

- Node JS :-

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1. What is Node JS ?

- Node JS is a free open-source Javascript runtime environment that lets developers build web application & other program.
- Node JS is a cross-platform environment that runs Javascript code outside of a web browser. It's used to build web application server, command line tools & scripts.

2. What are the key features of Node JS ?

- Some key features of Node JS :
- 1) Event-driven architecture :- Node JS uses an event-driven architecture that triggers callback or listeners when event occur. This allows for non-blocking and asynchronous I/O operation.
 - 2) Scalability :- Node JS can scale vertically & horizontally, & can manage concurrent connections. It also has load balancing capabilities.
 - 3) cross-platform compatibility :- Node JS can be used on many platforms, including Windows, Linux, Unix, Mac OS X & mobile operating systems.

- 4) Single threaded:- Node.js is build on top of the V8 javascript engine, which is also single-threaded.
- 5) Asynchronous non-blocking:- Node.js asynchronous & non-blocking features allow it run multiple events at once & process many task on a single thread.
- 6) Microservices:- Node.js includes micro services that helps maintain code & make application faster.
- 7) Event loop:- Node.js uses an event loop to process & dispatch events like callbacks, timers & I/O operation.

Q.3. What is -the V8 engine in Node.js?

- The V8 javascript engine is a core technology that power node.js & the Google chrome.
- V8 engine translate Javascript source code into machine instruction.
 - It's key feature of Javascript code to run seamlessly across multiple platform including laptop, smart phones, cloud server & more.

- V8 is written in C++ and is constantly being improved. It's open source software - that's part of the chromium project.
- V8 was chosen to power Node.js in 2009.

q.4. What is npm in node.js?

→ NPM is Node package Manager, is standard package manager for Node.js

q.5. What is Node.js Module?

- In Node.js, a module is a collection of JavaScript function objects that can be external application.
- Modules are similar to JavaScript libraries and are a key part of building Node.js applications.
- Modules create a separate scope of Variables and functions which helps avoid naming conflicts.
- There are two main types of modules :-
 - 1) Built-in modules :- These modules are available when node.js is installed. Some examples include http, url, path, fs and os.
 - 2) Local modules :- These modules are created within a program.

Q.6. What is a callback function in Node.js?

- Node.js callbacks are a special type of function passed as an argument to another function.
- They are called when the function that contains the callback as an argument completes its execution, allowing the code in the callback to run in meantime.

Q.7. How do you create a basic HTTP server in Node.js?

- 1) Overview of Node.js
2) Importing HTTP Module
3) Using the `http.createServer()` Method
4) Understanding the request & response objects
5) Binding server to specific port by starting to listen for incoming connections.
6) Basic Example: Creating a "Hello, World!" HTTP Server
7) Conclusion.

Q.8. How does Node.js differ from other backend technologies like PHP or Python?

- While talking about PHP vs Node.js, Node.js is an asynchronous, event-driven & non-blocking programming language.

Where PHP is a synchronous programming language.

- Node.js:- A runtime environment that uses JS for both front-end & back-end development. Node.js is known for high performance & scalability & it's often used web application, real-time chats & streaming. It's also good choice for managing concurrent requests.
- PHP:- A language that can be used to generate dynamic page content, collect form data, & more. PHP is compatible with many types of database, including MySQL, mSQL, PostgreSQL, SQLite & MySQL. PHP is often used for building e-commerce website with complex backend functionality.
- Python:- A versatile, high-level programming language that's often used for data analysis, machine learning, scientific computing. Python has a large ecosystem of libraries & packages, & is supported by many programming standards. Python is often used for complex web projects including big data, AI development & automation.

Q.g. What is role of required() in Node.js?

- The function allows you to include one external modules or files in your Javascript code, which helps keep your code organized & maintainable.
- require function return the exports of required module
- `const fs = require('fs')` -- In above example, we're using required() function to include the built-in fs (file system) module in Node.js.