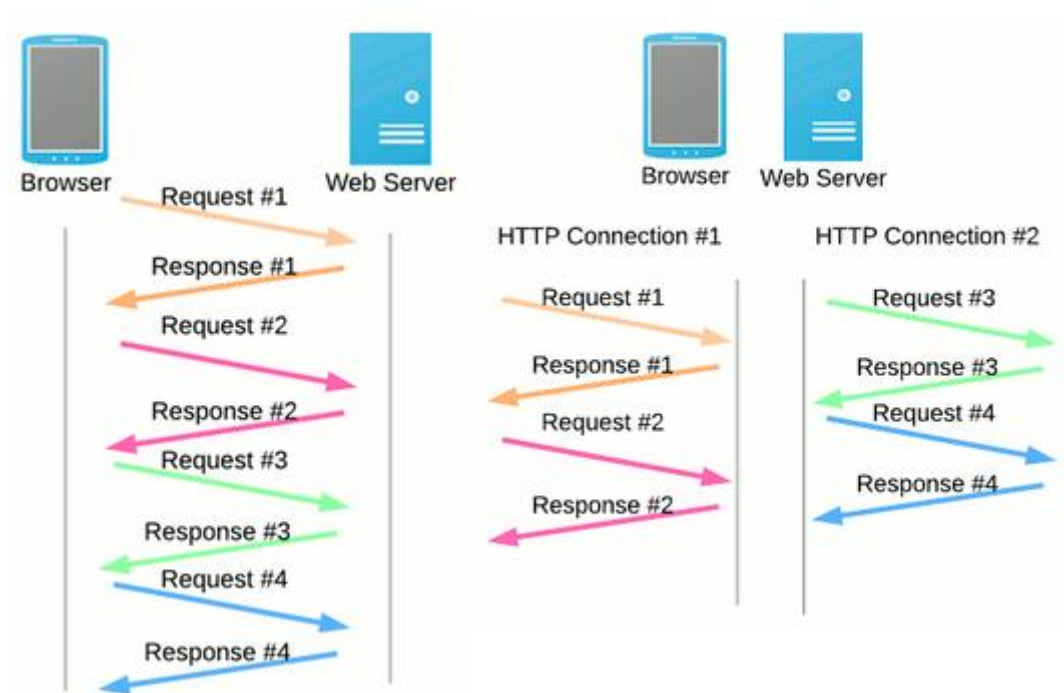


Q1 :

HTTP 1.1 AND HTTP2

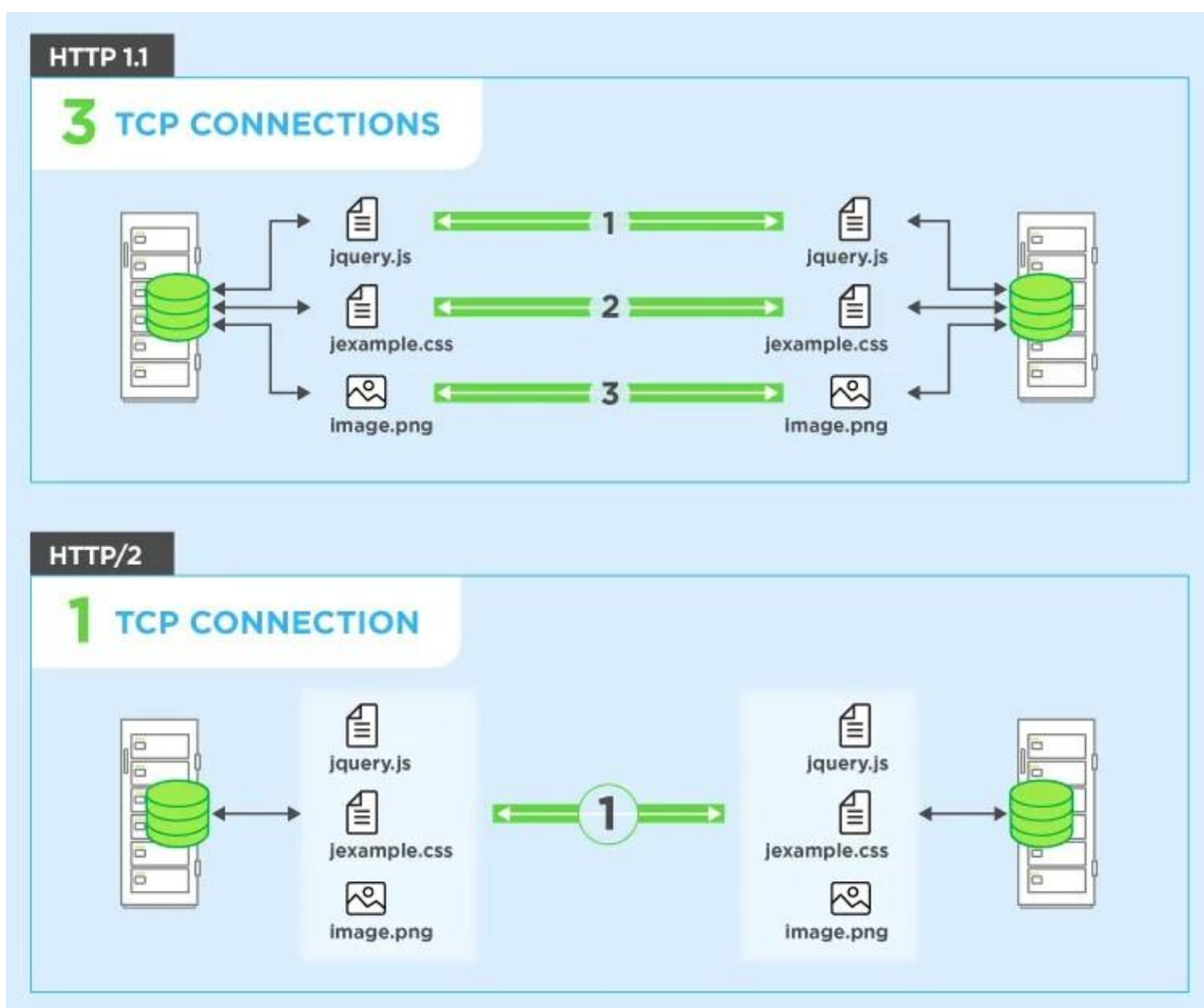
- The Hypertext Transfer Protocol (HTTP) is the foundation of the World Wide Web.
- Tim Berners-Lee created HTTP to allow communication between a server and a client. It is this communication that forms the basis of the Internet.
- HTTP is based on the Client/Server model. Client/Server model can be explained as two computers, Client (receiver of service) and Server (provider of service) that are communicating via requests and responses.
- It is used to load web pages using hypertext links.
- It is an application layer protocol designed to transfer information between networked devices and runs on top of other layers of the network protocol stack.
- Its main function is to store, process and deliver web pages to clients.
- The major feature difference between both is their binary framing layer.
- HTTP transmits unencrypted data, which means that the original HTTP version released in 1996-97 was called HTTP/1.1 , Where HTTP/2 and HTTP/3 are upgraded versions of the protocol itself.
- The data transfer system's been modified to make it more efficient.
- In 2015, a new version of HTTP called HTTP/2 was created. HTTP/2 solved several problems that the creators of HTTP/1.1 did not anticipate.

DIFFERENCE BETWEEN HTTP 1.1 AND HTTP 2 :

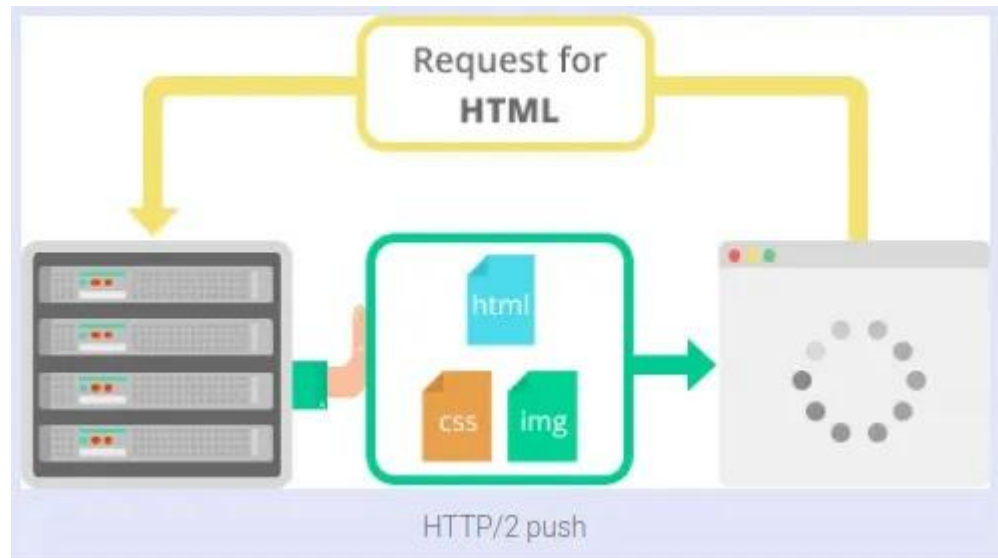


- ★ HTTP/2 is much faster and more efficient than HTTP/1.1. One of the ways in which HTTP/2 is faster is in how it prioritizes content during the loading process.
- ★ HTTP/ 2 back-and-forths data in binary instead of textual format. It also allows servers to proactively transmit responses to customer caches instead of waiting for a new HTTP request. HTTP/ 3 is kind of new but attempts to take HTTP/ 2 one step further. The purpose of HTTP/ 3 is to support real- time streaming and other ultramodern data transfer requirements more efficiently.
- ★ HTTPS prioritizes data security concerns in HTTP. Modern systems use HTTP/ 2 with SSL/ TLS as HTTPS. As HTTP/ 3 matures, cybersurfer and server technology will sooner or later integrate it under HTTPS as well.

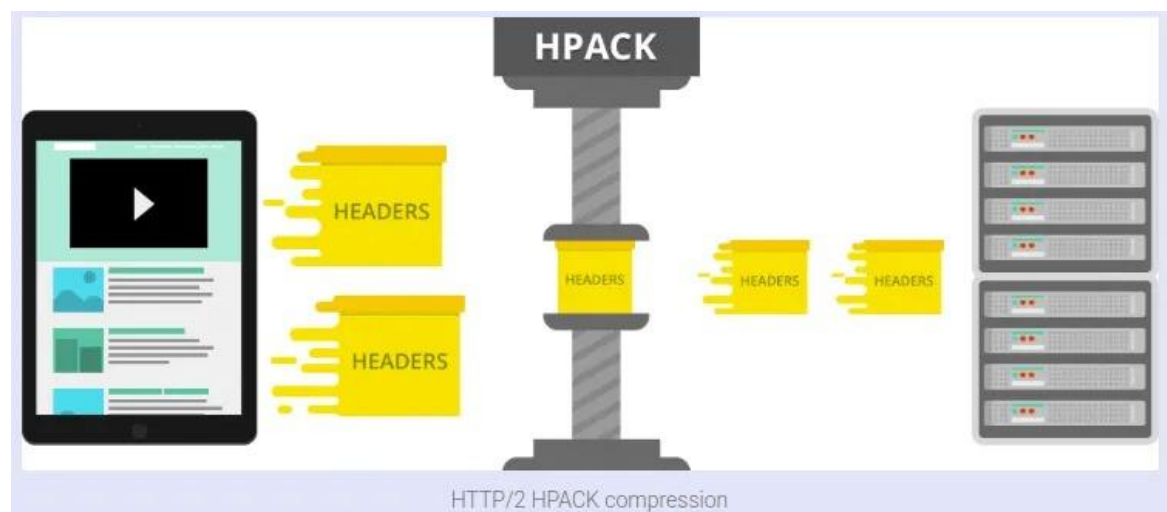
- ★ HTTPS combines HTTP requests and responses with SSL and TLS technology.
 - ★ Another major difference that affects performance are Multiplexing, Server push and Header compression.
- **MULTIPLEXING** : HTTP 1.1 loads resources one after the other, so if one resource can not be loaded, it blocks all the other resources behind it. In contrast HTTP2 is capable of using a single TCP connection to shoot multiple aqueducts of data at once so that no one resource blocks any other resource.



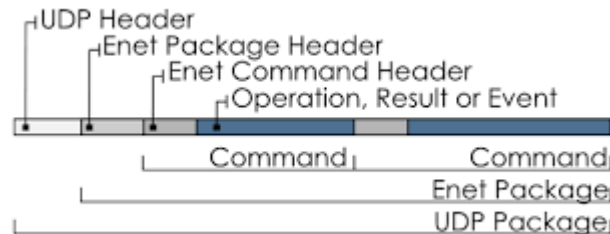
- **SERVER PUSH** : Server drive generally, a server only serves content to a customer device if the customer asks for it. Still, this approach isn't always practical for new webpages.



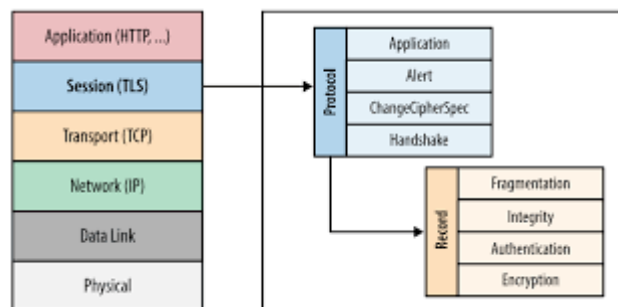
- **HEADER COMPRESSION** : Small files load more quickly than large ones. To speed up web performance, both HTTP 1.1 and HTTP2 compress HTTP dispatches to make them less. Still HTTP2 uses a more advanced compression technique called HPACK that eliminates extra information in HTTP header packets. This eliminates some bytes from every HTTP packet. Given the volume of HTTP packets involved in loading a single webpage, those bytes add up rapidly, performing in faster loading.



→ **BINARY PROTOCOL** : HTTP 2 used a binary protocol. By reducing the amount of data transferred between the client and server, this function enhances protocol efficiency.



→ **TLS ENCRYPTION** : HTTPS is essential for HTTP2 but optional for HTTP 1.1

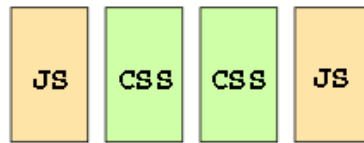


→ **PRIORITIZATION** : HTTP2 allows the client to set the order in which to receive requests, which can reduce latency and increase protocol responsiveness.

Priority

63

Concurrency: 0



...

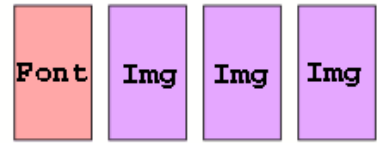
32

Concurrency: 1



50%

Concurrency: n



50%

...

0

Overall, HTTP2 outperforms HTTP 1.1 in terms of performance, especially for complex web applications that demand an array of requests and answers.

However not every web browser and web server supports HTTP/2 and some older programs might not work with the updated protocol.

Q2 :

- An Object is a **unique** entity that contains **properties** and **methods**.
- A JavaScript object is a collection of named values.
- The object can be created in two ways in JavaScript:
 - Object Literal
 - Object Constructor .
- Objects, in JavaScript, is its most important data-type and forms the building blocks for JavaScript.
- The primitive objects are quite different from JavaScript's primitive data-types, which are Number, String, Boolean, null, undefined and symbol in the sense that it is very different from these objects in the latter, that they only hold one value per type.
- An object in JavaScript has properties attached to it. A variable that is affixed to an object can be used to explain one of its properties.
- The attachment to objects makes object attributes different from regular JavaScript variables, but otherwise they are the same. The qualities of an object are determined by its properties.

Object Properties :

The named values in JavaScript objects, are called properties.

Object Methods :

JavaScript methods are actions that can be performed on objects.

A JavaScript method is a property containing a function definition.

Object Accessors :

Javascript Accessors are *Getters* and *Setters*.

Getters and *setters* allow you to define *Object Accessors*.

Object Sets :

- ★ A JavaScript Set is a collection of unique values.
- ★ Each value can only occur once in a Set.
- ★ A Set can hold any value of any data type.