Senior Backend Developer (Node.js) Interview Questions

Core Node.js Concepts

- Explain the Node.js event loop and how it works.

- What is the difference between process.nextTick(), setImmediate(), and setTimeout()?

- How does Node.js handle asynchronous operations?

- What is the role of the libuv library in Node.js?

- Explain the difference between CommonJS and ES Modules in Node.js.

- What is clustering in Node.js and when should you use it?

API Design & RESTful Services

- How do you design scalable RESTful APIs?

- What are the key principles of REST architecture?

- How do you handle API versioning?

- How would you implement rate limiting in an API?

- Explain the importance of idempotency in HTTP methods.

Authentication & Security

- How do you implement authentication and authorization in Node.js?

- What is the difference between JWT and session-based authentication?

- How do you protect Node.js apps from common security threats (e.g., XSS, CSRF, SQL injection)?

- What is helmet.js and how does it improve security?

- How do you securely store and manage API keys and secrets?

Database & Data Management

- Compare SQL and NoSQL databases. When would you use each?

- How do you handle transactions in MongoDB or PostgreSQL with Node.js?

- What are ORMs and when should you use them (e.g., Sequelize, TypeORM)?

- How do you implement caching in a Node.js application?

- How do you handle database migrations and schema versioning?

Performance & Optimization

- What tools do you use for profiling and monitoring Node.js applications?

- How do you handle memory leaks in Node.js?

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- What is backpressure in streams and how do you manage it?

- Explain the use of load balancers with Node.js applications.

- How would you optimize response times for high-traffic APIs?

Testing & CI/CD

- What are the best practices for unit and integration testing in Node.js?

- Which testing frameworks do you use (e.g., Mocha, Jest, Supertest)?

- How do you mock external APIs in tests?

- How do you set up a CI/CD pipeline for a Node.js backend?

- What strategies do you use for database testing?

Architecture & System Design

- How would you design a scalable microservices architecture with Node.js?

- What are the benefits and drawbacks of monolith vs microservices?

- How do you manage service-to-service communication (e.g., gRPC, REST, message queues)?

- What is your approach to designing a logging and monitoring strategy?

- How do you ensure fault tolerance and high availability?

DevOps & Deployment

- How do you containerize a Node.js app using Docker?

- What is your approach to environment configuration and secrets management?

- How do you use PM2 for process management?

- How do you deploy Node.js applications on cloud platforms (AWS, GCP, Azure)?

- What is blue-green deployment and how do you implement it?