

# Task 1

## Difference between HTTP 1.1 vs HTTP 2

### HTTP 1.1

- Top-level application protocol that exchanges information between client computer and local web server.
- Client sends a text based request using methods such as GET or POST.
- For example: If a user searches for "[www.example.com](http://www.example.com)" then, it is requested using the GET method on the web server and it returns the HTML page of example.com from the web server. The request and response will go back and forth between client and web server until all the resources of the request is seen in the web page.
- It does not use binary framing layer.

### HTTP 2

- It is developed with the intention of reducing the webpage load latency by using complexon, multiplexing and prioritization.
- It uses binary framing layer. Binary framing layer encapsulates all messages in binary format.
- An application level API would still create messages in conventional HTTP formats, but the underlying layer would then convert these messages into binary.

## HTTP version history

- WWW - World Wide Web - 1989 - consists of HTML,HTTP and server httpd.
- HTTP 0.9 - simple request consist of a single line and using GET method get response. The response consists of an HTML file and it's extras. But no other type other than HTML can be received here.
- HTTP 1.0 - status code line is introduced here so that browser itself will understand success and failure of the request and adapt its behaviour according to that.
- HTTP 1.1 - connection can be reused so that it saves the time to while reopen to display, pipelining is added here so that second request is sent even efore first response is fully transmitted so that it lowers the latency of communication, cache control mechanisms are added.
- HTTP 2 - introduced binary protocol rather than text, improved optimization techniques, parallel requests can be handled over same connection compresses headers so that it removes duplication and overhead of data transmitted, server push - allows server to populate data in a clent cache.

# **Difference between Browser JS and Node JS**

## **Browser JS**

- JS is a programming language. It runs in any web browser with a proper browser engine.
- Mainly used in the client side for providing dynamic changes to a webpage or for refreshing the page at a certain interval without refreshing the page.
- Javascript runs in any engine such as Spidermonkey(firefox), JavaScript core(Safari), V8(Google chrome).
- Javascript is normally following java programming language standards.
- Accessing a non-blocking OS task in JS is done using a specific object for a specific browser.

## **Node JS**

- It is an interpreter and environment for javascript with some specific useful libraries. Which javascript can be used separately.
- Mainly used for accessing and performing any non-blocking operation of any OS. accessing any hardware information or running any backend job.
- Node JS only runs in V8 engine in google chrome.
- Node JS is written in C++ and provides a V8 engine base browser which helps us to run written Js in any browser environment.
- Node JS has utility to run some non-blocking tasks of any javascript programming It does not need any specific object to run these tasks.

## **What happens when you type a URL in the address bar in the browser?**

1. Enter the URL in the browser.
2. Browser looks up IP address for the domain name using DNS(Domain Name System).
3. The Browser sends HTTP requests to the server.
4. Server sends back HTTP response.
5. Browser engine begins rendering the HTML.
6. Browser sends request for additional objects embedded in HTML(images, CSS and JS)
7. Repeat steps 3-6 again and again until all behaviour and properties are loaded.
8. Once everything is loaded, the browser sends further async requests as needed.