrics | Page views | Cost Per Clicks | User Engagement |
| Advertising | Banners | Interactive | Behavioral |
| Research | Britannica Online | Wikipedia | The semantic web |
| Technologies | HTML / FTP | Flash / Java / XML | RDF / RDFS / OWL |

1. What are the Internet and the Web? Explain the importance of Web Technology. [2078 Bhadra QN.1]

Ans. *(Already answered)*

1. Explain how the Internet evolved. [2076 Chaitra QN. 1]

Ans. The Internet is a network of interconnected computers that is now global. The history is mentioned below:

 **1969**: **ARPANET**: The first message was sent over ARPANET, the precursor to the Internet.

** 1971**: **Email**: Ray Tomlinson sent the first email on ARPANET.

** 1983**: **TCP/IP Protocol**: ARPANET adopted TCP/IP, standardizing communication protocols for the Internet.

** 1984**: **DNS**: The Domain Name System (DNS) was introduced, replacing numerical IP addresses with human-readable domain names.

 **1989**: **World Wide Web Proposal**: Tim Berners-Lee proposed the concept of the World Wide Web.

 **1990**: **First Website**: Tim Berners-Lee launched the first website at CERN.

 **1991**: **Public Access**: The World Wide Web became publicly accessible.

 **1993**: **Mosaic Browser**: The release of the Mosaic web browser made the web more accessible to the general public.

 **1994**: **Netscape Navigator**: Netscape released the Navigator browser, which became highly popular.

 **1995**: **Commercialization**: The Internet was fully commercialized; major online services like Amazon and eBay were launched.

 **1998**: **Google Founded**: Google was founded, revolutionizing web search.

 **2004**:**Web 2.0**: The term "Web 2.0" gained popularity, emphasizing user-generated content, social networking, and interactivity.

**Facebook Launched**: Facebook was launched, becoming a leading social networking platform.

1. Differentiate between the Internet and WWW. Explain the client-server computing paradigm and provide its importance. [2074 Chaitra QN.1]

Ans. Difference between Internet and WWW is given below:

|  |  |  |
| --- | --- | --- |
| Aspect | Internet | World Wide Web (WEB) |
| Definition | A global network of interconnected computers and servers. | A system of interlinked hypertext documents and multimedia accessed via the Internet. |
| Function | Facilitates data exchange, communication, and connectivity among devices. | Enables access to web pages and web applications through browsers. |
| Components | Hardware (servers, routers, devices), software (protocols). | |  | | --- | |  |  |  | | --- | | Websites, web pages, web browsers, and web servers. | |
| Protocols | Uses TCP/IP as its core protocol. | Primarily uses HTTP/HTTPS as its protocol. |
| Scope | |  | | --- | |  |  |  | | --- | | Includes all online activities (email, file transfer, online gaming, etc.). | | Specifically related to accessing and interacting with websites. |
| Inventors | Developed by multiple researchers and organizations, notably ARPANET by the U.S. Department of Defense. | Invented by Tim Berners-Lee in 1989. |
| Usage | Provides the infrastructure for the web, email, VoIP, and other services. | Enables browsing, sharing, and interaction with web content. |
| Nature | A hardware and software infrastructure. | An information-sharing model built on top of the Internet. |
| First Use | Operational since the late 1960s. | Introduced to the public in 1991. |
| Examples | Email services, FTP, Telnet, online gaming. | Websites like Wikipedia, Google, Facebook. |

The client-server computing paradigm is a distributed application structure that partitions tasks or workloads between two main entities: clients and servers. Clients request services or resources, and servers provide those services or resources.

Process**:**

1. Request: A client sends a request to a server over a network (e.g., a web browser requesting a web page).
2. Processing: The server processes the request, which may involve retrieving data, running calculations, or accessing other resources.
3. Response: The server sends the requested data or service back to the client, which then processes and displays the response.

Importance:

1. **Centralized Resources**:

Efficient resource management by centralizing data storage, processing power, and application services. Easier to manage and maintain data consistency and security.

1. **Scalability**:

Servers can be upgraded or added to handle increased loads without requiring changes to clients. Load balancing can be used to distribute requests across multiple servers.

1. **Security**:

Centralized control of data and resources enhances security. Easier to implement access controls, data encryption, and regular security updates.

1. **Maintenance and Updates:**

Simplifies maintenance and updates as changes are made on the server side without affecting the clients. Ensures all clients benefit from the latest features and security patches.

1. **Resource Sharing:**

Multiple clients can access and share the same server resources, reducing redundancy and costs. Promotes efficient use of hardware and software resources.