ASSIGNMENT-1

1) What are http methods and differentiate them?

HTTP is designed to enable the communication between the clients and the server. Some of the http methods are GET,POST,PUT,HEAD,DELETE,OPTIONS,PATCH and TRACE methods.

GET method: used to request data from a specified resource. This method can be bookmarked and cached.

POST method: used to send data to a server to create or update a resource. This method cannot be bookmarked and cannot be cached.

PUT method: used to send data to a server just like POST method. The main difference between the POST and PUT is that PUT requests are idempotent that is calling PUT requests for several times will produce the same output whereas POST doesn't.

HEAD method: it is identical to GET method but without the response body.

DELETE method: deletes the specified resource.

CONNECT method: The CONNECT method establishes a tunnel to the server identified by the target resource.

OPTIONS method: The OPTIONS method is used to describe the communication options for the target resource.

TRACE method: The TRACE method performs a message loop-back test along the path to the target resource.

PATCH method: The PATCH method is used to apply partial modifications to a resource.

2) List different types of http response codes?

HTTP defines 40 standard status codes that can be used to convey the results of a client's request. They are basically divided into 5 categories.

1xx(informational)----communicates transfer protocol—level information.

2xx(success)----it means that client's request was accepted successfully.

3xx(redirection)---it means that the client should take some necessary action in order to complete the request.

4xx(client error)----here the status code points the finger at clients.

5xx(server error)----the server takes responsibilities for these error status code.

Eg: 201:accepted

302:found

404:not found

500:internal server error

The above mentioned are some of the HTTP status codes .

3) What is idempotency?

Idempotency is a property of HTTP methods. An idempotent HTTP method is a HTTP method that can be called many times without different outcomes.

They are considered to be the safe option to update a resource on the server. Some of the methods which are idempotent are PUT, PATCH and GET. Even though you call them for several times we will get the same result with the same URL.

4) What is content delivery network?

It is also called as content distribution network. It is a geographically distributed network of proxy servers and their data centres. The goal is to distribute service spatially to end users with high availability and high performance.

It provides different content delivery services such as video streaming, web and mobile content acceleration.

5) List the types of operating system and browsers and the technologies in which they are coded?

Microsoft Windows(c, c++, c#)

Unix(c and c++)

Ubuntu linux (c programming using gcc)

Apple Mac(large amounts of c++)

Internet explorer(c, c++)

Safari(css2, XHTML)

Opera(java)

Lynx(unix)

6) What is meant by MEAN and MERN stack?

MEAN and MERN are the free and open source java script software stacks for building dynamic websites and web applications.

MEAN---Mongo db, express js, angular js, node js

MERN---Mongo db, express js, react, node js

7) What are the advantages of compiled languages over interpreted languages?

Compiled programs generally run faster than interpreted ones because interpreted programs must be reduced to machine instructions at runtime.

Compiler creates the machine language code that makes most efficient use of hardware,

Compiler executes conditional control statements must faster.

Compiler produces more optimal executable code.

8) What is time and space complexity?

Time and space complexity of an algorithm calculates the amount of time and space taken by an algorithm to run as a function of length of input respectively.

There are some asymptotic notations for the time complexity:

Big oh notation which expresses the upper bound of an algorithm's running time. Usually used for finding the worst case.

Omega notation expresses the lower bound of an algorithm's running time. Usually used for finding the best case.

Theta notation expresses the lower and upper bound of an algorithm's running time. Usually used for finding the average case.

9)What is a data structure?

Data structure is a data organisation , management and storage format that enables efficient access and modification of data .

Linked list, graphs, trees, stacks and queues come under data structures.

10) Why node.js?

It is a platform built on chrome's java script runtime for easily building fast and scalable network applications. It contains event driven, non blocking io model which makes it light weight and efficient.

Mainly used for developing applications that uses java script at the server and the client side.

11) What is single thread and multi-thread?

A thread is a light weight process which is used in improving the application performance.

Basically we will be having single thread and multi-thread programming. Single thread means execution is done on one core of CPU. It accepts one command at a time whereas in multithread modern CPU's have multiple cores and can run multiple threads in parallel with fast speed.

12)Define multithreading, multitasking and multiprocessing?

Multithreading threads are being executed in one process sharing the common address space whereas in multiprocessing different process have different address space. Creating multiple processes is costly compared to threads.

Multitasking allows the user to perform more than one complete task. It keeps the track of where you are in the tasks and go from one to another tasks.

13)What is synchronous and asynchronous programming?

Synchronous programming refers to line by line execution. Each time a function is called program execution waits until function returns.

Asynchronous programming is a means of parallel programming in which a unit of work runs separately from main application thread.

14)What is libuv?

Libuv is a multiplatform c library that provides support for asynchronous io based on event loops. It is written in C. it supports kqueue, solaris.

15) What is v8 engine?

It is a java script engine built at the google development centre in Germany. It is an opensource engine and is written in c++. Used for both client and server side.

16) What is non blocking io?

Non blocking io means an io request is queued straight away and the function returns. This happens because the event loop is unable to continue running java script while a blocking operation is occurring. All of the io methods in node js library provides asynchronous versions which are non blocking and accept call back functions.

17) What is an event loop?

The event loop is the loop which allows the node js to perform non blocking ip operations. Node js uses events heavily and it is one of the reason why node js is pretty fast compared to other technologies.