



## **NodeJS - The Complete Guide (MVC, REST APIs, GraphQL, Deno)**

**FEES 40000/- AFTER Discount 8888/- only**

### **1. Introduction**

1. Introduction
2. What is Node.js
3. Installing Node.js and Creating our First App
4. Understanding the Role & Usage of Node.js
5. Course Outline
6. How To Get The Most Out Of The Course
7. Working with the REPL vs Using Files

### **2. Optional JavaScript - A Quick Refresher**

1. Module Introduction
2. JavaScript in a Nutshell
3. Refreshing the Core Syntax
4. let & const
5. Understanding Arrow Functions
6. Working with Objects, Properties & Methods
7. Arrays & Array Methods
8. Arrays, Objects & Reference Types
9. Understanding Spread & Rest Operators
10. Destructuring
11. Async Code & Promises
12. Wrap Up

### **3. Understanding the Basics**

1. Module Introduction
2. How The Web Works
3. Creating a Node Server
4. The Node Lifecycle & Event Loop
5. Understanding Requests
6. Sending Responses
7. Routing Requests
8. Redirecting Requests
9. Parsing Request Bodies
10. Understanding Event Driven Code Execution
11. Blocking and Non-Blocking Code
12. Node.js - Looking Behind the Scenes
13. Using the Node Modules System
14. Wrap Up

### **4. Improved Development Workflow and Debugging**

1. Module Introduction
2. Understanding NPM Scripts
3. Installing 3rd Party Packages
4. Using Nodemon for Autorestarts
5. Understanding different Error Types
6. Finding & Fixing Syntax Errors
7. Dealing with Runtime Errors

8. Logical Errors
9. Using the Debugger
10. Restarting the Debugger Automatically After Editing our App
11. Changing Variables in the Debug Console
12. Wrap Up

## **5. Working with Express.js**

1. Module Introduction
2. What is Express.js
3. Installing Express.js
4. Adding Middleware
5. How Middleware Works
6. Express.js - Looking Behind the Scenes
7. Handling Different Routes
9. Parsing Incoming Requests
10. Limiting Middleware Execution to POST Requests
11. Using Express Router
12. Adding a 404 Error Page
13. Filtering Paths
14. Creating HTML Pages
15. Serving HTML Pages
16. Returning a 404 Page
17. Using a Helper Function for Navigation
18. Styling our Pages
19. Serving Files Statically
20. Wrap Up

## **6. Working with Dynamic Content & Adding Templating Engines**

1. Module Introduction
2. Sharing Data Across Requests & Users
3. Templating Engines - An Overview
4. Installing & Implementing Pug
5. Outputting Dynamic Content
6. Converting HTML Files to Pug
7. Adding a Layout
8. Finishing the Pug Template
9. Working with Handlebars
10. Converting our Project to Handlebars
11. Adding the Layout to Handlebars
12. Working with EJS
13. Working on the Layout with Partial
14. Wrap Up
15. [OPTIONAL] Assignment Solution

## **7. The Model View Controller (MVC)**

1. Module Introduction
2. What is the MVC
3. Adding Controllers
4. Finishing the Controllers
5. Adding a Product Model
6. Storing Data in Files Via the Model
7. Fetching Data from Files Via the Model
8. Refactoring the File Storage Code
9. Wrap Up

## **8. Optional Enhancing the App**

1. Module Introduction
2. Creating the Shop Structure
3. Working on the Navigation

4. Registering the Routes
5. Storing Product Data
6. Displaying Product Data
7. Editing & Deleting Products
8. Adding Another Item

## **9. Dynamic Routes & Advanced Models**

1. Module Introduction
2. Preparations
3. Adding the Product ID to the Path
4. Extracting Dynamic Params
5. Loading Product Detail Data
6. Rendering the Product Detail View
7. Passing Data with POST Requests
8. Adding a Cart Model
9. Using Query Params
10. Pre-Populating the Edit Product Page with Data
11. Linking to the Edit Page
12. Editing the Product Data
13. Adding the Product-Delete Functionality
14. Deleting Cart Items
15. Displaying Cart Items on the Cart Page
16. Deleting Cart Items
17. Fixing a Delete Product Bug
18. Wrap Up

## **10. SQL Introduction**

1. Module Introduction
2. Choosing a Database
3. NoSQL Introduction
4. Comparing SQL and NoSQL
5. Setting Up MySQL
6. Connecting our App to the SQL Database
7. Basic SQL & Creating a Table
8. Retrieving Data
9. Fetching Products
10. Fetching Products - Time to Practice
11. Inserting Data Into the Database
12. Fetching a Single Product with the where Condition
13. Wrap Up

## **11. Understanding Sequelize**

1. Module Introduction
2. What is Sequelize
3. Connecting to the Database
4. Defining a Model
5. Syncing JS Definitions to the Database
6. Inserting Data & Creating a Product
7. Retrieving Data & Finding Products
8. Getting a Single Product with the where Condition
9. Fetching Admin Products
10. Updating Products
11. Deleting Products
12. Creating a User Model
13. Adding a One-To-Many Relationship
14. Creating & Managing a Dummy User
15. Using Magic Association Methods
16. Fetching Related Products

17. One-To-Many & Many-To-Many Relations
18. Creating & Fetching a Cart
19. Adding New Products to the Cart
20. Adding Existing Products & Retrieving Cart Items
21. Deleting Related Items & Deleting Cart Products
22. Adding an Order Model
23. Storing Cartitems as Orderitems
24. Resetting the Cart & Fetching and Outputting Orders
25. Wrap Up

## **12. Working with NoSQL & Using MongoDB**

1. Module Introduction
2. What is MongoDB
3. Relations in NoSQL
4. Setting Up MongoDB
5. Installing the MongoDB Driver
6. Creating the Database Connection
7. Finishing the Database Connection
8. Using the Database Connection
9. Creating Products
10. Understanding the MongoDB Compass
11. Fetching All Products
12. Fetching a Single Product
13. Making the Edit & Delete Buttons Work Again
14. Working on the Product Model to Edit our Product
15. Finishing the Update Product Code
16. One Note About Updating Products
17. Deleting Products
18. Fixing the Add Product Functionality
19. Creating New Users
20. Storing the User in our Database
21. Working on Cart Items & Orders
22. Adding the Add to Cart Functionality
23. Storing Multiple Products in the Cart
24. Displaying the Cart Items
25. Fixing a Bug
26. Deleting Cart Items
27. Adding an Order
28. Adding Relational Order Data
29. Getting Orders
30. Removing Deleted Items From the Cart
31. Wrap Up

## **13. Working with Mongoose**

1. Module Introduction
2. What is Mongoose
3. Connecting to the MongoDB Server with Mongoose
4. Creating the Product Schema
5. Saving Data Through Mongoose
6. Fetching All Products
7. Fetching a Single Product
8. Updating Products
9. Deleting Products
10. Adding and Using a User Model
11. Using Relations in Mongoose
12. One Important Thing About Fetching Relations
13. Working on the Shopping Cart

14. Loading the Cart
15. Deleting Cart Items
16. Creating & Getting Orders
17. Storing All Order Related Data
18. Clearing the Cart After Storing an Order
19. Getting & Displaying the Orders
20. Wrap Up

#### **14. Sessions & Cookies**

1. Module Introduction
2. What is a Cookie
3. The Current Project Status
4. Optional Creating the Login Form
5. Adding the Request Driven Login Solution
6. Setting a Cookie
7. Manipulating Cookies
8. Configuring Cookies
9. What is a Session
10. Initializing the Session Middleware
11. Using the Session Middleware
12. Using MongoDB to Store Sessions
13. Sessions & Cookies - A Short Summary
14. Deleting a Cookie
15. Fixing Some Minor Bugs
16. Making Add to Cart Work Again
17. Two Tiny Improvements
18. Wrap Up

#### **15. Adding Authentication**

1. Module Introduction
2. What is Authentication
3. How is Authentication Implemented
4. Our Updated Project Status
5. Implementing an Authentication Flow
6. Encrypting Passwords
7. Adding a Tiny Code Improvement
8. Adding the SignIn Functionality
9. Working on Route Protection
10. Using Middleware to Protect Routes
11. Understanding CSRF Attacks
12. Using a CSRF Token
13. Adding CSRF Protection
14. Fixing the Order Button
15. Providing User Feedback
16. Optional Styling Error Messages
17. Finishing the Flash Messages
18. Adding Additional Flash Messages
19. Wrap Up

#### **16. Sending Emails**

1. Module Introduction
2. How Does Sending Emails Work
3. Using SendGrid
4. Using Nodemailer to Send an Email
5. Potential Limitation for Large Scale Apps

#### **17. Advanced Authentication**

1. Module Introduction
2. Resetting Passwords

3. Implementing the Token Logic
4. Creating the Token
5. Creating the Reset Password Form
6. Adding Logic to Update the Password
7. Why we Need Authorization
8. Adding Authorization
9. Adding Protection to Post Actions
10. Why Editing Fails
11. Wrap Up

## **18. Understanding Validation**

1. Module Introduction
2. Why Should We Use Validation
3. How to Validate Input
4. Setup & Basic Validation
5. Using Validation Error Messages
6. Built-In & Custom Validators
7. More Validators
8. Checking For Field Equality
9. Adding Async Validation
11. Keeping User Input
12. Adding Conditional CSS Classes
13. Adding Validation to Login
14. Sanitizing Data
15. Validating Product Addition
16. Validating Product Editing
17. Wrap Up

## **19. Error Handling**

1. Module Introduction
2. Types of Errors & Error Handling
3. Analyzing the Error Handling in the Current Project
4. Errors - Some Theory
5. Throwing Errors in Code
6. Returning Error Pages
7. Using the Express.js Error Handling Middleware
8. Updating the App
9. Using the Error Handling Middleware Correctly
10. Status Codes
11. Wrap Up

## **20. File Upload & Download**

1. Module Introduction
2. Adding a File Picker to the Frontend
3. Handling Multipart Form Data
4. Handling File Uploads with Multer
5. Configuring Multer to Adjust Filename & Filepath
6. Filtering Files by Mimetype
7. Storing File Data in the Database
9. Serving Images Staticly
10. Downloading Files with Authentication
11. Setting File Type Headers
12. Restricting File Access
13. Streaming Data vs Preloading Data
14. Using PDFKit for .pdf Generation
15. Generating .pdf Files with Order Data
16. Deleting Files
17. Fixing Invoice Links

18. Wrap Up

## **21. Adding Pagination**

1. Module Introduction
2. Adding Pagination Links
3. Retrieving a Chunk of Data
4. Preparing Pagination Data on the Server
5. Adding Dynamic Pagination Buttons
6. Re-Using the Pagination Logic & Controls
7. Wrap Up

## **22. Understanding Async Requests**

1. Module Introduction
2. What are Async Requests
3. Adding Client Side JS Code
4. Sending & Handling Background Requests
5. Manipulating the DOM

## **23. Adding Payments**

1. Module Introduction
2. How Payments Work
3. Adding a Checkout Page
4. Using Stripe in Your App

## **24. Working with REST APIs - The Basics**

1. Module Introduction
2. What are REST APIs and why do we use Them
3. Accessing Data with REST APIs
4. Understanding Routing & HTTP Methods
5. REST APIs - The Core Principles
6. Creating our REST API Project & Implementing the Route Setup
7. Sending Requests & Responses and Working with Postman
8. REST APIs, Clients & CORS Errors
9. Sending POST Requests
10. Wrap Up

## **25. Working with REST APIs - The Practical Application**

1. Module Introduction
2. REST APIs & The Rest Of The Course
3. Understanding the Frontend Setup
4. Planning the API
5. Fetching Lists of Posts
6. Adding a Create Post Endpoint
7. Adding Server Side Validation
8. Setting Up a Post Model
9. Storing Posts in the Database
10. Static Images & Error Handling
11. Fetching a Single Post
12. Uploading Images
13. Updating Posts
14. Deleting Posts
15. Adding Pagination
16. Adding a User Model
17. Adding User Signup Validation
18. Signing Users Up
19. How Does Authentication Work
20. Starting with User Login
21. Logging In & Creating JSON Web Tokens (JWTs)
22. Using & Validating the Token
23. Adding Auth Middleware to All Routes

24. Connecting Posts & Users
25. Adding Authorization Checks
26. Clearing Post-User Relations
27. Wrap Up

## **26. Understanding Async Await in Node.js**

1. Module Introduction
2. What is Async Await All About
3. Transforming Then Catch to Async Await
4. Top-level await
5. Wrap Up

## **27. Understanding Websockets & Socket.io**

1. Module Introduction
2. What Are Websockets & Why Would You Use Them
3. Websocket Solutions - An Overview
4. Setting Up Socket.io on the Server
5. Establishing a Connection From the Client
6. Identifying Realtime Potential
7. Sharing the IO Instance Across Files
8. Synchronizing POST Additions
9. Fixing a Bug - The Missing Username
10. Updating Posts On All Connected Clients
11. Sorting Correctly
12. Deleting Posts Across Clients
13. Wrap Up

## **28. Working with GraphQL**

1. Module Introduction
2. What is GraphQL
3. Understanding the Setup & Writing our First Query
4. Defining a Mutation Schema
5. Adding a Mutation Resolver & GraphQL
6. Adding Input Validation
7. Handling Errors
8. Connecting the Frontend to the GraphQL API
9. Adding a Login Query & a Resolver
10. Adding Login Functionality
11. Adding a Create Post Mutation
12. Extracting User Data From the Auth Token
13. Sending the Create Post Query
14. Fixing a Bug & Adding New Posts Correctly
15. Adding a Get Post Query & Resolver
16. Sending Create Post and Get Post Queries
17. Adding Pagination
18. Uploading Images
19. Viewing a Single Post
20. Updating Posts
21. Deleting Posts
22. Managing the User Status
23. Using Variables
24. Fixing a Pagination Bug
25. Wrap Up

## **29. Deploying our App**

1. Module Introduction
2. Deploying Different Kinds of Apps
3. Deployment Preparations
4. Using Environment Variables



5. Using Production API Keys
6. Setting Secure Response Headers with Helmet
7. Compressing Assets
8. Setting Up Request Logging
9. Setting Up a SSL Server
10. Using a Hosting Provider
11. Understanding the Project & the Git Setup
12. A Deployment Example with Heroku
13. Deploying APIs

### **30. Testing Node.js Applications**

1. Module Introduction
2. What is Testing
3. Why & How
4. Setup and Writing a First Test
5. Testing the Auth Middleware
6. Organizing Multiple Tests
7. What Not To Test!
8. Using Stubs
9. Testing Controllers
10. Testing Asynchronous Code
11. Setting up a Testing Database
12. Testing Code With An Active Database
13. Cleaning Up
14. Hooks
15. Testing Code That Requires Authentication
16. Wrap Up & Mastering Tests

### **31. Node.js as a Build Tool & Using npm**

1. Module Introduction
2. npm & Node.js
3. Using npm
4. What is a Build Tool
5. Using Node.js in Build Processes

### **32. Modern JavaScript & NodeJS**

1. Module Introduction
2. What is this Module About
3. Working with ES Modules & Node
4. More on ES Modules
5. Node Core Modules & Promises

### **33. NodeJS & TypeScript**

1. Module Introduction
2. TypeScript What & Why
3. TypeScript Setup
4. Assigning Types
5. Type Inference & Type Casting
6. Configuring TypeScript
7. Working with Union Types
8. Using Object & Array Types
9. Working with Type Aliases & Interfaces
10. Understanding Generics
11. A First Summary
12. Node & TypeScript Setup
13. Getting Started with Node and TypeScript
14. Writing TypeScript Express.js Code
15. Adding REST Routes with TypeScript
16. Finishing the REST Routes

17. Testing the API
18. Using Type Casting
19. Moving to a Better Project Structure
20. Wrap Up

### **34. An Introduction to Deno**

1. Module Introduction
2. What is Deno
3. Why Deno
4. Deno Setup
5. Writing First Deno Code
6. The Deno Runtime (Namespace) API
7. Using the Runtime API
8. Working with Deno Permissions
9. Repeating the Example with Node
10. How Deno Features Are Organized
11. Using the Standard Library
12. Creating a Web Server
13. Using the Oak Framework with Deno
14. An Example Node REST API
15. Re-building the REST API with Deno
16. Should You Switch From Node to Deno

### **35. Deno, CRUD & Databases (MongoDB)**

1. Module Introduction
2. App Setup
3. Handling CORS Errors
4. Connecting Deno to MongoDB
5. Using the MongoDB Client Module
6. Finishing the Deno MongoDB CRUD Operations
7. Wrap Up

### **36. Roundup**

1. Course Roundup