1. HTTP 1.1 and HTTP 2

* HTTP stands for HyperText Transfer Protocol, and is the most basis of all the web applications
* With the help of HTTP, the user sends a request to the server and the server sends back a response to the user.

HTTP 1.1

* The first useable form of HTTP was created in 1997.
* It went through many stages of development, and so the first version of HTTP is called HTTP 1.1
* As usual, when a user sends a request to the server and the server sends back a response to the user.
* Before this any of the things happens, there would be TCP connection established between client and server
* For example, if we make a request to the server for a document.docx, and the server would give a response as an document.docx. the connection was not broke because we add a keep-alive header which would be the part of the request so there is an open connection between server and the client.
* It works on the textual format
* There is head of line blocking that blocks all the requests behind it until it doesn’t get its all resources
* It uses requests resource inlining for use getting multiple pages
* It compresses data by itself
* It loads resources one after the other, so if one resource cannot be loaded, it blocks all the other resources behind it.

HTTP 2

* It was developed in the 2015
* It is much faster and more efficient than HTTP 1.1
* It prioritzes content during the loading process.
* It was developed over the SPDY protocol
* It works on fully multiplexed that is one TCP connection is used for multiple requests.
* It uses HPACK which is used to split data from header, as it compresses the header, for data compression
* The server sends all the other files like CSS & JS without the request of the client using the PUSH frame
* It works on the binary protocol
* It allows multiplexing so one TCP connection is required for multiple requests

1. Objects and its internal representation in Javascript

* Objects are the most important data type and form the building blocks for the Javascript
* Objects are completely different from primitive datatypes
* Primitive datatypes contain one value but objects can hold many values in form of Key:value pair.
* These keys can be variables or functions and are called properties and methods, in the context of an object
* It Is a reference data types.
* Variables that are assigned a reference value are given a reference or a pointer to that value.
* That reference or pointer points to the location in memory where the object is stored.
* The variables don’t actually store the value

Inherited Properties

* Those properties that have been inherited from the object’s prototype, as opposed to being defined for the object itself, which is known as the object’s own property.
  + The property’s value
  + The property’s value can be changed
  + The property’s can be iterated over by “for-in” enumeration. In other case, the property can be known as non-enumerable
  + The property is configurable.

Objects and properties

* The properties of an object define the characteristics of the object.

objectName.propertyName

* Creating a javascript object with object literal

let watch ={name:’Automatic’, maker:’Fossil’, movement:’silent’}

* Objects are collections of key-value pairs, where keys are strings and values can be of any type, including other objects.

const School ={

name : “Venkat”,

age:23,

school:”Petit seminaire”

};

1. IP address, port, HTTP methods, MAC address

IP address

* IP address is also known as Internet Protocol address, is a unique number that identifies a device on the internet or a local network.
* These IP addresses are typically assigned by an ISP which is known as Internet Service Provider.
* These addresses serves 2 main functions:
  + Network interface identification
  + Location addressing
* IP address are of 2 types mainly which is IPv4 and IPv6.
* Here, in IPv4 addresses are only 32 bits.
* While IPv6 addresses are made up to 128 bits

Port

* It is a number that identifies endpoint and directs data to a specific service
* Helps computer to sort the network traffic they receive
* They are software based and managed by a computer’s OS.
* Each port is associated with a specific process or service
* Port numbers are divided into 3 ranges
  + Well-known ports
  + Registered ports
  + Dynamic or private ports
  + Ephemeral ports
  + Serial ports
  + Ethernet ports

HTTP methods

* HTTP works a request-response protocol between a client and the server
* The methods of HTTP are
  + GET
  + POST
  + PUT
  + HEAD
  + DELETE
  + PATCH
  + OPTIONS
  + CONNECT
  + TRACE
* GET and POST are the 2 most common methods used in HTTP
* GET method is used to retrieve data from a web server by the given arguments or parameters in the URL portion of the request sent by the user to the server.
* POST method is used to send data to a server to create or update a resources. These requests are never cached and do not remain in the browser history

MAC Address

* MAC address is also known as Media Access Address, it is the physical address of the computer
* It has 12-character alphanumeric identifier that uniquely identifies a network interface controller (NIC)
* A device can have many MAC addresses because each network interface requires a different address
* There are 3 types of MAC address
* Unicast : It is only sent out to the interface leading to a specific NIC. If the first octet of the address is set to zero, then the frame is meant to reach only one receiving NIC.
* Multicast : This address allows the source to send a frame to a group of devices.
* Broadcast : A frame with this destination address will be sent to all the hosts which are being under the same network segment/ broadcast domain.