**HTTP VERSION HISTORY:**

Http stands for Hyper Text Transfer Protocol which is the underlying protocol for worldwideweb. It is developed by Tim Berners-Lee and his team between 1989-1991.HTTP has many changes in it in order to get simplified and achieve flexibility. In initial phases it is very simple later changed to HTTP/0.9 also known as one-line protocol.

**HTTP/0.9-The-one-line-protocol**:  
In initial stages http has no version number later it is named as http/0.9 as to differentiate from previous versions. It is very simple and has only GET methods followed by the path of the resource (not the URL as both the protocol, server and port are unnecessary. once connected to the server).  
Get/mypage.html  
And the response is  
<Html>  
A very simple html page  
<\HTMl>  
There were no http headers like only html files could be transmitted but no other types of documents. If any problem occurs only a html page with description appears for human consumption.

**HTTP/1.0-Building extensibility**

It has provided with header fields including rich metadata about both request and response(HTTP version number, status code and content type).It is browser friendly protocol. Other than plain HTML files Content-type header provided ability to transmit files like stylesheets, media etc. Methods supported: GET HEAD, POST. Terminated immediately after the response in nature of connection.

**HTTP/1.1-The standardized protocol**

This version is in common use currently.  
It has introduced critical performance optimizations and feature enhancements-persistant and pipelines connections, chunked transfers, compression/decompression, content negotiations, virtual hosting, faster response and great bandwidth savings by adding cache support.  
It supports GET, HEAD, POST,PUT,DELETE,TRACE,OPTIONS.  
It has a long lived nature of connection.

**HTTP/2-A protocol for greater performance.**

Due to the increase of complexity in web pages and applications ,much data need to be transmitted over the http requests. HTTP/1.1 connections need requests in the sequence order.Theoretically, several parallel connections need to be used brings considerable overhead and complexity. In first half of 2010's,google  demonstrated an alternative way of exchanging data between client and server,by implementating an experimental protocol SPDY.Defining an increase in responsiveness and solving the problem of duplication of data transmitted ,SPDY served as the foundation of the HTTP/2 protocol.

**Difference between HTTP1.1 vs HTTP2**

1)HTTP/2 is an improved version of http/1.1 in a number of ways which allows speedier content delivery and improved user experience, including  
Binary protocols-Binary protocols consume less bandwidth, are more efficiently parsed and are less error-prone than the textual protocols used by HTTP/1.1.Additionally,they can better handle elements such as whitespace, capitalization and line endings.

2) Multiplexing-HTTP/2 is a multiplexed protocol as it initiates multiple requests in parallel over a single TCP connection. As a result. web pages containing several elements are delivered over one TCP connection. These capabilities solve head-of-line blocking problem in HTTP/1.1.in which a packet at the front of the line blocks others from being transmitted.

3) Header compression: HTTP/2 uses header compression to reduce the overhead caused by TCP's slow-start mechanism.

4)Server-push-HTTP/2 servers push likely to be used resources into a browser's cache, even before they are requested. This allows browsers to display content without additional request cycles.  
Increased security: web browsers only support HTTP/2 via encrypted connections, increasing user application security.

**List 5 differences between Browser JS vs Node Js.**

|  |  |
| --- | --- |
| **Javascript** | **Nodejs** |
| 1.Javascript is a high level programming  language that is used for writing scripts for the website.    2.Javascript can run only in the browsers.  3.It is client side scripting language.  4.javascript can run in any browser engine as like JS core in safari and spider monkey in firefox.  5.Javascript is used in frontend development . | 1.Nodejs is a cross platform and open source javascript runtime environment that allows the javascript to be run one server side.  2.Nodejs allows js code to run outside the browser.  3.It is mostly used on the server side.  4.nodejs can only run in vi engine of google chrome.  5.nodejs is used in server side development. |

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

What happen when you type a url in the address bar in the browser.  
When you type a url in the address bar of our browser.

Firstly the browser checks the cache for DNS record to find the corresponding IP address of our URL. Here every single URL on the internet has a unique IP address assigned to it. The IP address belongs to the computer which hosts the server of the website we are requesting to access.  
To find DNS record, the browser checks four caches.  
First it checks for the browser cache. The browser maintains a repository of DNS records for a fixed duration of websites you have previously visited. So it is the first place to run a DNS query.

Second the browser checks for OS cache. If it is not present in the OS, the browser makes  a system call to your underlying computer OS which also maintains a cache of DNS records to fetch the record.

Third it checks the router cache. It is not on the computer .The browser makes request for router cache which also maintains its own cache of DNS records.

Fourth, it checks the ISP cache. ISP maintains it's own DNS server, which includes a cache of DNS records.  
If the requested URL is not in the cache, ISP's DNS server initiates a DNS query to find the IP address of the server that hosts our URL. The purpose of a DNS query is to search multiple DNS servers on the internet until it finds correct IP addresses by using recursive search methods.  
The browser initiates a tcp connection with the server.  
Once the browser receives the correct ip address, it builds a connection between the server that matches the Ip address to transfer information. Once the TCP connection established,it is time to start transferring data as the browser will send a GET request asking for a url web page. If you entering  credentials or submitting a form,this could be a POST request. Then the server handles the requests and sends back a response with response handler to read and generate a response. The server sends out an HTTP response. The browser displays the HTML content  such as HTMl responses .Thats it!