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Q.1. What is Node.js? Explain its core characteristics and why it is popular for building certain types of application?

Node.js is an open source, cross-platform runtime environment that allow developers to run JS on server side. It is built on chrome's V8 JS engine, which makes it fast and efficient.

• Core characteristics of Node.js

- 1) Event-Driven & Asynchronous I/O → It uses event loop to handle multiple request non-blockingly, meaning it can manage thousands of concurrent connections without blocking the thread.
- 2) Single-Threaded Architecture → Through single-threaded Node.js can handle concurrency through Asynchronous callbacks & event loop, which makes it light weight & scalable.
- 3) Non-Blocking I/O → Operations like reading files, querying db, & making HTTP requests are non-blocking allowing the system to do more with fewer resources.
- 4) Fast Execution → Node JS converts JS to machine code offering high performance for code execution.
- 5) Node Package Manager (NPM) → Comes with vast ecosystem of open-source libraries making development faster and more efficient.