Node.js

What is Node.js?

A JavaScript runtime built on Chrome's V8 JavaScript engine. Node.js uses an event-driven, non-blocking model that makes it lightweight and efficient. Node.js' package ecosystem, npm , is the largest ecosystem of open source libraries in the world.
A platform which allows us to run JavaScript on a computer / server.
Read, delete, and update files.
Easily communicate with a database.

Why is Node.js so Popular?
- It uses JavaScript
- Very fast (runs on the V8 engine & uses non - blocking code)
- Huge ecosystem of open-source packages (npm)
- Great for real - time services (like chats)

Pre-Requisites for Node.js:
- JavaScript
- HTML
- About the command line

What are JavaScript Engines?
Computers do not understand JavaScript. A JavaScript engine takes JavaScript and converts it into something it does understand - machine code.

Node.js is written in C ++
The heart of Node.js is the V8 engine
The V8 engine converts our JS into machine code

What is V8?
V8 is **the name of the JavaScript engine that powers Google Chrome**. It's the thing that takes our JavaScript and executes it while browsing with Chrome. V8 is the JavaScript engine i.e. it parses and executes JavaScript code.

What are Global Objects?
Global Objects are the **objects that are available in all modules**. Global Objects are built-in objects that are part of the JavaScript and can be used directly in the application without importing any module.

What is Function Expression?

Function Expression **allows us to create an anonymous function which doesn't have any function name.**
Syntax for Function Expression (anonymous):

    let *variableName* = function (x, y) {statements... return (z)};

Require() Function?

require() is **a built-in function to include external modules that exist in separate files**. require() statement basically reads a JavaScript file, executes it, and then proceeds to return the export object.

What is a Module in Node.js?

A set of functions that we include in our application.

Built-in Modules:

Node.js has a set of built-in modules which we can use without any further installation.

How to include Modules?

To include a module, the require () function is used with the name of the module:
var http = require('http');

What is module.export?

module exports are the instruction that tells node.js which bits of code (functions, objects, strings, etc.) to "exports" from a given file so other files are allowed to access the exported code.

What is module pattern?

The Module Pattern is one of the important patterns in JavaScript. It is a commonly used Design Pattern which is used to wrap a set of variables and functions together in a single scope.

fs module- file system module?

A file system is a mechanism that controls how data is stored, accessed, and managed on an operating system. The file system module in Node. js **allows you to work programmatically with the file system on an operating system**. Using file system (fs) module, we can perform read, write, delete, and many more operations.

What is Stream and Buffer?

To handle and manipulate streaming data like a video, a large file, etc., we need streams in [Node](). The streams module in Node.js manages all streams.

In Node, there are different types of streams:

- Readable streams → To create a stream of data for reading (say, reading a large file in chunks).

- Writable streams → To create a stream of data for writing (say, writing a large amount of data to a file).

- Duplex streams → To create a stream that is both readable and writable at the same time. We can read and write to a duplex stream (say, a socket connection between a client and a server).

Streams work on a concept called *buffer*.

A *buffer* is a temporary memory that a stream takes to hold some data until it is consumed.

In a stream, the buffer size is decided by the highWatermark property on the stream instance which is a number denoting the size of the buffer in bytes.

A buffer memory in Node by default works on String and Buffer. We can also make the buffer memory work on JavaScript objects. To do so, we need to set the property objectMode on the stream object to true.

What is pipe?

Pipes can be used to connect multiple streams together. One of the most common example is to pipe the read and write stream together for the transfer of data from one file to the other.

What is Routing?

Routing refers to how an application's endpoints (URIs) respond to client requests.

Routing defines the way in which the client requests are handled by the application endpoints.

What is Express?

Express is a node js web application framework that provides broad features for building web and mobile applications.

Express is a minimal and flexible Node.js web application framework that provides a robust set of features to develop web and mobile applications. It facilitates the rapid

development of Node based Web applications. Following are some of the core features of Express framework

- Allows to set up middlewares to respond to HTTP Requests.
- Defines a routing table which is used to perform different actions based on HTTP Method and URL.
- Allows to dynamically render HTML Pages based on passing arguments to templates

HTTP request?
Get, Post, Delete, Put
Responding to Requests
-Get - app.get('route',fn)
-Post – app.post('route',fn)
-Delete – app.delete('route',fn)