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Node.js





Hello!

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What is 🤔



JS RUNTIME



Created by RYAN DAHL in 2009



Built on top of Chrome V8 Engine



Allows to execute Javascript outside the browser



Enables developers to write a full stack application in JavaScript



Uses an event-driven, non-blocking I/O **event loop** for handling concurrent requests.



Comes with a built in package manager.



Open Source & Cross Platform



Fast & Efficient

👨‍💻 Source : https://github.com/nodejs/node

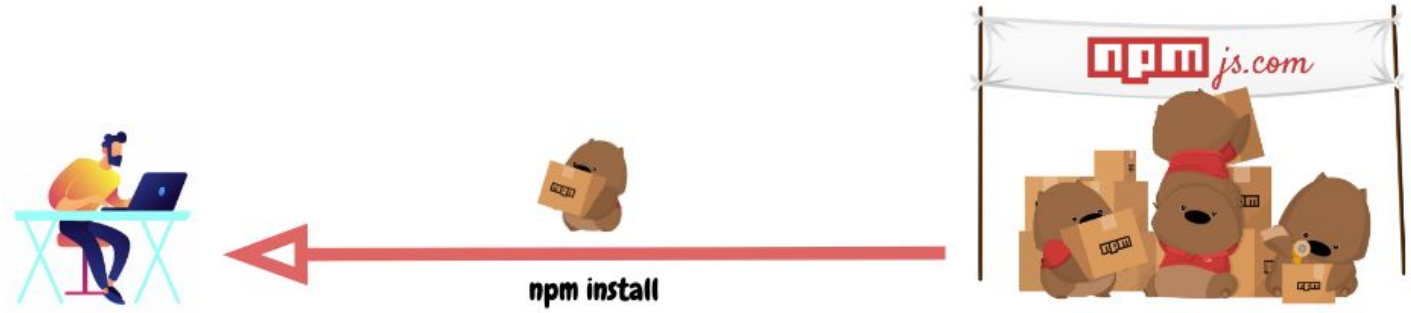
⬇️ Download: https://nodejs.org/en/download/current

What's npm



What is npm?

- **npm** is Node.js's package manager.
- It manages dependencies in Node.js projects.
- Developers can install open-source packages with ease.
- **npm** simplifies adding functionality to Node.js apps.
- It ensures version control for package consistency.



What’s Event Loop?



What is Event Loop?

1st PRIORITY - Call Stack

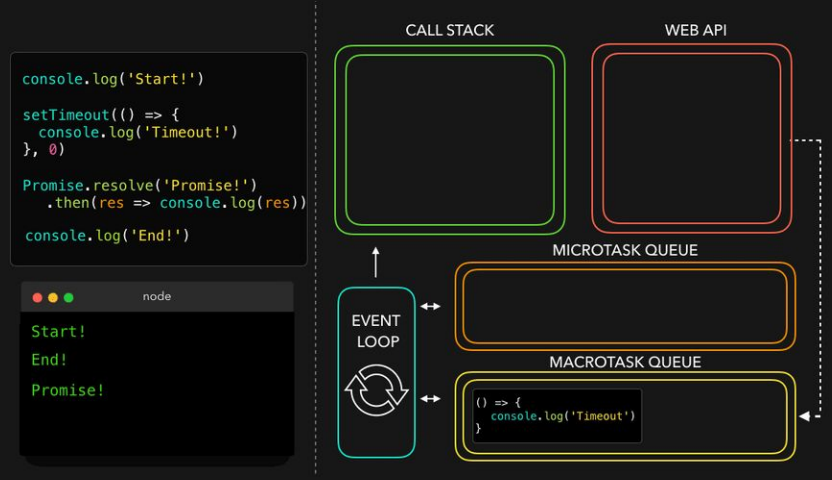
➡️ Handles Synchronous Code

2nd PRIORITY - MICROTASK QUEUE

➡️ Handles Promises and Microtasks

3rd PRIORITY - TASK QUEUE

➡️ Handles Callbacks (From DOM APIs, I/O operations, Timers, etc.)



RESTful API Development with Node.js



What is a RESTful API?

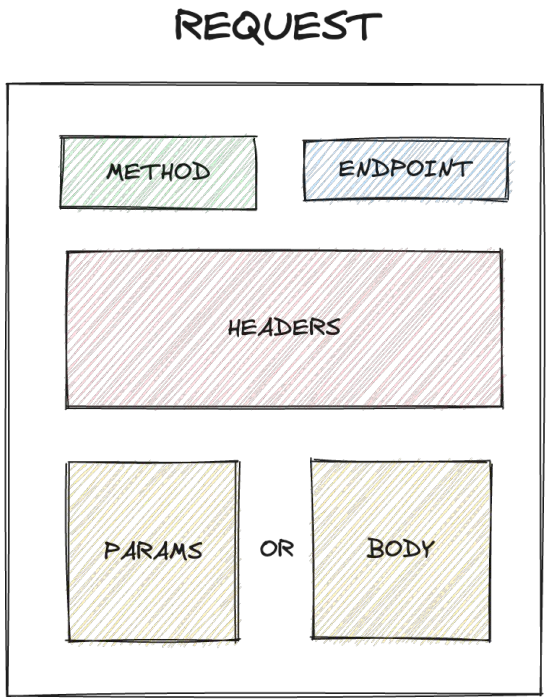
REST: Representational State Transfer

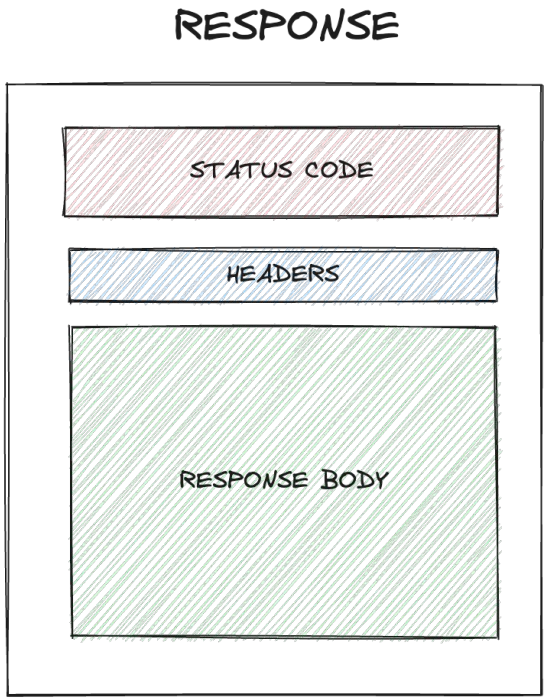
API: Application Programming Interface



- ✅ STANDARDIZED
- ✅ STATELESS
- ✅ PERFORMANT

REQUEST vs RESPONSE





HTTP Methods

CREATE	→	POST
READ	→	GET
UPDATE	→	PUT
DELETE	→	DELETE

Demo

Scenario Overview



IDEALIZE
API

The API should be able to provide the organizing committee to manage and organize the sessions organized as prerequisites for IDEALIZE 2023.

Requirements:

⭐ Should be able to fetch, add, update & delete authors.

⭐ Should be able to fetch, add, update & delete sessions.

⭐ Add, update & delete should be protected.

Base URL: http://localhost:3000

Endpoints:
http://localhost:3000/authors
http://localhost:3000/sessions

Supporting Software



Package Manager - **npm**

💡Can also use yarn or pnpm as well.



Web Framework - **Express.js**

💡Can also use Nest, Sails, Koa, etc.



Database System - **Firestore**

💡Can also use MySQL, MongoDB, etc.



REST Client - **Postman**

💡Can also use Insomnia, curl, etc.

Structuring the API

🚀 Minimal API: index.js ↗️

Controllers

Modules or functions that handle the business logic for specific API endpoints.

Routes

HTTP methods that clients can use to interact with the API.

Middleware

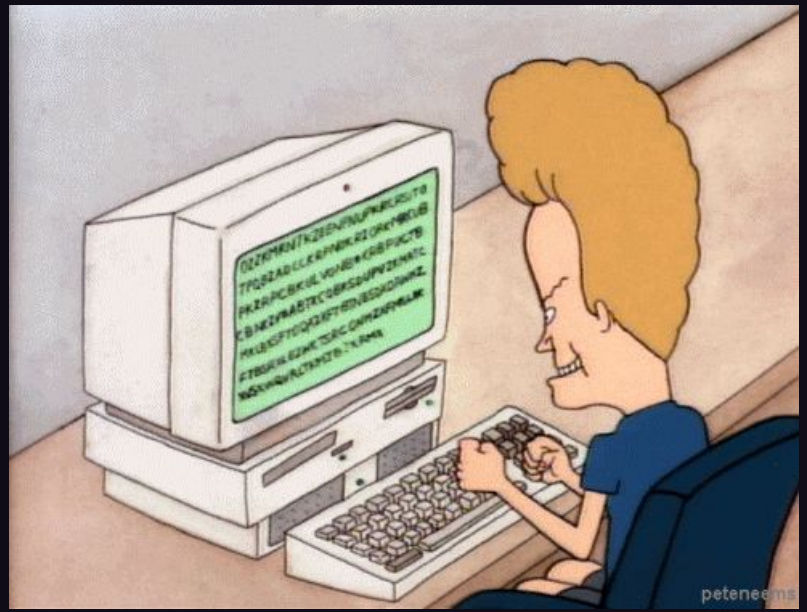
Functions that have access to the request and response objects and can perform additional processing before the final request handler

Folder Structure

Tree

```
- src
    - controllers
        - authors.js
        - sessions.js
    - middleware
        - auth.js
    - routes
        - authors.js
        - sessions.js
    - index.js
- package.json
```

👨‍💻 Code up to now: source ↗️





Firebase





Hello!

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What's  Firebase



What is Firebase?

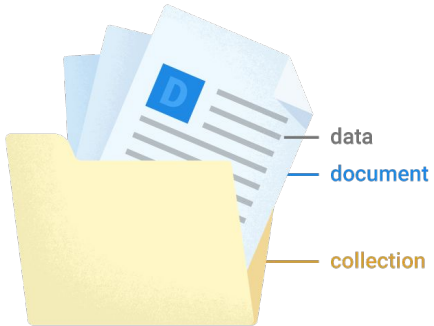
- Firebase in **NOT** a database.
- A collection of backend cloud computing services by Google.
- There is a free tier to try out things.
- It offers following services (and more)
  - Databases
  - Authentication
  - Storage
  - Hosting
  - Compute units
  - Analytics

What's  Cloud Firestore



What is Cloud Firestore?

- **NoSQL** cloud database
- Collection/Document structure of data
- Store data in flexible, hierarchical data structures
- Integrate with web or mobile technologies with provided SDKs
- Realtime updates
- Offline support
- Scales automatically



Demo

What's next?

- Use an IDaaS like  Asgardeo to Authorize users accessing your API.
  - https://wso2.com/asgardeo
- Consuming configurations from `.env` files.
  - Do not push the original file to the repository.
  - Push a `.env.sample` file with placeholders.
- Use a logger for logging in useful actions that'll come in handy for debugging.
  - https://www.npmjs.com/package/winston
- You may have to use additional tools.
  - `cors`
    - Handle cross origin requests when embedding the API in to a web application.
  - `dotenv`
    - Read environment variables from `.env` files.

Question Time!



Thanks!



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