**TASK 1**

**Q1) Difference between HTTP1.1 Vs HTTP2?**

**HTTP1.1**

1. The concept of headers both for requests as well as responses was introduced .
2. In earlier versions such headers like GET/POST/HEAD which added extend flexibility are not possible with earlier version .
3. As TCP connection it allowed single request .
4. Other than HTML, the content type header made it possible to send files, including scripts and media.

**HTTP2**

1. The concept of server push is introduced by HTTP2
2. The server push helps the server to anticipated the resources that will be required for client and pushes them prior to client making requests.
3. It introduces concept of multiplexing which interleaves the requests and responses with out head-of-line blocking and does to over a single TCP connection.
4. In HTTP2. It is a binary protocol that is only 0’s and 1’s are transmitted over the wire .
5. The data or header greatly increases efficiency in terms of securely, multiplexing.

**Q2) HTTP Version history?**

**History of http**

The term hypertext was coined by ted nelson in 1965 in the xanadu project which was in turn inspired by vannevre's bush 1930s vision of the microfilm-based information retrieval and management “MEMEX” system described in his 1945 essay “AS WE MAY THINK “TIM BERNERS LEE” and his team at CERN are credited with inventing the original HTTP, along with HTML and the associated technology for a web server and a text-based web browser. Later Berners-Lee first proposed the "World Wide Web" project in 1989—now known as the WORLD WIDE WEB The first version of the protocol had only one method, namely GET, which would request a page from a server. The response from the server was always an HTML page.

The first documented version of HTTP was HTTP V0.9 (1991). Dave Raggett led the HTTP Working Group (HTTP WG) in 1995 and wanted to expand the protocol with extended operations, extended negotiation, richer meta-information, tied with a security protocol which became more efficient by adding additional methods and Header feilds. RFC 1945 officially introduced and recognized HTTP V1.0 in 1996.

The HTTP WG planned to publish new standards in December 1995 and the support for pre-standard HTTP/1.1 based on the then developing RFC 2068 (called HTTP-NG) was rapidly adopted by the major browser developers in early 1996. End-user adoption of the new browsers was rapid. In March 1996, one web hosting company reported that over 40% of browsers in use on the Internet were HTTP 1.1 compliant. That same web hosting company reported that by June 1996, 65% of all browsers accessing their servers were HTTP/1.1 compliant. The HTTP/1.1 standard as defined in RFC 2068 was officially released in January 1997. Improvements and updates to the HTTP/1.1 standard were released under RFC 2616 in June 1999.

In 2007, the HTTP working group was formed, in part, to revise and clarify the HTTP/1.1 specification. In June 2014, the WG released an updated six-part specification obsoleting RFC 2616:

* RFC 7230, HTTP/1.1: Message Syntax and Routing
* RFC 7231,  HTTP/1.1: Semantics and Content
* RFC 7232, HTTP/1.1: Conditional Requests
* RFC 7233, HTTP/1.1: Range Requests
* RFC 7234, HTTP/1.1: Caching
* RFC 7235, HTTP/1.1: Authentication

**Q3) List 5 differences between browser JS (Console) vs Node JS?**

**Difference between Java script and Node Js**

| S.No | Java script | Node JS |
| --- | --- | --- |
| 1. | Java script is a programming language that is used for writing scripts on the website. | Node JS is a Java script runtime environment. |
| 2. | Java script can only be run in the browsers. | Node JS code can be run outside the browser. |
| 3. | It is basically used on the client-side. | It is mostly used on the server-side. |
| 4. | Java script is capable enough to add HTML and play with the DOM. | Node Js does not have capability to add HTML tags. |
| 5. | Java script can run in any browser engine as like JS core in safari and Spider monkey in Firefox. | Node Js can only run in V8 engine of google chrome. |
| 6. | Java script is used in frontend development. | Node Js is used in server-side development. |
| 7. | Some of the java script frameworks are RamdaJS,  Typed JS, etc. | Some of the Node Js modules are Lodash, express etc. These modules are to be imported from npm. |
| 8. | It is the upgraded version of ECMA script that uses Chrome’s | Node Js is written in C, C++ and Java script. |

**Q4) What happens when you type a URL in the address bar in the browser?**

**Steps for what happens when we enter a URL :**

1. 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
2. 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.
3. Browser initiates a TCP (transfer control protocol) connection with the server using synchronize(SYN) and acknowledge(ACK) messages.
4. Browser sends and HTTP request to the web server. GET or POST request.
5. The 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.
6. Later Server sends out an HTTP response along with the status of response.
7. Browser displays HTML content.
8. Finally, Done.

**SHORT NOTES:**

1. You enter a URL into a web browser
2. The browser looks up the IP address for the domain name via DNS
3. The browser sends a HTTP request to the server
4. The server sends back a HTTP response
5. The browser begins rendering the HTML
6. The browser sends requests for additional objects embedded in HTML (images, CSS, JavaScript) and repeats steps 3-5.
7. Once the page is loaded, the browser sends further async requests as needed.