Top 50+ Node.js Interview Questions and Answers for 2023

Topics : Node js Interview Questions
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Basics of Node.js:

1. **What is Node.js?**
    - Node.js is a server-side JavaScript runtime environment built on the V8 JavaScript engine.
2. **How does Node.js differ from traditional JavaScript?**
    - Node.js is not a language; it allows JavaScript to be executed server-side, outside the browser.
3. **Explain the event-driven architecture of Node.js.**
    - Node.js operates on a non-blocking, event-driven model where events trigger asynchronous callbacks.
4. **What is an EventEmitter in Node.js?**
    - EventEmitter is a class in Node.js that allows objects to emit and listen for events.

Node.js Modules:

5. **What is a module in Node.js?**
    - A module is a reusable piece of code that encapsulates functionality.
6. **How can you include external libraries in Node.js?**
    - Use `require('module')` to include external libraries.

npm (Node Package Manager):

7. **What is npm?**
    - npm is the Node Package Manager used for package management and distribution.

8. **How do you install packages using npm?**
    - Use `npm install package-name` to install packages locally and `npm install -g package-name` for global installation.
9. **Explain the purpose of `package.json`.**
    - `package.json` is a file containing metadata about a Node.js project, including dependencies.

Callbacks and Promises:

10. **What is a callback function in Node.js?**
    - A callback is a function passed as an argument to another function, to be executed later.
11. **Explain the concept of callback hell.**
    - Callback hell refers to the nesting of multiple callbacks, making the code hard to read and maintain.
12. **What are Promises in Node.js?**
    - Promises are objects representing the eventual completion or failure of an asynchronous operation.
13. **How do you handle errors in Promises?**
    - Use `.catch()` or `.then(null, errorHandler)` to handle errors in Promises.

File System:

14. **How do you read and write files in Node.js?**
    - Use `fs.readFile` for reading and `fs.writeFile` for writing files.
15. **Explain the difference between `fs.readFileSync` and `fs.readFile`.**
    - `fs.readFileSync` is synchronous, blocking execution, while `fs.readFile` is asynchronous.
16. **What is the purpose of the `fs.createReadStream` method?**
    - It creates a readable stream to efficiently read large files.

Express.js:

17. **What is Express.js?**
    - Express.js is a web application framework for Node.js, simplifying the process of building robust web applications.

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18. **How do you install Express.js?**
    - Use `npm install express` to install Express.js.
19. **Explain the routing in Express.js.**
    - Routing in Express.js defines how the application responds to client requests.
20. **What is middleware in Express.js?**
    - Middleware functions are functions that have access to the request, response, and the next middleware function in the application's request-response cycle.

RESTful APIs:

21. **What is RESTful architecture?**
    - RESTful architecture is a style of designing networked applications using simple HTTP methods.
22. **How do you create a RESTful API using Express.js?**
    - Use Express.js to define routes and handlers for HTTP methods.
23. **Explain the HTTP methods used in RESTful services.**
    - GET (read), POST (create), PUT (update), DELETE (delete).

Asynchronous Programming:

24. **What is the event loop in Node.js?**
    - The event loop is a core concept in Node.js for handling asynchronous operations.
25. **How does Node.js handle asynchronous code?**
    - Through callbacks, Promises, and async/await.
26. **What is the purpose of the `setImmediate` function?**
    - `setImmediate` is used to execute a script once the current event loop cycle completes.

Streams:

27. **What are streams in Node.js?**
    - Streams provide an efficient way to read or write data in chunks.
28. **Explain the difference between readable and writable streams.**
    - Readable streams allow reading, while writable streams allow writing.

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29. **How do you pipe streams in Node.js?**
    - Use the `pipe` method to connect the output of one stream to the input of another.

WebSocket:

30. **What is WebSocket?**
    - WebSocket is a communication protocol providing full-duplex communication channels over a single TCP connection.
31. **How do you implement WebSocket in Node.js?**
    - Use the `ws` library or the `socket.io` library for WebSocket implementation.

MongoDB and Mongoose:

32. **What is MongoDB?**
    - MongoDB is a NoSQL database.
33. **How do you connect to a MongoDB database using Node.js?**
    - Use the `mongodb` driver or an ODM like Mongoose.
34. **What is Mongoose?**
    - Mongoose is an ODM (Object-Document Mapper) for MongoDB and Node.js.
35. **Explain the schema in Mongoose.**
    - A schema defines the structure of documents in a collection.

Testing in Node.js:

36. **What testing frameworks are commonly used in Node.js?**
    - Mocha, Jasmine, Jest.
37. **How do you write unit tests in Node.js?**
    - Use testing frameworks like Mocha and assertions libraries like Chai.

Security:

38. **How can you prevent common security vulnerabilities in Node.js applications?**
    - Validate input, use parameterized queries, sanitize user inputs, and keep dependencies updated.

Debugging:

39. **How do you debug a Node.js application?**

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- Use the `debugger` statement or tools like `node-inspector` and built-in debugging in VSCode.

Performance Optimization:

40. **What techniques can you use to optimize the performance of a Node.js application?**
    - Caching, load balancing, minimizing blocking code, and using a reverse proxy.

Child Processes:

41. **Explain the use of the `child_process` module in Node.js.**
    - It allows running external processes, enabling interaction with the operating system.

Global Objects in Node.js:

42. **What is the global object in Node.js?**
    - The `global` object represents the global namespace in Node.js.
43. **Explain the purpose of `__dirname` and `__filename`.**
    - `__dirname` is the name of the directory containing the currently executing script, and `__filename` is the file name of the current module.

Error Handling:

44. **How do you handle errors in Node.js?**
    - Use try-catch blocks, callback error-first pattern, and Promise `.catch()`.

Deployment:

45. **What are some common deployment strategies for Node.js applications?**
    - Using containers (Docker), cloud platforms (AWS, Azure, Heroku), and continuous integration.

Scalability:

46. **How can you scale a Node.js application?**
    - Horizontal scaling with load balancing, using a reverse proxy, and optimizing code.

Middleware:

47. **Explain the concept of middleware in Express.js.**
    - Middleware functions are functions that have access to the request, response, and the next middleware function in the application's request-response cycle.

Cross-Origin Resource Sharing (CORS):

48. **What is CORS, and how can you handle it in Express.js?**
    - CORS (Cross-Origin Resource Sharing) is a security feature implemented by browsers. In Express.js, you can use the `cors` middleware to handle it.

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Template Engines:

49. **What is a template engine, and which ones are commonly used with Node.js?**
    - A template engine processes templates to produce HTML. Common ones for Node.js are EJS, Handlebars, and Pug.

WebSockets:

50. **How do WebSockets differ from traditional HTTP communication?**
    - WebSockets provide full-duplex communication, allowing real-time data transfer, unlike the request-response nature of HTTP.

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