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**ZEN-CLASS FSD TASK-1**

1. Difference between HTTP1.1 vs HTTP2

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| **Feature** | **HTTP/1.1** | **HTTP/2** |
| Multiplexing | Each request/response on a separate connection, leading to potential latency and overhead issues. | Introduces multiplexing, allowing multiple requests and responses to be sent and received on the same connection simultaneously, reducing latency and overhead. |
| Header Compression | Headers sent in plain text, consuming significant bandwidth. | Employs header compression, reducing overhead and conserving bandwidth by compressing headers before transmission. |
| Server Push | Clients must explicitly request resources, limiting server's ability to proactively push resources. | Introduces server push, allowing servers to proactively send resources to clients before they are requested, reducing round trips and improving page load times. |
| Binary Protocol | Uses plain text for communication, human-readable but less efficient for machines. | Adopts a binary protocol, improving parsing efficiency by machines and reducing overhead associated with textual protocols. |

2. IP address, port, http methods, MAC address

* **IP Address:**

An IP address(Logical address) is a unique identifier assigned to each device on a network. It enables communication between devices by providing a means of addressing and locating them within the network.

* **Port:**

Ports are logical endpoints for communication within a device. They differentiate between different services or processes running on a device, allowing multiple applications to operate simultaneously.

* **HTTP Methods:**

HTTP methods, or verbs, define the actions a client can perform on a web server. Common methods include GET (retrieve data), POST (submit data), PUT (update data), DELETE (remove data), and more.

GET: Requests data from a specified resource.

POST: Submits data to be processed to a specified resource.

PUT: Updates a specified resource with the provided data.

DELETE: Deletes a specified resource.

PATCH: Partially modifies a specified resource.

HEAD: Requests the headers of a specified resource without the actual data.

* **MAC Address:**

A MAC address is a unique identifier assigned to a network interface. It ensures that data packets are delivered to the correct device within a local network segment, regardless of IP changes.

3. objects and its internal representation in Javascript

JavaScript's objects are the backbone of dynamic web development, shaping both the Document Object Model (DOM) and the Cascading Style Sheets Object Model (CSSOM). Let's explore their roles and internal representation succinctly:

**Understanding Objects:**

Objects in JavaScript are collections of key-value pairs, offering flexibility in data manipulation.

They are dynamic, allowing properties to be added, modified, or deleted at runtime.

**DOM: Structuring Web Pages(Document Object Model)**

The DOM represents HTML documents as a tree of objects.

Each element, attribute, and text node in the document is represented by a corresponding object in the DOM.

**CSSOM: Styling Web Elements(CASECADE STYLE SHEET OBJECT MODEL)**

The CSSOM complements the DOM by representing applied styles.

It provides access to style rules and properties, allowing manipulation of element styles via JavaScript.

**Interaction with JavaScript:**

JavaScript interacts with the DOM and CSSOM to dynamically manipulate web content and styles.

It can create, modify, and remove DOM elements, as well as modify CSS rules and properties.