

prepare and brush up on your interview skills beforehand. Although there are a few commonly asked Node.js interview questions that pop up during all types of interviews, we also recommend that you prepare by focusing on exclusive questions to your specific industry.

We have compiled a comprehensive list of common Node.js interview questions that come up often in interviews and the best ways to answer these questions. This will also help you understand the [fundamental concepts of Node.js](#).

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## Beginner Node.js Interview Questions

This section will provide you with the Basic Node.js interview questions which will primarily help freshers.

### 1. What is Node.js? Where can you use it?

Node.js is an open-source, cross-platform JavaScript runtime environment and library to run web applications outside the client's browser. It is used to create server-side web applications.

Node.js is perfect for data-intensive applications as it uses an asynchronous, event-driven model. You can use I/O intensive web applications like video streaming sites. You can also use it for developing: Real-time web applications, Network applications, General-purpose applications, and Distributed systems.

### 2. Why use Node.js?

Node.js makes building scalable network programs easy. Some of its advantages include:

- It is generally fast
- It rarely blocks
- It offers a unified programming language and data type
- Everything is asynchronous
- It yields great concurrency

### 3. How does Node.js work?

A web server using [Node.js](#) typically has a workflow that is quite similar to the diagram illustrated below. Let's explore this flow of operations in detail.



- Clients send requests to the webserver to interact with the web application. Requests can be non-blocking or blocking:
- Querying for data
- Deleting data
- Updating the data
- Node.js retrieves the incoming requests and adds those to the Event Queue
- The requests are then passed one-by-one through the Event Loop. It checks if the requests are simple enough not to require any external resources
- The Event Loop processes simple requests (non-blocking operations), such as I/O Polling, and returns the responses to the corresponding clients

A single thread from the Thread Pool is assigned to a single complex request. This thread is responsible for completing a particular blocking request by accessing external resources, such as computation, database, file system, etc.

Once the task is carried out completely, the response is sent to the Event Loop that sends that response back to the client.

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### 4. Why is Node.js Single-threaded?

Node.js is single-threaded for async processing. By doing async processing on a single-thread under typical web loads, more performance and scalability can be achieved instead of the typical thread-based implementation.

### 5. Explain callback in Node.js.

A callback function is called after a given task. It allows other code to be run in the meantime and prevents any blocking. Being an asynchronous platform, Node.js heavily relies on callback. All APIs of Node are written to support callbacks.

### 6. How would you define the term I/O?

- The term I/O is used to describe any program, operation, or device that transfers data to or from a medium and to or from another medium
- Every transfer is an output from one medium and an input into another. The medium can be a physical device, network, or files within a system

### 7. How is Node.js most frequently used?

Node.js is widely used in the following applications:

1. Real-time chats

2. Internet of Things

## 2. Internet of Things

### 3. Complex SPAs (Single-Page Applications)

### 4. Real-time collaboration tools

### 5. Streaming applications

### 6. Microservices architecture

## 8. Explain the difference between frontend and backend development?

Front-end	Back-end
Frontend refers to the client-side of an application	Backend refers to the server-side of an application
It is the part of a web application that users can see and interact with	It constitutes everything that happens behind the scenes
It typically includes everything that attributes to the visual aspects of a web application	It generally includes a web server that communicates with a database to serve requests
HTML, CSS, JavaScript, AngularJS, and ReactJS are some of the essentials of frontend development	Java, PHP, Python, and Node.js are some of the backend development technologies

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### 9. What is NPM?

NPM stands for Node Package Manager, responsible for managing all the packages and modules for Node.js.

Node Package Manager provides two main functionalities:

- Provides online repositories for node.js packages/modules, which are searchable on [search.npmjs.org](https://search.npmjs.org)
- Provides command-line utility to install Node.js packages and also manages Node.js versions and dependencies

### 10. What are the modules in Node.js?

Modules are like [JavaScript libraries](#) that can be used in a Node.js application to include a set of functions. To include a module in a Node.js application, use the `require()` function with the parentheses containing the module's name.



Node.js has many modules to provide the basic functionality needed for a web application. Some of them include:

Core Modules	Description
--------------	-------------

HTTP	Includes classes, methods, and events to create a Node.js HTTP server
util	Includes utility functions useful for developers
fs	Includes events, classes, and methods to deal with file I/O operations
url	Includes methods for URL parsing
query string	Includes methods to work with query string
stream	Includes methods to handle streaming data
zlib	Includes methods to compress or decompress files

## 11. Why is Node.js preferred over other backend technologies like Java and PHP?

Some of the reasons why Node.js is preferred include:

- Node.js is very fast
- Node Package Manager has over 50,000 bundles available at the developer's disposal
- Perfect for data-intensive, real-time web applications, as Node.js never waits for an API to return data
- Better synchronization of code between server and client due to same code base
- Easy for web developers to start using Node.js in their projects as it is a JavaScript library

## 12. What is the difference between [Angular](#) and Node.js?

Angular	Node.js
It is a frontend development framework	It is a server-side environment
It is written in TypeScript	It is written in C, C++ languages
Used for building single-page, client-side web applications	Used for building fast and scalable server-side networking applications
Splits a web application into MVC components	Generates database queries

### 13. Which database is more popularly used with Node.js?

MongoDB is the most common database used with Node.js. It is a [NoSQL](#), cross-platform, document-oriented database that provides high performance, high availability, and easy scalability.

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### 14. What are some of the most commonly used libraries in Node.js?

There are two commonly used libraries in Node.js:

- **ExpressJS** - Express is a flexible Node.js web application framework that provides a wide set of features to develop web and mobile applications.
- **Mongoose** - [Mongoose](#) is also a Node.js web application framework that makes it easy to connect an application to a database.

### 15. What are the pros and cons of Node.js?

Node.js Pros	Node.js Cons
Fast processing and an event-based model	Not suitable for heavy computational tasks
Uses JavaScript, which is well-known amongst	Using callback is complex since you end



developers	up with several nested callbacks
Node Package Manager has over 50,000 packages that provide the functionality to an application	Dealing with relational databases is not a good option for Node.js
Best suited for streaming huge amounts of data and I/O intensive operations	Since Node.js is single-threaded, CPU intensive tasks are not its strong suit

## 16. What is the command used to import external libraries?

The “require” command is used for importing external libraries. For example - “**var http=require (“HTTP”).**” This will load the HTTP library and the single exported object through the HTTP variable.

Now that we have covered some of the important beginner-level Node.js interview questions let us look at some of the intermediate-level Node.js interview questions.



## Intermediate Node.js Interview Questions

### 17. What does event-driven programming mean?

An event-driven programming approach uses events to trigger various functions. An event can be anything, such as typing a key or clicking a mouse button. A call-back function is already registered with the element executes whenever an event is triggered.

### 18. What is an Event Loop in Node.js?

Event loops handle asynchronous callbacks in Node.js. It is the foundation of the non-blocking

Event loops handle asynchronous callbacks in Node.js. It is the foundation of the non-blocking input/output in Node.js, making it one of the most important environmental features.

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### 19. What is an EventEmitter in Node.js?

- EventEmitter is a class that holds all the objects that can emit events
- Whenever an object from the EventEmitter class throws an event, all attached functions are called upon synchronously



### 20. What are the two types of API functions in Node.js?

The two types of API functions in Node.js are:

- Asynchronous, non-blocking functions
- Synchronous, blocking functions

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### 21. What is the package.json file?

The package.json file is the heart of a Node.js system. This file holds the metadata for a particular project. The package.json file is found in the root directory of any Node application or module

This is what a `package.json` file looks like immediately after creating a Node.js project using the command: **npm init**

You can edit the parameters when you create a Node.js project.



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## 22. How would you use a URL module in Node.js?

The URL module in Node.js provides various utilities for URL resolution and parsing. It is a built-in module that helps split up the web address into a readable format.



## 23. What is the Express.js package?

Express is a flexible Node.js web application framework that provides a wide set of features to develop both web and mobile applications

## 24. How do you create a simple Express.js application?

- The request object represents the HTTP request and has properties for the request query string, parameters, body, HTTP headers, and so on
- The response object represents the HTTP response that an Express app sends when it receives an HTTP request



## 25. What are streams in Node.js?

Streams are objects that enable you to read data or write data continuously.

There are four types of streams:

**Readable** – Used for reading operations

**Writable** – Used for write operations

**Duplex** – Can be used for both reading and write operations

**Transform** – A type of duplex stream where the output is computed based on input

## 26. How do you install, update, and delete a dependency?



## 27. How do you create a simple server in Node.js that returns Hello World?



- Import the HTTP module
- Use createServer function with a callback function using request and response as parameters.
- Type "hello world."
- Set the server to listen to port 8080 and assign an IP address

## 28. Explain asynchronous and non-blocking APIs in Node.js.

- All Node.js library APIs are asynchronous, which means they are also non-blocking
- A Node.js-based server never waits for an API to return data. Instead, it moves to the next API after calling it, and a notification mechanism from a Node.js event responds to the server for the previous API call

## 29. How do we implement async in Node.js?

As shown below, the async code asks the JavaScript engine running the code to wait for the `request.get()` function to complete before moving on to the next line for execution.

```
async function fun1(req, res){  
  let response = await request.get('http://localhost:3000');  
  if (response.err) { console.log('error');}  
  else { console.log('fetched response');  
}
```

## 30. What is the purpose of `module.exports`?

A module in Node.js is used to encapsulate all the related codes into a single unit of code, which can be interpreted by shifting all related functions into a single file. You can export a module using the `module.exports`, which allows it to be imported into another file using a `required` keyword.

## 31. What is a callback function in Node.js?

A callback is a function called after a given task. This prevents any blocking and enables other code to run in the meantime.

In the last section, we will now cover some of the advanced-level Node.js interview questions.

## Advanced Node.js Interview Questions

This section will provide you with the Advanced Node.js interview questions which will primarily help experienced professionals.

## 32. What is REPL in Node.js?

REPL stands for Read Eval Print Loop, and it represents a computer environment. It's similar to a Windows console or Unix/Linux shell in which a command is entered. Then, the system responds with an output

### 33. What is the control flow function?

The control flow function is a piece of code that runs in between several asynchronous function calls.

### 34. How does control flow manage the function calls?



### 35. What is the difference between fork() and spawn() methods in Node.js?

fork()	spawn()
fork() is a particular case of spawn() that generates a new instance of a V8 engine.	Spawn() launches a new process with the available set of commands.
Multiple workers run on a single node code base for multiple tasks.	This method doesn't generate a new V8 instance, and only a single copy of the node module is active on the processor.

### 36. What is the buffer class in Node.js?

Buffer class stores raw data similar to an array of integers but corresponds to a raw memory allocation outside the V8 heap. Buffer class is used because pure JavaScript is not compatible with

binary data

### 37. What is piping in Node.js?

Piping is a mechanism used to connect the output of one stream to another stream. It is normally used to retrieve data from one stream and pass output to another stream

### 38. What are some of the flags used in the read/write operations in files?



### 39. How do you open a file in Node.js?

This is the syntax for opening a file in Node.js

```
fs.open(path, flags[, mode], callback)
```

### 40. What is callback hell?

- Callback hell, also known as the pyramid of doom, is the result of intensively nested, unreadable, and unmanageable callbacks, which in turn makes the code harder to read and debug
- improper implementation of the asynchronous logic causes callback hell

### 41. What is a reactor pattern in Node.js?

A reactor pattern is a concept of non-blocking I/O operations. This pattern provides a handler that is associated with each I/O operation. As soon as an I/O request is generated, it is then submitted to a demultiplexer

### 42. What is a test pyramid in Node.js?

- A test pyramid is a figure which explains the proportion of unit tests, integrations tests, and end-to-end tests that are required for the proper development of a project
- The components of a test pyramid are given below:
  - **Unit Tests:** They test the individual units of code in isolation
  - **Integrations Tests:** They test the integration among dissimilar units



- End-to-End (E2E) Tests: They test the whole

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#### 44. Explain the concept of middleware in Node.js.

Middleware is a function that receives the request and response objects. Most tasks that the middleware functions perform are:

- Execute any code
- Update or modify the request and the response objects
- Finish the request-response cycle
- Invoke the next middleware in the stack

#### 45. What are the different types of HTTP requests?

HTTP defines a set of request methods used to perform desired actions. The request methods include:

**GET:** Used to retrieve the data

**POST:** Generally used to make a change in state or reactions on the server

**HEAD:** Similar to the GET method, but asks for the response without the response body



**DELETE:** Used to delete the predetermined resource

#### 46. How would you connect a MongoDB database to Node.js?

To create a database in MongoDB:

- Start by creating a MongoClient object
- Specify a connection URL with the correct IP address and the name of the database you want to create

```
var MongoClient = require('mongodb').MongoClient;
var url = "mongodb://localhost:27017/mydb";

MongoClient.connect(url, function(err, db) {
  if (err) throw err;
  console.log("Database created!");
  db.close();
});
```

#### 47. What is the purpose of NODE\_ENV?

- NODE\_ENV is an environmental variable that stands for node environment in express server
- It's how we set and detect which environment we are in

To set an environment

```
export NODE_ENV=production
```

#### 48. List the various Node.js timing features.

As you prepare for your upcoming job interview, we hope that this comprehensive guide has provided more insight into what types of questions you'll be asked.

Timers module is provided by Node.js which contains various functions for executing the code after a specified period of time. Various functions that are provided by this module:

**setTimeout/clearTimeout** - Used to schedule code execution after a designated amount of milliseconds



`setInterval/clearInterval` - Used to execute a block of code multiple times

`setImmediate/clearImmediate` - Used to execute code at the end of the current event loop cycle



I believe that these Node.js interview questions would help you understand what kind of questions may be asked to you in an interview, and by going through these Node.js interview questions, you can prepare and crack your next interview in one go.

For more in-depth training on this increasingly popular web application development framework, enroll in [Simplilearn's Node.js Training course](#) today, which can prepare you even more for any upcoming Node.js interviews.

Best of luck with your upcoming job interview!

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## About the Author



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Taha is a Research Analyst at Simplilearn. He is passionate about building great user interfaces and keeps himself updated on the world of Artificial Intelligence. Taha is also interested in ga...