**GUVI TASK 1**

1. Difference between https1.1 &2

* In HTTP/1.1, each resource (e.g., HTML file, CSS file, image) typically required a separate connection to the server. This led to a high overhead in establishing and maintaining connections, which resulted in increased latency and slowed down the loading of web pages, especially for complex pages with many resources.
* With HTTP/2's multiplexing, all requests and responses can share a single connection. This means that multiple resources can be transferred in parallel, reducing latency and improving the overall speed of web page loading. It allows for a much more efficient use of network resources and significantly enhances the user experience when browsing the web.
* Multiplexing:
* HTTP/1.1: In HTTP/1.1, each request and response typically requires a separate connection,if a webpage has multiple resources (such as images, scripts, and stylesheets), multiple connections must be established, leading to increased latency and overhead.
* HTTP/2: HTTP/2 supports multiplexing, which allows multiple requests and responses to be sent and received over a single connection simultaneously. This significantly reduces latency and improves efficiency, especially for complex web pages with many resources.
* Server Push:
* HTTP/1.1: HTTP/1.1 does not support server push. The server can only respond to client requests.
* HTTP/2: HTTP/2 introduces server push, which allows the server to proactively send resources to the client before they are requested. This can further reduce page load times by anticipating the client's needs.
* Binary Protocol:
* HTTP/1.1: HTTP/1.1 uses a text-based protocol, which can be human-readable but less efficient in terms of parsing and processing.
* HTTP/2: HTTP/2 uses a binary protocol, which is more efficient for machines to parse and process, reducing overhead.
* Upgrade Mechanism:
* HTTP/1.1: HTTP/1.1 requires a new connection to be established if you want to switch to a secure version (HTTPS), adding some latency.
* HTTP/2: HTTP/2 is designed to work seamlessly with HTTPS from the beginning, making it easier to use encryption and improving security.

HTTP/2 is designed to overcome some of the limitations and performance issues associated with HTTP/1.1, resulting in faster and more efficient web communication.

Increased security: HTTP/2 is supported through encrypted connection.

1. objects and its internal representation in Javascript
2. Objects, in JavaScript, are the most important data type and form the building blocks for modern JavaScript.
3. objects in JavaScript may be defined as an unordered collection of related data, of primitive or reference types, in the form of “key: value” pairs.
4. An object can be created with figure brackets {…} with an optional list of properties. A property is a “key: value” pair, where a key is a string (also called a “property name”), and the value can be anything.
5. objectName.propertyName
6. eg: let bike = {name: 'SuperSport', maker:'Ducati', engine:'937cc'}
7. MAC address

A MAC (Media Access Control) address, sometimes referred to as a hardware or physical address, is a unique, 12-character alphanumeric attribute that is used to identify individual electronic devices on a network. MAC Addresses are unique 48-bit hardware number of a computer, that is embedded into a network card (known as a Network Interface Card during manufacturing. The MAC Address is also known as the Physical Address of a network device. In IEEE 802 standard, the data link layer is divided into two sublayers:

Logical Link Control (LLC) Sublayer

Media Access Control (MAC) Sublayer

A MAC address is mostly used to configure a router for a network device or during troubleshooting. The address of our computer device can be easily checked with any operating device. All the Apple devices connected to our home network contain a unique MAC address. Command for MAC address in MacOS is TCP/IP control panel.

HTTP methods:

|  |  |  |  |
| --- | --- | --- | --- |
| POST | Create | 201 (Created), | 404 (Not Found), 409 (Conflict) |
| GET | Read | 200 (OK), | 200 (OK) single customer |
| PUT | Update/Replace | 405 | 200 (OK) |
| PATCH | Update/Modify | 405 | 200 (OK) or 204 (No Content) |
| DELETE | Delete |  |  |

**IP address** and Port

IP address is the address of the **layer-3 IP protocol**.  **It** is a logical **32-bit** address which is used to determine the destination of a data packet (datagram).**The IP address** identifies the source and destination networks which allow the datagram to flow accordingly in the specified route.

**Ports** are represented by **16-bit numbers**. Hence ports range from **0-65,525.** The port numbers from **0 -1023** are restricted because they are reserved for the use of well-known protocol services such as**HTTP and**[FTP](https://ipwithease.com/ftp-file-transfer-protocol/). In a network, the endpoint, which two hosts communicate with each other are identified as ports.