Task 01

1. Difference between HTTP1.1 and HTTP2.0?

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| --- | --- |
| HTTP1.1 | HTTP2.0 |
| It used to allow only one request per TCP connection. | With Http2.0 we can have multiple requests at a time over single TCP connection. |
| Latency issue was there | Latency issue was resolved in HTTP2.0 thus improving the performance of the webpage. |

1. Http Version History?

* **HTTP/0.9**

It is the initial version of http. It was extremely simple and request would consist of only single line with only GET method and the path of the requested document. The response is a single hypertext document—no headers or any other metadata, just the HTML.

* **HTTP/1.0**

HTTP/0.9 was very limited, So Http 2.0 came in to existence. A status code line is also sent at the beginning of the response. The notion of HTTP headers has been introduced, both for the requests and the responses, allowing metadata to be transmitted and making the protocol extremely flexible and extensible.

With the help of the new HTTP headers, the ability to transmit other documents than plain HTML files has been added

* **HTTP/1.1**

To standardize the Http protocols, the first standardized HTTP, the HTTP/1.1 was released. It came with numerous improvements where

Pipelining was added allowing to send second request before answer for the first one fully transmitted.

Chunked response was supported, Additional cache control mechanisms was introduced,.

Request for HTML file, with encoding, charset, and cookie metadata was introduced.

Due to the Host header, the ability to host different domains at the same IP address was possible which allowed server colocation.

* **HTTP/2.0**

Web pages have become much more complex, The amount of visual media displayed, the volume and size of scripts adding interactivity, has also increased, much more data is transmitted over significantly more HTTP requests. Users are demanding near real-time responsiveness and protocol performance from HTTP/1.1, which it simply cannot meet without some modifications. To meet these new challenges HTTP/2 was introduced

Multiplexed protocol was introduced to handle parallel request over the same connection.

It compresses headers to removes duplication and overhead of data transmitted.

The primary focus of HTTP/2 is on improving transport performance and enabling both lower latency and higher throughput.

1. List 5 difference between Browser JS(console) vs Nodejs?

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| --- | --- |
| Browser JS(console) | Node Js |
| Browser Js is Sandboxed(merge) | Nodejs is stripped(standalone) |
| Javascript file in Broswser Js can only be run in the browser. | Javascript file with node.js can be run outside of the browser. |
| It has capability to add HTMl tags and interact with DOM | Node js don’t have that capability to interact with Html tags |
| Browser Js you don’t get to choose browser environment. | Node.js you control the environment. |
| It runs in Front end | It runs in back end |

1. What happens when you type a URL in the address bar in the browser?

* You type [www.example.com](http://www.example.com) into the address bar of your browser.
* Browser checks cache for DNS entry to find the corresponding IP address of website.

It looks for following cache. If not found in one, then continues checking to the next until found.

Browser Cache

Operating Systems Cache

Router Cache

ISP Cache

* If not found in cache, ISP’s (Internet Service Provider) DNS server initiates a DNS query to find IP address of server that hosts the domain name.

The responsibility is given to DNS recursor to find IP address. The DNS recursor will contact the root name server.

The root name server will redirect it to the .com domain name server.

.com domain name server will redirect it to the example.com name server.

The example.com name server will find the matching IP address for www.example.com in its’ DNS records and return it to your DNS recursor, which will send it back to your browser.

The requests are sent using small data packets that contain information content of request and IP address it is destined for.

* Browser initiates a TCP (Transfer Control Protocol) connection with the server using synchronizes (SYN) and acknowledges (ACK) messages.
* Browser sends an HTTP request to the web server. GET or POST request.
* Server on the host computer handles that request and sends back a response. It assembles a response in some format like JSON, XML and HTML.
* Server sends out an HTTP response along with the status of response.

1xx indicates an informational message only

2xx indicates success message

3xx redirects to another URL

4xx indicates an error on the client’s part

5xx indicates an error on the server’s part

* Browser displays HTML content and sends request for additional elements on webpage such as images, CSS, Stylesheet, JavaScript files.
* Finally [www.example.com](http://www.example.com) appear in our browser.