HTTP/1.1 & HTTP/2

Chaitanya harsha
B22 WD

HTTP/1.1

The HTTP/1.1 is developed by Tim Berners-Lee (Timothy Berners-Lee) in 1989 as a communication standard for the World Wide Web. The first usable version of HTTP/1.1 is created in 1997. The delay was because it went through several stages of development. The HTTP/1.1 is still used on the web. Tim Berners-Lee is the founder of WWW (World Wide Web). HTTP stands for Hypertext transfer protocol.

HTTP is basically an application protocol which acts as the bridge between the client computer and remote web server. That is HTTP helps to transfer the information between the client computer and web server. Here the communication happens like the user or the client computer asks or requests something through either the GET method or POST method. So the web server replies with something like an HTML page back to the client computer where all the content requested by the user will be there. The major problem in HTTP/1.1 is it loads the resources one after another. So, if one resource cannot be loaded, it blocks all the other resources behind it. Header compression is used by HTTP/1.1 to speed up the web performance as small files loads faster than the larger files.

HTTP/2

In 2015, a new version of HTTP was created and it is called HTTP/2. The creators of HTTP/1.1 was not ambitious about the protocol. Their primary aim was to create a protocol which helps to create a communication between client and web server. So HTTP/2 is way faster and more efficient than HTTP/1.1. One way the HTTP/2 is faster is in how it prioritizes the content during the loading process. Prioritization basically means how much priority or in what order the priority should be given to the contents in the web page requested by the user. If the user loads the page, the elements in the header will be getting more priority than the elements in the footer. This helps to render the web page smoothly. HTTP/2 allows developers to decide which page resources should load first every time, and this feature is called weighted prioritization. HTTP/2 is able to use a single TCP connection to send multiple streams of data at once so that no resource block any other resources

behind it. It is done by splitting the data into binary code messages and numbering it so that the client computer or browser knows how to arrange the binary messages properly. Here HTTP/2 supports server push, which basically means the server pushes the content to the client before the client asks for it. The server also sends a message where what are the contents pushed by the server and what contents available in the local machine which the user or client can expect. HTTP/2 uses an advanced compression method called HPACK that eliminates unwanted information from HTTP header packets. So this will helps to load the web pages faster than HTTP/1.1 even though it had header compression.

HTTP/1.1 vs HTTP/2

HTTP/1.1	HTTP/2
Slower compared to HTTP/2.	Faster.
Relies on TCP/IP connection.	Relies on TCP/IP connection.
Loads resources one after another.	Loads resources parallelly.
Server push is not available.	Server push is available.
Basic Header compression.	Advanced Header compression.
The Default Communication method is GET.	No default communication method.

HISTORY OF HTTP

HTTP/0.9

Year of release 1991

It is extremely simple requests consist of a single line and start with the only possible method GET followed by the path to the resource.

There were no status or error messages.

HTTP/1.0

Year of release is 1996

Version information is now sent within each request.

A status code is also sent at the beginning of the response.

The HTTP headers has been introduced.

The transfer of other documents than plain HTML files has been added.

HTTP/1.1

Year of release is 1997

A connection can be reused.

Pipelining has been added, allowing to send a second request before the answer for the first one is fully transmitted.

Cache control mechanism have been introduced.

HTTP/2

Year of release is 2015

It is a binary protocol rather than text.

It is a multiplexed protocol. Parallel requests can be handled over the same connection, removing the order and blocking issues of the HTTTP/1.1 protocol.

It compresses headers. As these are often similar among a set of requests, this removes duplication and overhead of data transmitted.

Difference between Browser JS(console) vs Nodejs

In browser "window" is a predefined global object which has functions and attributes, where as Nodejs doesn't have it.

In browser "location" is another predefined object, where as Nodejs doesn't have it.

In browser "require" is not predefined object, where as Nodejs has it.

In browser module is not required, where as in Nodejs you have to keep your code inside the module.

In browser "document" is a predefined object, where as Nodejs doesn't have it.

What Happens When You Type in a URL

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.