

# **Web Applications & MongoDB Setup**

Day 1: Understanding the Full Stack Journey & Environment Setup

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# Learning Goals

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Mastering the fundamentals of MERN and Database  
Management

# What You Will Learn Today



## Web Architecture

Understand how Clients, Servers, and Databases interact in a modern web ecosystem.



## MongoDB Mastery

Setup MongoDB Atlas and use Compass for visual data exploration and management.



## Environment Setup

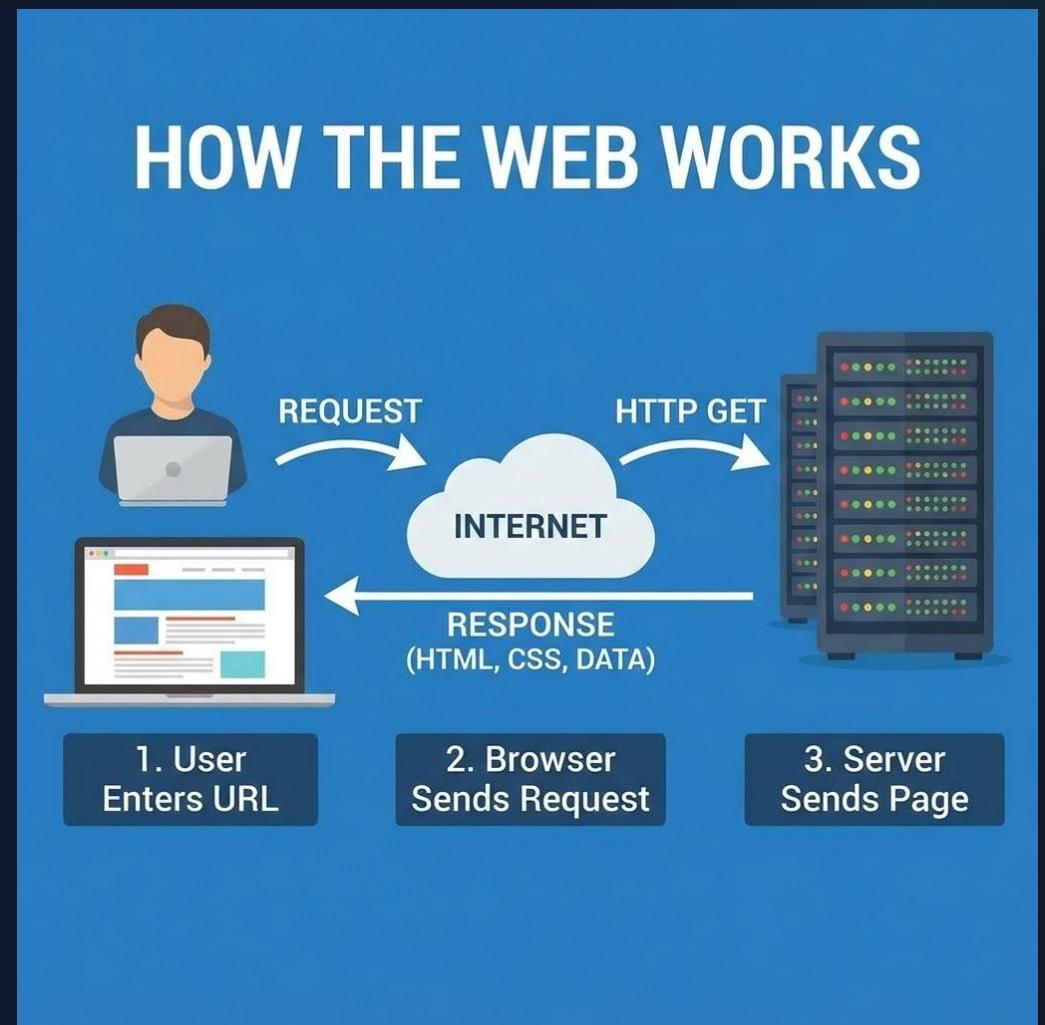
Install Node.js, VS Code, and launch your first React and Node projects.

# How the Web Works

## Main Components

- 💻 Client (Browser): Built with React (HTML/CSS/JS) to show UI.
- 💻 Server: Handles logic and requests using Node.js & Express.
- ในฐาน נתונים Database: Stores persistent data like users via MongoDB.

Client → Server → Database



# What is MERN Stack?

Tech	Name	Role in the Stack
M	MongoDB	NoSQL Database to store application data
E	Express.js	Backend web framework for Node.js
R	React	Frontend library for building User Interfaces
N	Node.js	JavaScript runtime for building scalable servers

*Key Advantage: "JavaScript Everywhere" – One language for the entire stack.*

# MongoDB Atlas Setup

-  Sign up at [mongodb.com/atlas](https://mongodb.com/atlas) using Google or Email.
-  Create a **Free Shared Cluster** (AWS Provider).
-  Set up a Database User with a secure username and password.
-  Whitelist your IP (use 0.0.0.0/0 for easy dev).

## Why Cloud?

Atlas handles backups, scaling, and security automatically, letting you focus on code instead of server maintenance.

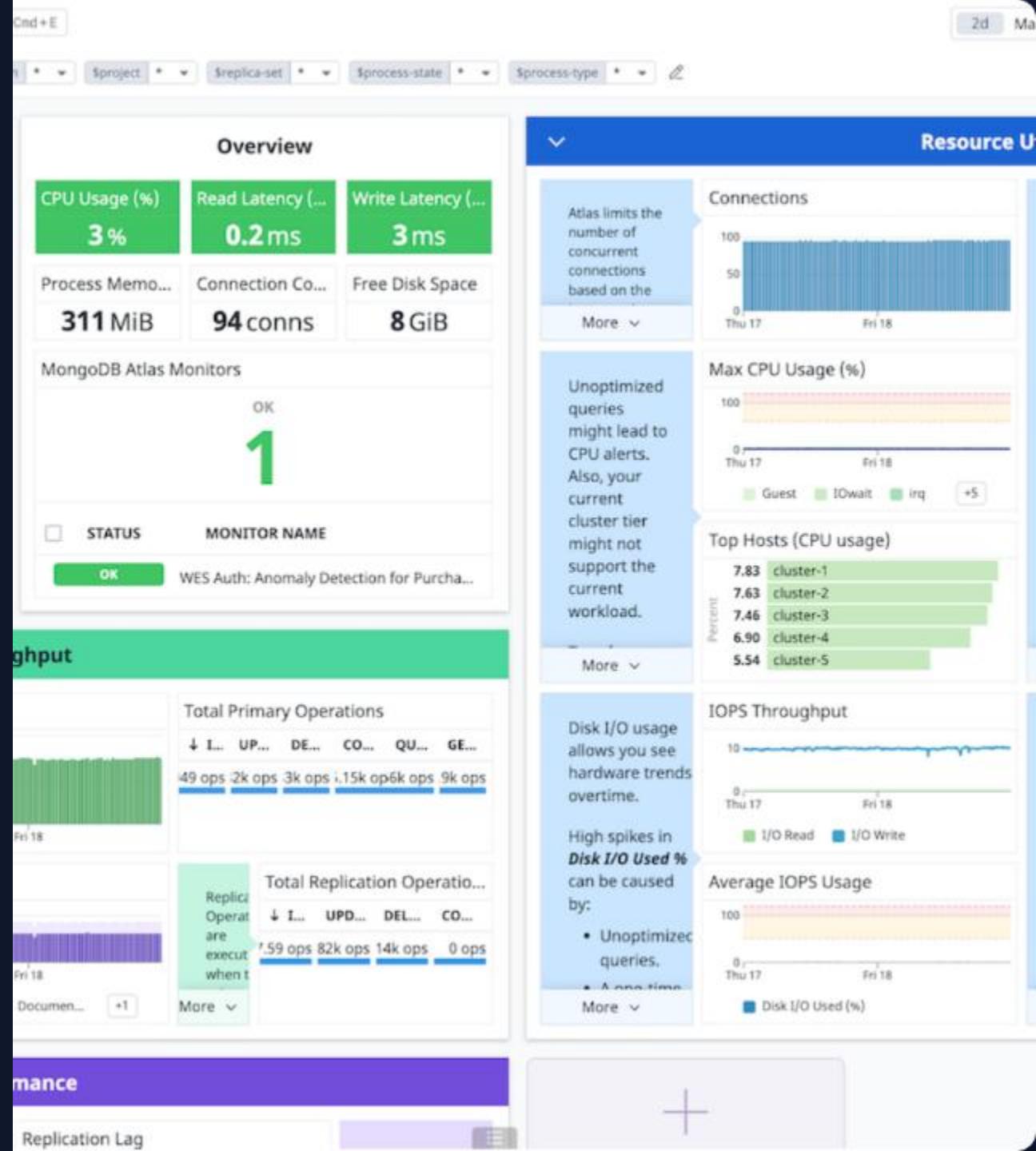
# Atlas Dashboard

**Clusters:** Manage your database servers.

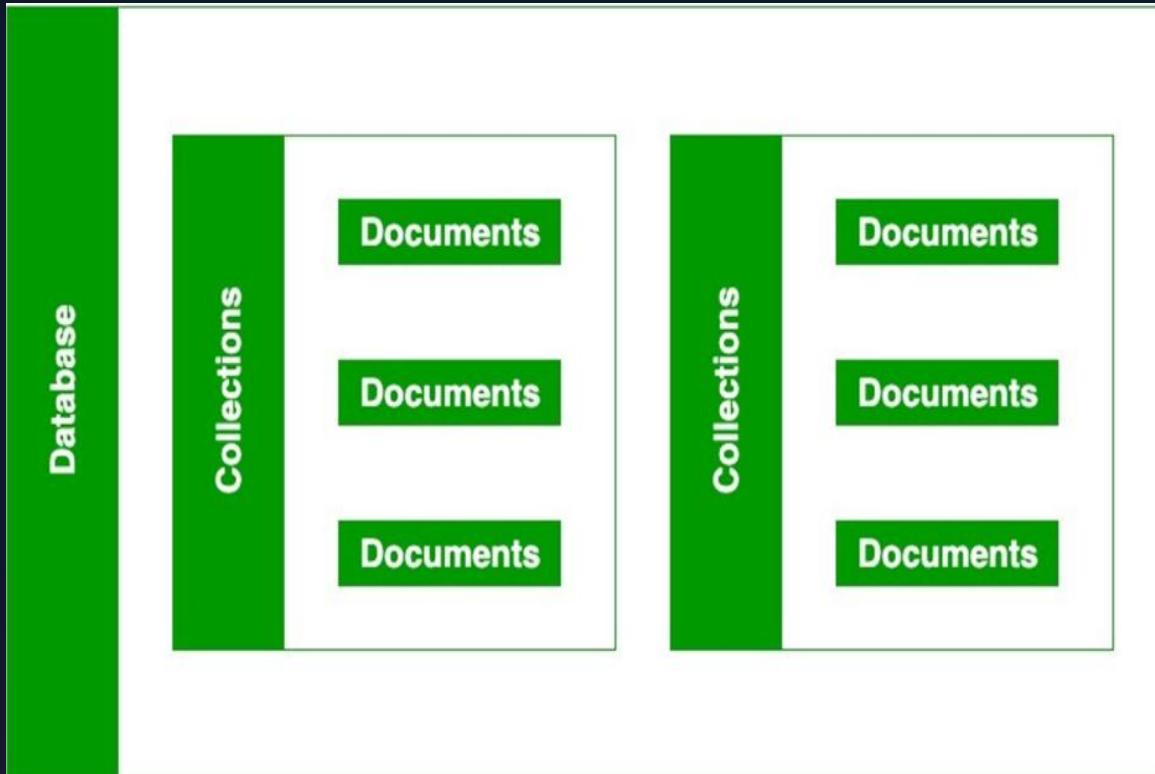
**Collections:** View and query your actual data.

**Security:** Manage users and network access.

The Atlas GUI provides a powerful overview of your database health and performance metrics in real-time.



# Databases & Collections



## Data Hierarchy

MongoDB uses a flexible structure:

**Database:** Container for collections (e.g., mern\_app).

**Collection:** Group of documents (e.g., users).

**Document:** Individual records stored in JSON-like format.

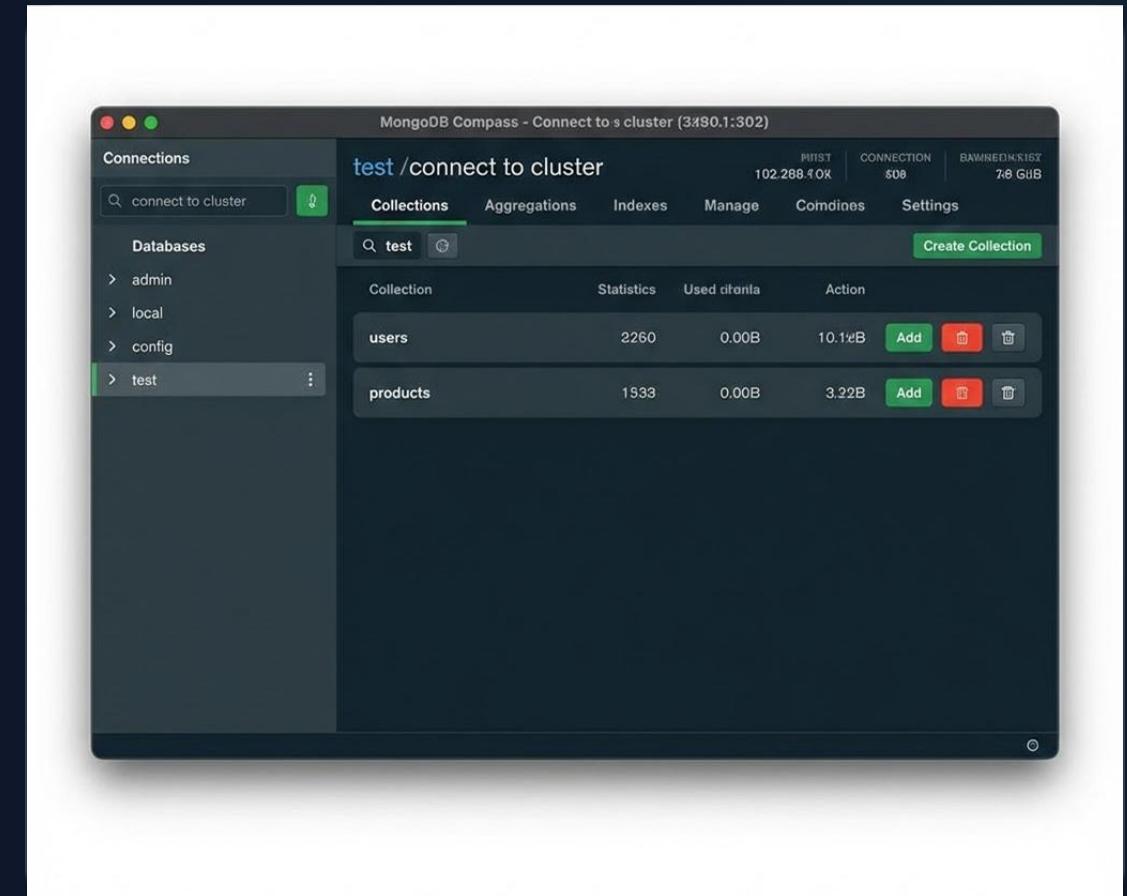
```
{ "name": "John Doe", "email": "john@example.com",  
  "age": 22 }
```

# MongoDB Compass

## Visual Data Handling

Compass is a GUI tool to manage your data locally without using the web dashboard.

-  Connect using your Atlas string.
-  Visual CRUD (Create, Read, Update, Delete).
-  Run complex filters and queries.
-  Analyze data schemas and performance.



# Installing Required Tools



## Node.js

Download from [nodejs.org](https://nodejs.org).

Check version:

```
node -v
```



## VS Code

The industry standard IDE. Install

**ES7+ React Snippets** for speed.



## Vite

Modern build tool for React

projects. Fast and lightweight.

# Hello World: React & Node.js



## React (App.jsx)

```
function App() {  
  return (  
    <div>Hello from React! 🚀</div>  
  );  
  
  export default App;
```



Run using: npm run dev



## Node.js (server.js)

```
const http = require("http");  
const srv = http.createServer((q, r) =>{  
  r.end("Hello from Node.js");  
});  
  
srv.listen(5000);
```



Run using: node server.js

# Questions?

Next: Diving deeper into React Components and Express Routing