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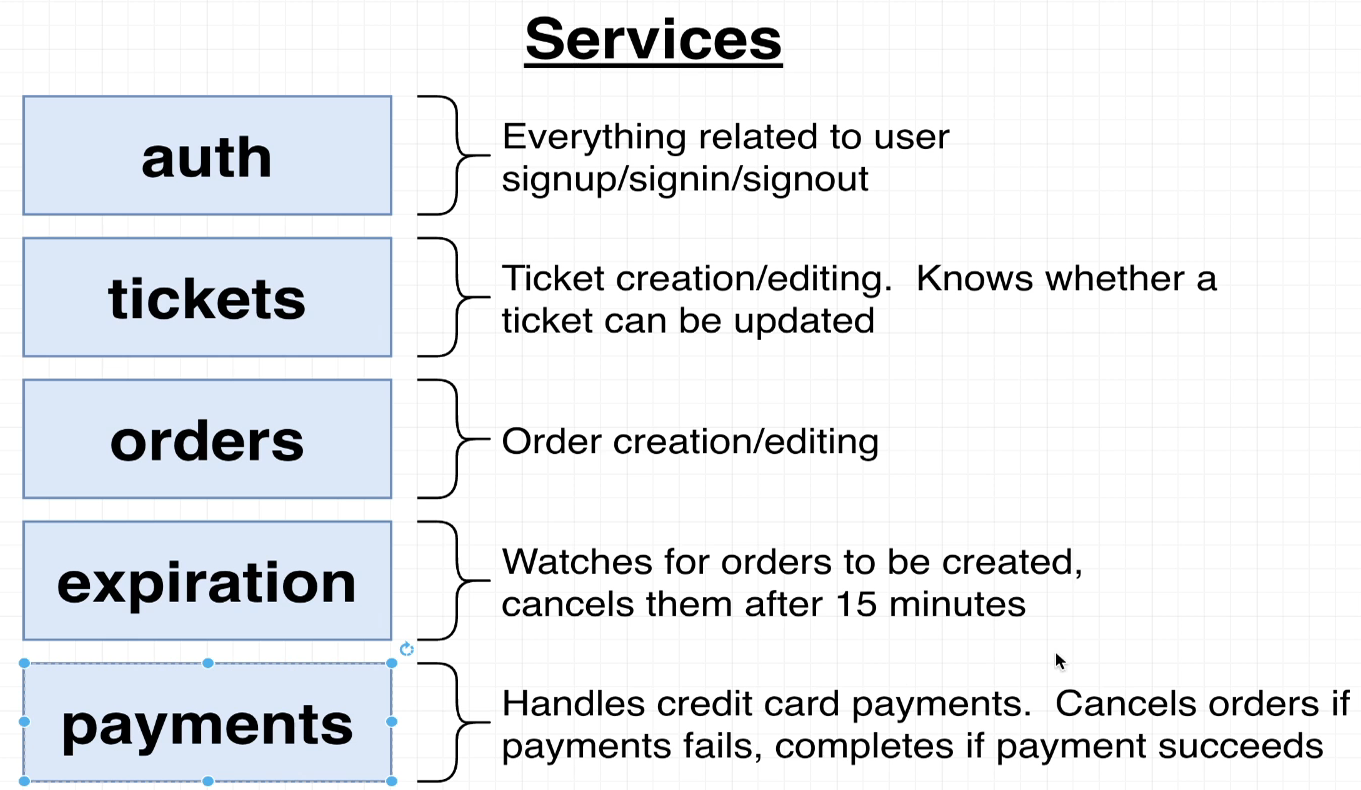
# Section 5: Architecture of Multi-Service Apps

105. Big Ticket Items

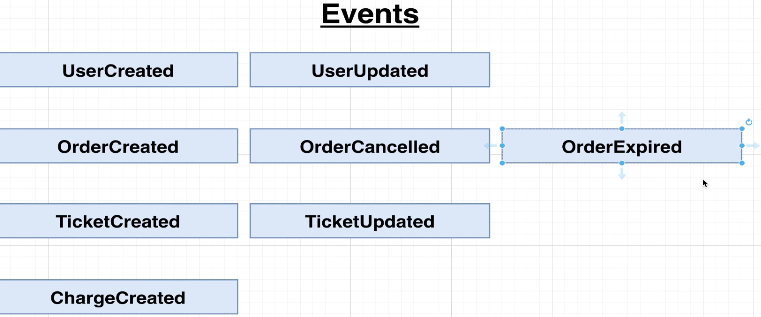
106. App Overview

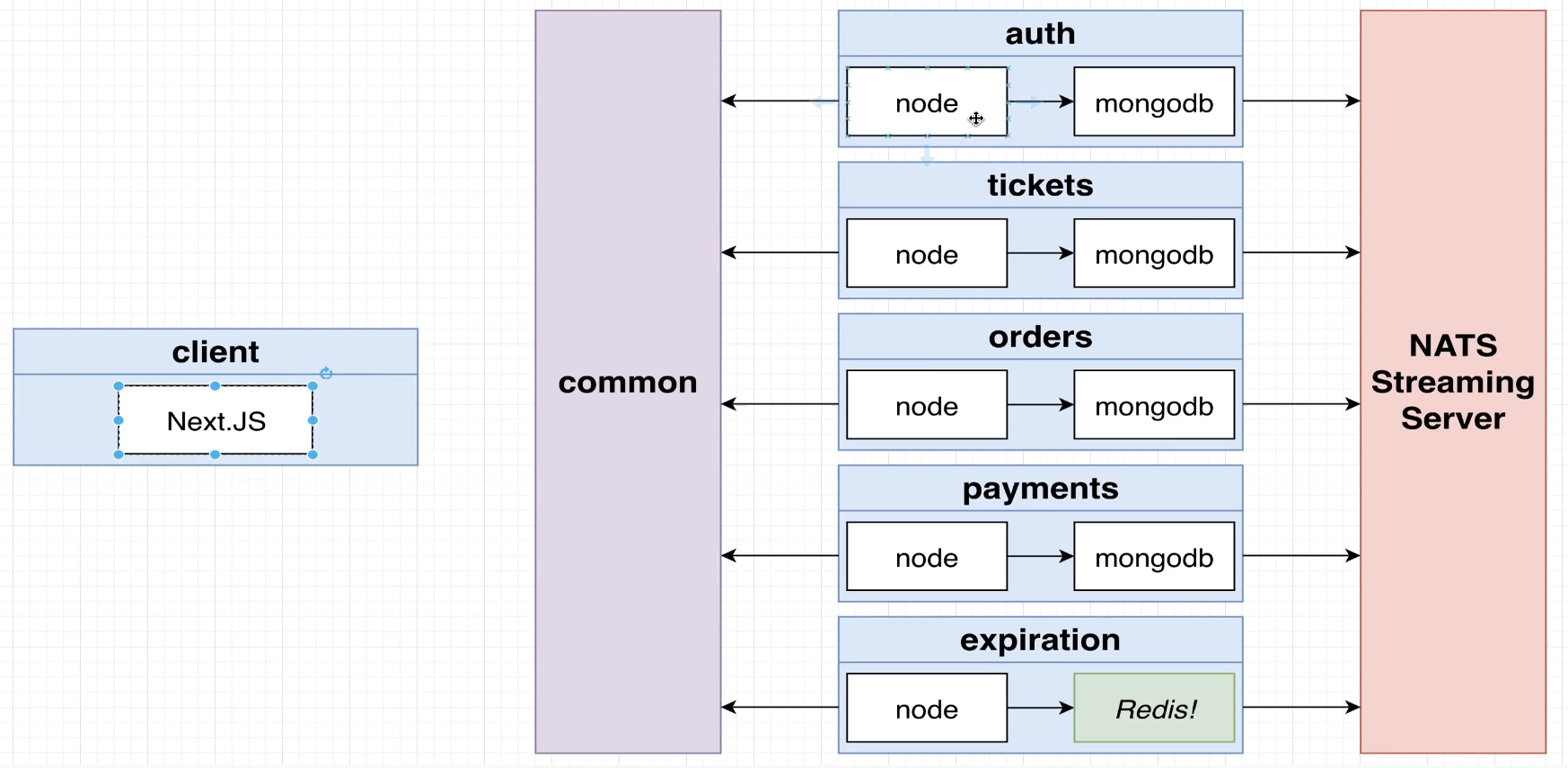
107. Resource Types

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110. Note on Typescript

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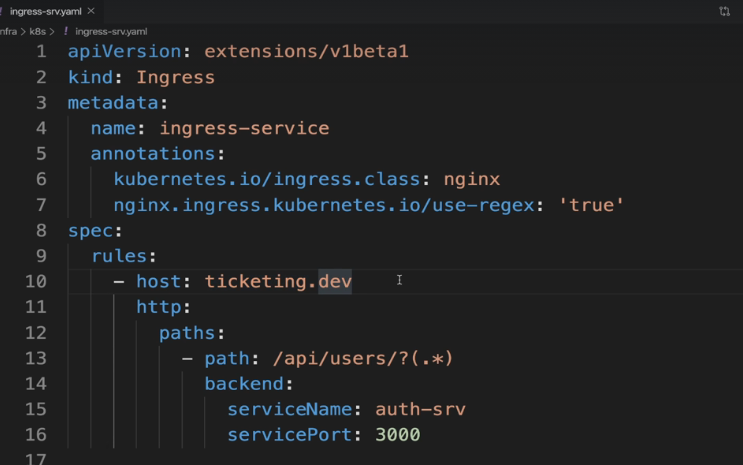
112. Auth K8s Setup

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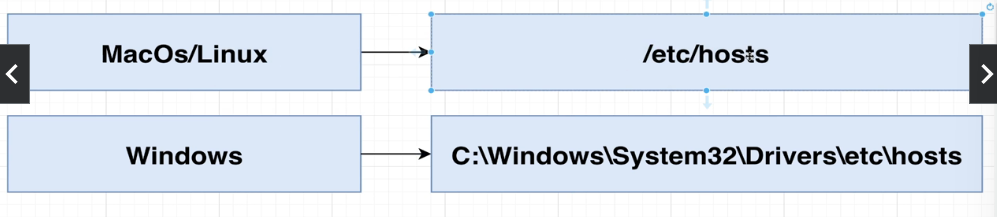
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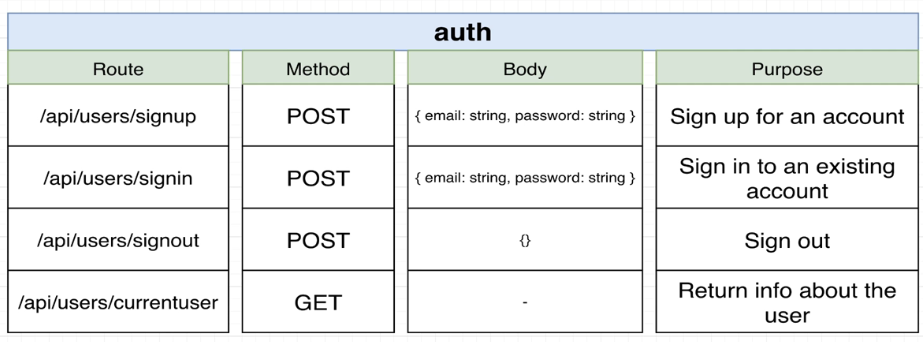
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197. Replacing --only=prod Install Flag

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201. Our First Test

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202. An Important Note

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203. Testing Invalid Input

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204. Requiring Unique Emails

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205. Changing Node Env During Tests

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206. Tests Around Sign In Functionality

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207. Testing Sign Out

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208. Issues with Cookies During Testing

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209. Easy Auth Solution

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210. globalThis has no index signature TS Error

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211. Auth Helper Function

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212. Testing Non-Authed Requests

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Section 11: Integrating a Server-Side-Rendered React App

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214. Reminder on Server Side Rendering

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215. Suggestion Regarding a Default Export Warning

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216. Basics of Next JS

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217. Building a Next Image

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218. Running Next in Kubernetes

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219. Small Update for Custom Webpack Config

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220. Note on File Change Detection

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221. Adding Global CSS

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222. Adding a Sign Up Form

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223. Handling Email and Password Inputs

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224. Successful Account Signup

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225. Handling Validation Errors

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226. The useRequest Hook

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227. Using the useRequest Hook

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228. An onSuccess Callback

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229. Overview on Server Side Rendering

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230. A note about ECONNREFUSED errors

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231. Fetching Data During SSR

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232. Why the Error?

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233. Two Possible Solutions

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234. Cross Namespace Service Communication

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235. When is GetInitialProps Called?

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236. On the Server or the Browser

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237. Ingress-Nginx Namespace and Service - Important Update

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238. Specifying the Host

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239. Passing Through the Cookies

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240. A Reusable API Client

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241. Content on the Landing Page

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242. The Sign In Form

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243. A Reusable Header

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244. Moving GetInitialProps

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245. Issues with Custom App GetInitialProps

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246. Handling Multiple GetInitialProps

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247. Passing Props Through

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248. Error: Invalid <Link> with <a> child

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249. Building the Header

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250. Conditionally Showing Links

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251. Signing Out

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252. React App Catchup & Checkpoint

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Section 12: Code Sharing and Reuse Between Services

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253. Shared Logic Between Services

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254. Options for Code Sharing

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255. NPM Organizations

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256. Publishing NPM Modules

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257. Project Setup

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258. Typo in package.json "files" Field - Do Not Skip

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259. An Easy Publish Command

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260. Relocating Shared Code

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261. Updating Import Statements

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262. NPM Update Command

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263. Updating the Common Module

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Section 13: Create-Read-Update-Destroy Server Setup

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264. Ticketing Service Overview

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265. Project Setup

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266. Running the Ticket Service

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267. Mongo Connection URI

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268. Quick Auth Update

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269. Test-First Approach

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270. Creating the Router

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271. Adding Auth Protection

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272. Faking Authentication During Tests

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273. A Required Session Fix and a Global Signin Reminder

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274. Building a Session

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275. Testing Request Validation

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276. Validating Title and Price

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277. Reminder on Mongoose with TypeScript

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278. Defining the Ticket Model

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279. Creation via Route Handler

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280. Testing Show Routes

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281. Unexpected Failure!

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282. What's that Error?!

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283. Better Error Logging

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284. Complete Index Route Implementation

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285. Ticket Updating

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286. Handling Updates

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287. Permission Checking

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288. Final Update Changes

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289. Manual Testing

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290. What Now?

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291. NATS Server Status - IMPORTANT NOTE

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292. Three Important Items

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293. Creating a NATS Streaming Deployment

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294. Big Notes on NATS Streaming

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295. Building a NATS Test Project

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296. Port-Forwarding with Kubectl

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297. Publishing Events

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298. Small Required Command Change

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299. Listening For Data

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300. Accessing Event Data

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301. Client ID Generation

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302. Queue Groups

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303. Manual Ack Mode

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304. Client Health Checks

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305. Graceful Client Shutdown

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306. Core Concurrency Issues

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307. Common Questions

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308. [Optional] More Possible Concurrency Solutions

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309. Solving Concurrency Issues

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310. Concurrency Control with the Tickets App

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311. Event Redelivery

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312. Durable Subscriptions

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Section 15: Connecting to NATS in a Node JS World

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313. Reusable NATS Listeners

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314. The Listener Abstract Class

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315. Extending the Listener

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316. Quick Refactor

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317. Leveraging TypeScript for Listener Validation

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318. Subjects Enum

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319. Custom Event Interface

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320. Enforcing Listener Subjects

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321. Quick Note: 'readonly' in Typescript

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322. Enforcing Data Types

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323. Where Does this Get Used?

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324. Custom Publisher

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325. Using the Custom Publisher

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326. Awaiting Event Publication

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327. Common Event Definitions Summary

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328. Updating the Common Module

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329. Reing NATS

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Section 16: Managing a NATS Client

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330. Publishing Ticket Creation

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331. More on Publishing

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332. NATS Client Singleton

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333. Node Nats Streaming Installation

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334. Remember Mongoose?

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335. TS Error - Did you forget to include 'void' in your type argument

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336. Singleton Implementation

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337. Accessing the NATS Client

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338. Graceful Shutdown

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339. Successful Listen!

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340. Ticket Update Publishing

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341. Failed Event Publishing

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342. Handling Publish Failures

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343. Fixing a Few Tests

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344. Redirecting Imports

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345. Providing a Mock Implementation

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346. Test-Suite Wide Mocks

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347. Ensuring Mock Invocations

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348. NATS Env Variables

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349. The Orders Service

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350. Scaffolding the Orders Service

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351. A Touch More Setup

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352. Ingress Routing Rules

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353. Scaffolding a Few Route Handlers

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354. Subtle Service Coupling

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355. Associating Orders and Tickets

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356. Order Model Setup

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357. The Need for an Enum

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358. Creating an Order Status Enum

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359. More on Mongoose Refs

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360. Defining the Ticket Model

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361. Order Creation Logic

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362. Finding Reserved Tickets

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363. Convenience Document Methods

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364. Order Expiration Times

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365. globalThis has no index signature TS Error

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366. Test Suite Setup

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367. Small Update for "Value of type 'typeof ObjectId' is not callable"

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368. Asserting Tickets Exist

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369. Asserting Reserved Tickets

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370. Testing the Success Case

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371. Fetching a User's Orders

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372. A Slightly Complicated Test

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373. Fetching Individual Orders

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374. Does Fetching Work?

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375. Cancelling an Order

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376. Can We Cancel?

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Section 18: Understanding Event Flow

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377. Orders Service Events

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378. Creating the Events

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379. Implementing the Publishers

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380. Publishing the Order Creation

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381. Publishing Order Cancellation

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382. Testing Event Publishing

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Section 19: Listening for Events and Handling Concurrency Issues

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383. Heads Up Regarding Some Mongoose TS Errors

1min

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384. Time for Listeners!

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385. Reminder on Listeners

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386. Blueprint for Listeners

4min

Resources

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387. A Few More Reminders

5min

Resources

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388. Simple onMessage Implementation

2min

Resources

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389. ID Adjustment

6min

Resources

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390. Ticket Updated Listener Implementation

5min

Resources

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391. Initializing the Listeners

3min

Resources

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392. A Quick Manual Test

3min

* Lecture incomplete. Progress cannot be changed for this item.

393. Clear Concurrency Issues

13min

* Lecture incomplete. Progress cannot be changed for this item.

394. Reminder on Versioning Records

7min

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395. Optimistic Concurrency Control

6min

* Lecture incomplete. Progress cannot be changed for this item.

396. Mongoose Update-If-Current

4min

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397. Implementing OCC with Mongoose

4min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

398. Test functions cannot both take a 'done' callback and return something Error

1min

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399. Testing OCC

9min

Resources

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400. One More Test

4min

Resources

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401. Who Updates Versions?

6min

* Lecture incomplete. Progress cannot be changed for this item.

402. Including Versions in Events

3min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

403. Updating Tickets Event Definitions

4min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

404. Property 'version' is missing TS Errors After Running Skaffold

1min

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405. Applying a Version Query

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

406. Did it Work?

5min

* Lecture incomplete. Progress cannot be changed for this item.

407. Abstracted Query Method

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

408. [Optional] Versioning Without Update-If-Current

19min

* Lecture incomplete. Progress cannot be changed for this item.

409. Testing Listeners

5min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

410. A Complete Listener Test

9min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

411. Testing the Ack Call

2min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

412. Testing the Ticket Updated Listener

8min

Resources

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413. Success Case Testing

5min

Resources

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414. Out-Of-Order Events

5min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

415. The Next Few Videos

4min

Resources

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416. Fixing a Few Tests

7min

Resources

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417. Listeners in the Tickets Service

2min

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418. Building the Listener

5min

Resources

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419. Strategies for Locking a Ticket

5min

* Lecture incomplete. Progress cannot be changed for this item.

420. Reserving a Ticket

4min

Resources

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421. Setup for Testing Reservation

7min

Resources

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422. Test Implementation

4min

Resources

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423. Missing Update Event

6min

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424. Private vs Protected Properties

7min

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425. Publishing While Listening

7min

Resources

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426. Mock Function Arguments

10min

Resources

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427. Order Cancelled Listener

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

428. A Lightning-Quick Test

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

429. Don't Forget to Listen!

2min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

430. Rejecting Edits of Reserved Tickets

6min

Resources

Section 20: Worker Services

0 / 19 | 1hr 36min0 of 19 lectures completed1hr 36min

* Lecture incomplete. Progress cannot be changed for this item.

431. The Expiration Service

3min

* Lecture incomplete. Progress cannot be changed for this item.

432. Expiration Options

8min

* Lecture incomplete. Progress cannot be changed for this item.

433. Initial Setup

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

434. Skaffold errors - Expiration Image Can't be Pulled

1min

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435. A Touch of Kubernetes Setup

8min

Resources

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436. File Sync Setup

3min

* Lecture incomplete. Progress cannot be changed for this item.

437. Listener Creation

4min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

438. What's Bull All About?

4min

* Lecture incomplete. Progress cannot be changed for this item.

439. Creating a Queue

9min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

440. Queueing a Job on Event Arrival

5min

Resources

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441. Testing Job Processing

3min

* Lecture incomplete. Progress cannot be changed for this item.

442. Delaying Job Processing

5min

Resources

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443. Defining the Expiration Complete Event

4min

Resources

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444. Publishing an Event on Job Processing

6min

Resources

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445. Handling an Expiration Event

6min

Resources

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446. Emitting the Order Cancelled Event

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

447. Testing the Expiration Complete Listener

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

448. A Touch More Testing

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

449. Listening for Expiration

2min

Resources

Section 21: Handling Payments

0 / 31 | 2hr 40min0 of 31 lectures completed2hr 40min

* Lecture incomplete. Progress cannot be changed for this item.

450. The Payments Service

2min

* Lecture incomplete. Progress cannot be changed for this item.

451. globalThis has no index signature TS Error

1min

* Lecture incomplete. Progress cannot be changed for this item.

452. Initial Setup

9min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

453. Replicated Fields

6min

* Lecture incomplete. Progress cannot be changed for this item.

454. Another Order Model!

8min

* Lecture incomplete. Progress cannot be changed for this item.

455. Update-If-Current

1min

* Lecture incomplete. Progress cannot be changed for this item.

456. Replicating Orders

4min

* Lecture incomplete. Progress cannot be changed for this item.

457. Testing Order Creation

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

458. Marking an Order as Cancelled

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

459. Cancelled Testing

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

460. ing the Listeners

4min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

461. Payments Flow with Stripe

5min

* Lecture incomplete. Progress cannot be changed for this item.

462. Implementing the Create Charge Handler

9min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

463. Validating Order Payment

4min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

464. Testing Order Validation Before Payment

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

465. Testing Same-User Validation

5min

Resources

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466. Stripe Setup

4min

* Lecture incomplete. Progress cannot be changed for this item.

467. Creating a Stripe Secret

3min

* Lecture incomplete. Progress cannot be changed for this item.

468. Creating a Charge with Stripe

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

469. Manual Testing of Payments

7min

* Lecture incomplete. Progress cannot be changed for this item.

470. Automated Payment Testing

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

471. Mocked Stripe Client

4min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

472. A More Realistic Test Setup

9min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

473. Realistic Test Implementation

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

474. Tying an Order and Charge Together

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

475. Testing Payment Creation

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

476. Publishing a Payment Created Event

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

477. More on Publishing

3min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

478. Marking an Order as Complete

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

479. Important Info About the Next Lecture - Don't Skip

1min

* Lecture incomplete. Progress cannot be changed for this item.

480. Don't Cancel Completed Orders!

1min

Resources

Section 22: Back to the Client

0 / 21 | 1hr 43min0 of 21 lectures completed1hr 43min

* Lecture incomplete. Progress cannot be changed for this item.

481. A Few More Pages

6min

* Lecture incomplete. Progress cannot be changed for this item.

482. Reminder on Data Fetching with Next

6min

* Lecture incomplete. Progress cannot be changed for this item.

483. Two Quick Fixes

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

484. Scaffolding a Form

4min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

485. Sanitizing Price Input

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

486. Ticket Creation

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

487. Listing All Tickets

8min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

488. Reminder on Invalid <Link> with <a> child Errors

1min

* Lecture incomplete. Progress cannot be changed for this item.

489. Linking to Wildcard Routes

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

490. Creating an Order

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

491. Programmatic Navigation to Wildcard Routes

4min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

492. The Expiration Timer

11min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

493. Dising the Expiration

1min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

494. Showing a Stripe Payment Form

3min

* Lecture incomplete. Progress cannot be changed for this item.

495. Module not found: Can't resolve 'prop-types'

1min

* Lecture incomplete. Progress cannot be changed for this item.

496. Configuring Stripe

4min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

497. Test Credit Card Numbers

2min

* Lecture incomplete. Progress cannot be changed for this item.

498. Paying for an Order

9min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

499. Filtering Reserved Tickets

2min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

500. Header Links

2min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

501. Rendering a List of Orders

6min

Resources

Section 23: CI/CD

0 / 30 | 2hr 17min0 of 30 lectures completed2hr 17min

* Lecture incomplete. Progress cannot be changed for this item.

502. Development Workflow

4min

* Lecture incomplete. Progress cannot be changed for this item.

503. Git Repository Approaches

6min

* Lecture incomplete. Progress cannot be changed for this item.

504. Creating a GitHub Action

7min

* Lecture incomplete. Progress cannot be changed for this item.

505. Adding a CI Test Script

3min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

506. Tests in GitHub Actions Hang - Jest did not exit

1min

* Lecture incomplete. Progress cannot be changed for this item.

507. Running Tests on PR Creation

5min

* Lecture incomplete. Progress cannot be changed for this item.

508. Output of Failing Tests

6min

* Lecture incomplete. Progress cannot be changed for this item.

509. Running Tests in Parallel

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

510. Verifying a Test Run

3min

* Lecture incomplete. Progress cannot be changed for this item.

511. Selective Test Execution

6min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

512. Deployment Options

8min

* Lecture incomplete. Progress cannot be changed for this item.

513. Creating a Hosted Cluster

3min

* Lecture incomplete. Progress cannot be changed for this item.

514. Reminder on Kubernetes Context

4min

* Lecture incomplete. Progress cannot be changed for this item.

515. Reminder on Swapping Contexts

4min

* Lecture incomplete. Progress cannot be changed for this item.

516. The Deployment Plan

4min

* Lecture incomplete. Progress cannot be changed for this item.

517. Building an Image in an Action

9min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

518. Testing the Image Build

3min

* Lecture incomplete. Progress cannot be changed for this item.

519. Reing the Deployment

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

520. Applying Kubernetes Manifests

3min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

521. Prod vs Dev Manifest Files

4min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

522. Manual Secret Creation

4min

* Lecture incomplete. Progress cannot be changed for this item.

523. Don't Forget Ingress-Nginx!

6min

* Lecture incomplete. Progress cannot be changed for this item.

524. Testing Automated Deployment

3min

* Lecture incomplete. Progress cannot be changed for this item.

525. Additional Deploy Files

7min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

526. A Successful Deploy!

6min

* Lecture incomplete. Progress cannot be changed for this item.

527. Buying a Domain Name

3min

* Lecture incomplete. Progress cannot be changed for this item.

528. Three Important Changes Needed to Deploy - Do Not Skip!

1min

* Lecture incomplete. Progress cannot be changed for this item.

529. Configuring the Domain Name

5min

Resources

* Lecture incomplete. Progress cannot be changed for this item.

530. I Really Hope This Works

2min

* Lecture incomplete. Progress cannot be changed for this item.

531. Next Steps