

MERN STACK 6 MONTH COURSE

◆ Month 1: HTML & CSS Mastery



Week 1: HTML Essentials

- Structure of an HTML document
- Headings, paragraphs, links, images
- Forms and input types
- Semantic HTML (header, nav, section, footer)



Week 2: CSS Fundamentals

- Selectors, classes, IDs
- Box model, margins, padding, borders
- Fonts, colors, backgrounds



Week 3: Layouts with Flexbox and Grid

- Flexbox: direction, justify, align
- Grid: columns, rows, gap
- Media queries and responsiveness



Week 4: Modern Styling & Animation

- CSS transitions and transforms
- CSS variables
- Using frameworks (optional TailwindCSS or Bootstrap)
- Accessibility and responsive design tips



◆ Month 2: JavaScript for Frontend & React Setup

✓ Week 1: JavaScript Basics

- Variables (`let`, `const`)
- Data types, operators
- Functions, conditionals, loops
- Arrays and objects

✓ Week 2: DOM Manipulation & Events

- Selecting elements
- Handling events (click, submit, input)
- Form validation

✓ Week 3: Intro to React.js

- What is React?
- Setting up with Vite or Create React App
- Components, JSX
- `useState` and props

✓ Week 4: React Forms & Events

- Controlled components (input, form handling)
 - Event handling in React
 - Conditional rendering
 - Lists and keys
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{.js}

JavaScript



◆ Month 3: React Router, UI Design & Final Project

✓ Week 1: React Router & Navigation

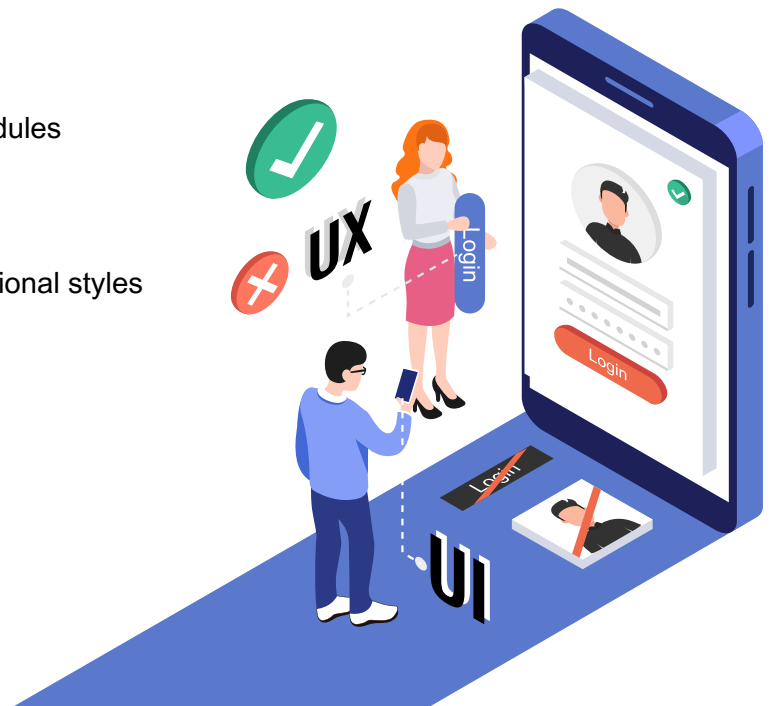
- `react-router-dom` setup
- Routes, links, `useParams`
- Nested routes

✓ Week 2: Styling React Apps

- Styling with TailwindCSS / CSS Modules
- Layouts and reusable components
- Responsive components and conditional styles

✓ Week 3: React App Structure

- Organizing components and folders
- Lifting state up
- Reusable form components
- Simple Context API (optional)



◆ Month 4: Node.js Fundamentals + Module System + CLI App



Week 1: Node.js Basics + Modules

- What is Node.js?
- CommonJS Module System

`module.exports` vs `exports`

Module object and wrapper function

Custom `require()` function

● ES6 Modules

Import/export syntax

Why different module systems?

🔍 Comparison:

● CommonJS vs ES6 Modules

● Types of Node.js modules (built-in, local, 3rd party)



✅ Week 2: NPM, Packages & CLI Tools

● `npm init`, versioning, dependencies

● Creating and publishing NPM packages

● `package.json` in depth

● Shebang (`#!`) in CLI scripts

● CLI packages vs libraries

● Local vs global installations

● What is `npx`? How does it work?



✅ Week 3: File System Module (fs)

● Reading/writing files

● Rename, delete, move, copy

- Directory operations
- Path module: resolving and joining paths

✓ Week 4: Event-Driven Architecture and EventEmitter in Node.js

- What is an I/O Operation?
- What is Async I/O?
- Introduction to Event-Driven Architecture
- The EventEmitter Class Creating and Emitting Events EventEmitter Methods

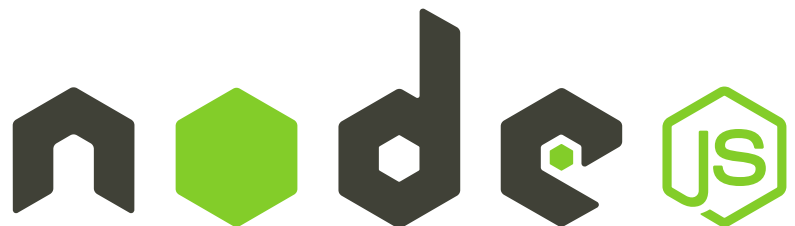
◆ Month 5: Express.js + REST APIs + Middleware

✓ Week 1: Intro to Express.js

- How Express works behind the scenes
- Setting up routes, handling methods (GET, POST, PUT, DELETE)
- Route vs request URL
- Sending responses: JSON, files, status codes

✓ Week 2: Middleware in Express

- What is middleware?
- Global vs route-specific middleware
- `app.use()` vs route handlers
- Serving static files



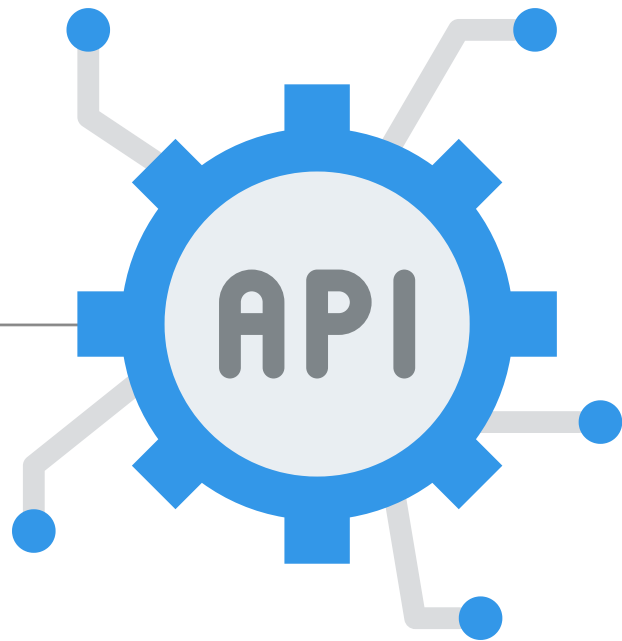
✓ Week 3: Advanced Express

- Dynamic routing and parameters
- File uploads with **Multer**
- CORS and preflight requests
- REST API principles and route naming conventions

✓ Week 4: Robust API Features

- Error handling middleware
- `try/catch`, error propagation
- `res.download()` method
- Advanced routing: `app.route()`, `router.param()`

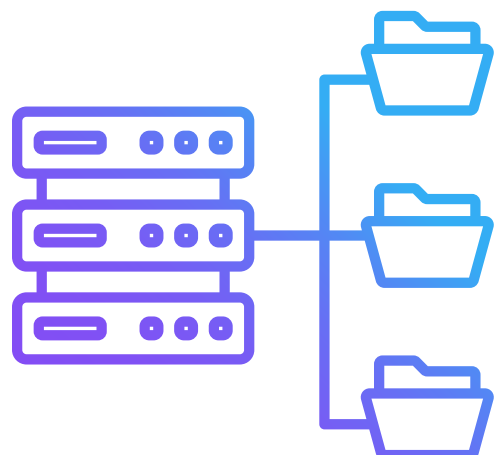
🔧 **Mini Project:** File Upload and Download API with Express



◆ Month 6: MongoDB + Mongoose

✓ Week 1: Intro to MongoDB

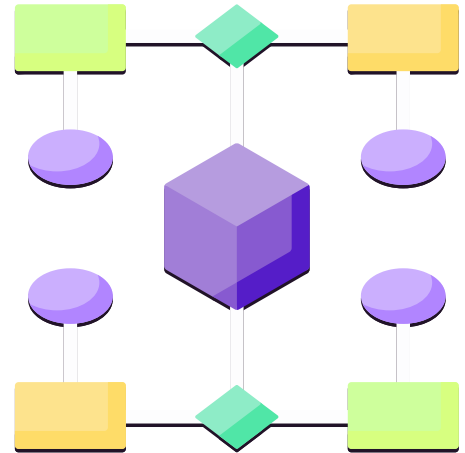
- What is a database?
- Types: Relational vs Non-relational
- **MongoDB Overview**
 - Mongo shell, Compass
 - Install MongoDB locally
 - CRUD basics (create, read, update, delete)
- MongoDB datatypes:



- ObjectId, numbers, BSON types
- Inspecting and querying documents

✓ Week 2: Mongoose & Data Modeling

- Intro to Mongoose
- Creating models and schemas
- Schema types, defaults, validation
- CRUD operations using Mongoose
- Query buffering: queries wait for DB connection



✓ Week 3: Mongoose In Depth

- What is a Mongoose query?
- What are documents?
- Thenable objects in Mongoose
- Populate and referencing other documents

✓ Week 4: MVC Architecture + Final App

- MVC Pattern
 - Models, Views (optional), Controllers
- Modularizing backend logic
- Routes + Controllers + Models structure
- Error handling and async structure



THANK YOU