JavaScript: Introduction to Browser & web

1. Write a blog on Difference between HTTP1.1 vs HTTP2

HTTP, or Hypertext Transfer Protocol, is a fundamental protocol that underpins data communication on the World Wide Web. It serves as the foundation for exchanging information between web servers and clients, enabling the retrieval and display of web content such as text, images, and multimedia.

The major difference between HTTP1.1 and HTTP2 given below:

HTTP/1.1	HTTP/2
It works on the textual format.	It works on the binary protocol.
There is head of line blocking that blocks all the requests behind it until it does not get its all resources.	It allows multiplexing so one TCP connection is required for multiple requests.
It uses requests resource Inlining for use getting multiple pages	It uses PUSH frame by server that collects all multiple pages
It compresses data by itself.	It uses HPACK for data compression.

2.Write a blog about objects and its internal representation in JavaScript

In JavaScript, objects are a fundamental data type that allows developers to structure and organize data using key-value pairs. Objects can represent real-world entities, and they are central to the language's flexibility and expressiveness. Objects are internally represented in JavaScript as explained below.

Internal Representation:

Internally, JavaScript engines use various data structures to represent objects efficiently. While the exact implementation details may vary between engines, the following aspects are common:

1. **Property Descriptor:** Each property in an object is associated with a property descriptor, which contains information about the property, such as whether it is writable, enumerable, and configurable.
2. **Hidden Classes (V8 Engine):** Some JavaScript engines, like V8 (used in Chrome and Node.js), utilize a concept called hidden classes to optimize object property access. Objects that share the same structure and order of properties can be optimized to use the same hidden class, improving performance.
3. **Prototype Chain:** Objects in JavaScript form a prototype chain, where an object can inherit properties and methods from another object known as its prototype. This chain allows for a form of inheritance and is crucial for the language's object-oriented features.
4. **Hash Tables:** Property names are often hashed for quick access. This helps JavaScript engines efficiently locate properties within an object by mapping the property names to specific memory locations.

IP Address:-
An IP address, or Internet Protocol address, is a numerical label assigned to each device participating in a computer network that uses the Internet Protocol for communication. IP addresses serve two primary functions: host or network interface identification and location addressing.

Types of IP Addresses:

1.IPv4 (Internet Protocol version 4):
Consists of 32 bits, typically represented as four decimal numbers separated by periods (e.g., 192.168.0.1).

IPv4 addresses are the most widely used and were the original standard for IP addresses.

2.IPv6 (Internet Protocol version 6):
Consists of 128 bits, often represented as eight groups of hexadecimal digits separated by colons (e.g., 2001:0db8:85a3:0000:0000:8a2e:0370:7334).

IPv6 addresses were introduced to address the limitations of IPv4 and provide a vastly expanded address space.

Port: -
Ports are essential for managing data flow and enabling communication between different applications or services within a computer system or across a network. Ports play a crucial role in facilitating communication between different processes and services on computers and across networks.

HTTP Methods: -
HTTP (Hypertext Transfer Protocol) defines a set of request methods or "HTTP methods" that indicate the desired action to be performed for a given resource. Each HTTP request typically includes a method, which specifies how the server should process the request. Here are some of the common HTTP methods:

1.GET:

The GET method is used to request data from a specified resource. It retrieves information without altering the state of the server or the resource. GET requests should only retrieve data and should not have side effects.

2.POST:

The POST method is used to submit data to be processed to a specified resource. It is often used when uploading a file or submitting a form. Unlike GET, POST requests can have side effects on the server or resource.

3.PUT:

The PUT method is used to update a resource or create a new resource if it does not exist. It replaces the entire resource with the data provided in the request.

4.DELETE:

The DELETE method is used to request the removal of a resource. It deletes the specified resource on the server.

5.PATCH:

The PATCH method is used to apply partial modifications to a resource. It is typically used when you want to update part of a resource without affecting the entire content.

6.HEAD:

The HEAD method is similar to GET but is used to request the headers of a resource without the actual data. It is often used to check for the existence of a resource or retrieve metadata.

7.OPTIONS:

The OPTIONS method is used to describe the communication options for the target resource. It allows the client to determine the communication options before sending a request.

8.TRACE:

The TRACE method is used to perform a message loop-back test along the path to the target resource. It is mainly used for diagnostic purposes.

9.CONNECT:

The CONNECT method is used to establish a network connection to a resource, typically to set up a secure tunnel for encrypted communication (e.g., SSL/TLS).

These HTTP methods provide a standardized way for clients to interact with web servers and perform various operations on resources. The appropriate use of these methods is crucial for designing RESful APIs and ensuring the security and integrity of web applications.

MAC Address: - A MAC address, or Media Access Control address, is a unique identifier assigned to a network interface card (NIC) for communication on a physical network. It is a hardware address that is permanently or semi-permanently embedded in the network interface during manufacturing. MAC addresses are essential for the functioning of local area networks (LANs) and are primarily associated with the Data Link Layer (Layer 2) of the OSI model.