https://www.udemy.com/course/microservices-with-node-js-and-react/

Microservices with Node JS and React

Build, deploy, and scale an E-Commerce app using Microservices built with Node, React, Docker and Kubernetes

26 sections 652 lectures 54h 27m total length

### **Fundamental Ideas Around Microservices9 lectures • 46min**

* ~~How to Get HelpPreview~~
* ~~00:56~~
* ~~Course Resources~~

00:38

* ~~What Is a Microservice? Preview~~
* 03:19
* ~~Data in MicroservicesPreview~~
* 07:34
* ~~Quiz - Data in Microservices~~

3 questions

* ~~Big Problems with Data~~

05:08

* ~~Sync Communication Between Services~~

06:53

* ~~Event-Based Communication~~

05:19

* ~~A Crazy Way of Storing Data~~

09:48

* ~~Pros and Cons of Async Communication~~

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* ~~App Overview~~

05:44

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* ~~Testing the Posts Service~~

04:04

* ~~Implementing a Comments Service~~

08:22

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00:20

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00:39

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05:00

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* ~~Handling CORS Errors~~

04:08

* ~~Fetching and Rendering Posts~~

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* ~~Creating Comments~~

08:09

* ~~Displaying Comments~~

07:23

* ~~Completed React App~~

00:13

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04:54

* ~~An Async Solution~~

07:16

* ~~Common Questions Around Async Events~~

04:14

* ~~Event Bus Overview~~

05:14

* ~~Important Note about Node v15 and Unhandled Promise Rejections~~

00:23

* ~~A Basic Event Bus Implementation~~

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* ~~Emitting Events~~

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04:33

* ~~Creating the Data Query Service~~

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* ~~Parsing Incoming Events~~

07:02

* ~~Using the Query Service~~

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* ~~Adding a Simple Feature~~

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* ~~Issues with Comment Filtering~~

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* ~~A Second Approach~~

05:37

* ~~How to Handle Resource Updates~~

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* ~~Creating the Moderation Service~~

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* ~~Adding Comment Moderation~~

04:26

* ~~Reminder about Node v15 and Error Catching~~

00:11

* ~~Handling Moderation~~

05:29

* ~~Updating Comment Content~~

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* ~~Rendering Comments by Status~~

03:26

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* ~~Required Node v15+ Update for Query Service~~

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* ~~Implementing Event Sync~~

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* ~~Event Syncing in Action~~

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### **Running Services with Docker8 lectures • 30min**

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* ~~Why Docker?~~

02:55

* ~~Why Kubernetes?~~

05:47

* ~~Don't Know Docker? Watch This.~~

01:17

* ~~Note About Docker Build Output and Buildkit~~

00:44

* ~~Dockerizing the Posts Service~~

04:02

* ~~Review Some Basic Commands~~

05:23

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### **Orchestrating Collections of Services with Kubernetes44 lectures • 3hr 25min**

* ~~Warning on Docker Desktop for Linux~~

00:37

* ~~Installing Kubernetes~~

03:19

* ~~IMPORTANT Note for Minikube and MicroK8s Users~~

00:47

* ~~A Kubernetes Tour~~

09:45

* ~~Important Kubernetes Terminology~~

02:51

* ~~Notes on Config Files~~

03:11

* ~~Creating a Pod~~

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00:35

* ~~Understanding a Pod Spec~~

05:15

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* ~~Introducing Deployments~~

03:27

* ~~Creating a Deployment~~

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* ~~Common Commands Around Deployments~~

04:35

* ~~Updating Deployments~~

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* ~~Preferred Method for Updating Deployments~~

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04:15

* ~~Creating a NodePort Service~~

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* ~~Accessing NodePort Services~~

05:09

* ~~Setting Up Cluster IP Services~~

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04:09

* ~~Updating Service Addresses~~

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05:00

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09:57

* ~~Testing Communication~~

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* ~~Load Balancer Services~~

05:13

* ~~Load Balancers and Ingress~~

06:38

* ~~Important - DO NOT SKIP - Ingress Nginx Installation Info~~

00:30

* ~~Installing Ingress-Nginx~~

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* ~~Ingress v1 API Required Update + pathType Warning~~

00:56

* ~~Writing Ingress Config Files~~

04:47

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01:12

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06:35

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02:43

* ~~Kubernetes Cluster Creation~~

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* ~~Kubectl Contexts~~

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05:03

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* ~~More Skaffold Updates~~

01:06

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* ~~Creating Route Handlers~~

05:40

* ~~Scaffolding Routes~~

04:05

* ~~Adding Validation~~

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* ~~Handling Validation Errors~~

06:18

* ~~Postman HTTPS Issues~~

00:11

* ~~Surprising Complexity Around Errors~~

06:06

* ~~Other Sources of Errors~~

04:17

* ~~Solution for Error Handling~~

04:50

* ~~Building an Error Handling Middleware~~

07:38

* ~~Communicating More Info to the Error Handler~~

05:23

* ~~Encoding More Information In an Error~~

04:35

* ~~Subclassing for Custom Errors~~

08:17

* ~~Determining Error Type~~

03:10

* ~~Property 'param' does not exist on type 'AlternativeValidationError'~~

00:23

* ~~Converting Errors to Responses~~

10:12

* ~~Moving Logic Into Errors~~

08:36

* ~~serializeErrors' not assignable to the same property in base type 'CustomError'~~

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* ~~Verifying Our Custom Errors~~

08:34

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10:19

* ~~How to Define New Custom Errors~~

05:01

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* ~~Understanding the Signup Flow~~

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* ~~Getting TypeScript and Mongoose to Cooperate~~

05:21

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06:00

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04:58

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* ~~So Which Option?~~

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08:26

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06:21

* ~~Microservices Auth Requirements~~

11:00

* ~~Issues with JWT's and Server Side Rendering~~

09:58

* ~~Cookies and Encryption~~

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* ~~Generating a JWT~~

08:29

* ~~JWT Signing Keys~~

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* ~~Securely Storing Secrets with Kubernetes~~

02:13

* ~~Creating and Accessing Secrets~~

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* ~~Accessing Env Variables in a Pod~~

05:18

* ~~Common Response Properties~~

04:41

* ~~Formatting JSON Properties~~

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* ~~Requiring Auth for Route Access~~

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* ~~Testing Goals~~

04:32

* ~~Testing Architecture~~

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* ~~Index to App Refactor~~

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* ~~A Few Dependencies~~

03:33

* ~~Required MongoMemoryServer Updates~~

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05:18

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* globalThis has no index signature TS Error

00:16

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07:12

* Testing Non-Authed Requests

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* Starting the React App

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* Reminder on Server Side Rendering

03:38

* Suggestion Regarding a Default Export Warning

00:30

* Basics of Next JS

05:24

* Building a Next Image

04:28

* Running Next in Kubernetes

10:12

* Small Update for Custom Webpack Config

00:19

* Note on File Change Detection

04:26

* Adding Global CSS

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* Adding a Sign Up Form

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* Handling Email and Password Inputs

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* Successful Account Signup

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* Handling Validation Errors

06:53

* The useRequest Hook

06:59

* Using the useRequest Hook

03:40

* An onSuccess Callback

05:37

* Overview on Server Side Rendering

06:47

* A note about ECONNREFUSED errors

00:24

* Fetching Data During SSR

05:07

* Why the Error?

09:00

* Two Possible Solutions

07:04

* Cross Namespace Service Communication

07:45

* When is GetInitialProps Called?

06:46

* On the Server or the Browser

02:01

* Ingress-Nginx Namespace and Service - Important Update

00:19

* Specifying the Host

08:23

* Passing Through the Cookies

04:01

* A Reusable API Client

07:05

* Content on the Landing Page

02:01

* The Sign In Form

03:12

* A Reusable Header

05:00

* Moving GetInitialProps

02:11

* Issues with Custom App GetInitialProps

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* Handling Multiple GetInitialProps

06:07

* Passing Props Through

03:03

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* Options for Code Sharing

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* Publishing NPM Modules

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* Running the Ticket Service

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* Quick Auth Update

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* Test-First Approach

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* Adding Auth Protection

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* Faking Authentication During Tests

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* A Required Session Fix and a Global Signin Reminder

00:15

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05:39

* Testing Request Validation

04:12

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07:12

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08:57

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* NATS Server Status - IMPORTANT NOTE

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* Three Important Items

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* Graceful Client Shutdown

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00:17

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### Cross-Service Data Replication In Action28 lectures • 2hr 44min

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* Asserting Reserved Tickets

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00:20

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02:12

* Reminder on Listeners

01:53

* Blueprint for Listeners

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05:37

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04:02

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00:20

* Testing OCC

09:07

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06:29

* Including Versions in Events

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03:55

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* Testing the Ticket Updated Listener

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* Listeners in the Tickets Service

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* Strategies for Locking a Ticket

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* Reserving a Ticket

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* Private vs Protected Properties

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* Publishing While Listening

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* What's Bull All About?

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* Creating a Queue

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* Queueing a Job on Event Arrival

05:10

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* Delaying Job Processing

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00:21

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* Payments Flow with Stripe

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* Validating Order Payment

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06:59

* Testing Same-User Validation

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* Stripe Setup

03:58

* Creating a Stripe Secret

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* Creating a Charge with Stripe

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* Manual Testing of Payments

06:35

* Automated Payment Testing

06:27

* Mocked Stripe Client

04:23

* A More Realistic Test Setup

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* Tying an Order and Charge Together

07:18

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* Publishing a Payment Created Event

06:31

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* Marking an Order as Complete

06:18

* Important Info About the Next Lecture - Don't Skip

00:51

* Don't Cancel Completed Orders!

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* A Few More Pages

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* Reminder on Data Fetching with Next

06:09

* Two Quick Fixes

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* Scaffolding a Form

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* Sanitizing Price Input

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* Linking to Wildcard Routes

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01:01

* Showing a Stripe Payment Form

03:06

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00:14

* Configuring Stripe

04:23

* Test Credit Card Numbers

01:58

* Paying for an Order

09:24

* Filtering Reserved Tickets

02:27

* Header Links

01:47

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* Development Workflow

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* Git Repository Approaches

06:05

* Creating a GitHub Action

07:11

* Adding a CI Test Script

02:42

* Tests in GitHub Actions Hang - Jest did not exit

00:17

* Running Tests on PR Creation

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* Output of Failing Tests

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* Running Tests in Parallel

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* Selective Test Execution

05:44

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* Creating a Hosted Cluster

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* Reminder on Kubernetes Context

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* Reminder on Swapping Contexts

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* The Deployment Plan

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* Building an Image in an Action

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* Testing the Image Build

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* Applying Kubernetes Manifests

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* Prod vs Dev Manifest Files

04:23

* Manual Secret Creation

03:39

* Don't Forget Ingress-Nginx!

05:31

* Testing Automated Deployment

02:51

* Additional Deploy Files

07:12

* A Successful Deploy!

06:07

* Buying a Domain Name

03:10

* Three Important Changes Needed to Deploy - Do Not Skip!

01:23

* Configuring the Domain Name

05:27

* I Really Hope This Works

01:58

* Next Steps

04:36

### [Appendix A] - Basics of Docker46 lectures • 3hr 3min

* Finished Code and Diagrams

00:38

* Why Use Docker?

03:43

* What is Docker?

02:53

* Docker for Mac / Windows

01:57

* Installing Docker on macOS

01:10

* Installing Docker with WSL2 on Windows 10/11

01:50

* Installing Docker on Linux

01:55

* Using the Docker Client

05:03

* But Really... What's a Container?

08:30

* How's Docker Running on Your Computer?

02:44

* Docker Run in Detail

01:54

* Overriding Default Commands

05:12

* Listing Running Containers

04:09

* Container Lifecycle

05:16

* Restarting Stopped Containers

03:43

* Removing Stopped Containers

01:39

* Retrieving Output Logs

02:33

* Stopping Containers

05:21

* Multi-Command Containers

04:16

* Executing Commands in Running Containers

02:53

* The Purpose of the 'it' Flag

04:35

* Getting a Command Prompt in a Container

04:06

* Starting with a Shell

02:13

* Container Isolation

03:09

* Creating Docker Images

02:36

* Buildkit for Docker Desktop

00:45

* Building a Dockerfile

04:51

* Dockerfile Teardown

02:41

* What's a Base Image?

05:40

* The Build Process in Detail

11:09

* A Brief Recap

03:24

* Rebuilds with Cache

07:02

* Tagging an Image

04:26

* Quick Note for Windows Users

00:14

* Manual Image Generation with Docker Commit

05:00

* Project Outline

02:35

* Node Server Setup

05:03

* A Few Planned Errors

05:12

* Required Node Base Image Version

00:23

* Base Image Issues

07:50

* A Few Missing Files

03:18

* Copying Build Files

04:50

* Container Port Forwarding

07:26

* Specifying a Working Directory

07:52

* Unnecessary Rebuilds

04:16

* Minimizing Cache Busting and Rebuilds

04:58

### **[Appendix B] - Basics of Typescript75 lectures • 5hr 42min**

* ~~How to Get Help~~

01:04

* ~~TypeScript Overview~~

06:19

* ~~Environment Setup~~

07:59

* ~~Important Axios Version Information~~

00:12

* ~~A First App~~

04:43

* ~~Executing Typescript Code~~

05:03

* ~~One Quick Change~~

03:35

* ~~Catching Errors with TypeScript~~

07:22

* ~~Catching More Errors!~~

05:15

* ~~Do Not Skip - Course Overview~~

03:36

* ~~Types~~

05:12

* ~~More on Types~~

05:53

* ~~Examples of Types~~

04:48

* ~~Where Do We Use Types?~~

00:49

* ~~Type Annotations and Inference~~

02:03

* ~~Annotations With Variables~~

04:53

* ~~Object Literal Annotations~~

06:53

* ~~Annotations Around Functions~~

05:55

* ~~Understanding Inference~~

03:51

* ~~The Any Type~~

07:47

* ~~Fixing the "Any" Type~~

01:49

* ~~Delayed Initialization~~

03:05

* ~~When Inference Doesn't Work~~

04:37

* ~~More on Annotations Around Functions~~

04:56

* ~~Inference Around Functions~~

06:08

* ~~Annotations for Anonymous Functions~~

01:42

* ~~Void and Never~~

02:49

* ~~Destructuring with Annotations~~

03:35

* ~~Annotations Around Objects~~

07:05

* ~~Arrays in TypeScript~~

05:05

* ~~Why Typed Arrays?~~

04:30

* ~~Multiple Typees in Arrays~~

02:57

* ~~When to Use Typed Arrays~~

00:54

* ~~Tuples in TypeScript~~

04:04

* ~~Tuples in Action~~

05:28

* ~~Why Tuples?~~

03:20

* ~~Interfaces~~

01:26

* ~~Long Type Annotations~~

04:42

* ~~Fixing Annotations With Interfaces~~

04:36

* Syntax Around Interfaces

03:31

* Functions in Interfaces

04:46

* Code Reuse with Interfaces

04:15

* General Plan with Interfaces

03:12

* Classes

03:47

* Basic Inheritance

03:03

* Class Method Modifiers

06:41

* Fields in Classes

06:18

* Fields with Inheritance

04:18

* Where to Use Classes

01:09

* Updated Parcel Instructions

00:13

* App Overview

02:45

* Bundling with Parcel

04:54

* Project Structure

03:19

* IMPORTANT Info About Faker Installation

00:23

* Generating Random Data

05:29

* Type Definition Files

05:17

* Using Type Definition Files

06:20

* Export Statements in TypeScript

05:06

* Defining a Company

04:43

* Important Note About Google Maps Key

00:27

* Adding Google Maps Support

07:38

* Required Update for New @types Library

00:18

* Google Maps Integration with TypeScript

04:06

* Exploring Type Definition Files

12:46

* Hiding Functionality

06:28

* Why Use Private Modifiers? Here's Why

08:25

* Adding Markers

09:18

* Duplicate Code

02:45

* One Possible Solution

06:38

* Restricting Access with Interfaces

05:35

* Implicit Type Checks

03:26

* Showing Popup Windows

06:47

* Updating Interface Definitions

07:11

* Optional Implements Clauses

06:06

* App Wrapup

08:08

### Bonus!1 lecture • 1min

* Bonus!

00:33