

MERN Stack Development

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MongoDB

Introduction to MongoDB

What is NoSQL

Types of NoSQL DBs

Necessity for NoSQL DBs

Relational Databases Vs NoSQL Databases

Advantages of NoSQL Databases

Introducing MongoDB

Installation and Configuration of MongoDB

Downloading and Installing MongoDB

Command Line Mode - Shell

GUI mode with MongoDB Compass

Starting and Stopping MongoDB

Getting Help

Fundamentals of MongoDB

Understanding MongoDB model

SQL Terms Vs MongoDB Terms

Understanding Database

Understanding Collections

Collections Vs Tables

Understanding Schemas and Documents

Creating and Dropping a Database

Working with Data - CRUD Operations

Creating Collections

Inserting Single Document and Multiple Documents

Inserting with `_id` Field

Inserting Document with Arrays

Understanding Embedded and Nested Documents

Updating Single and Multiple Documents

Using Update Operators – Field Update Operators and Array Update Operators

Deleting Single and Multiple Documents

Understanding and Implementing Bulk Write Operations

Working with Retryable Writes

Querying Collections

Using Query Operator - find() to query Documents
Querying Fields and Nested Fields
Using Logical Operations in Query
Querying Nested and Embedded Documents
How to Query an Array?
Projecting Fields in a Query
Using _id Field in Query
Querying Null and Missing Fields
Querying Text in MongoDB
Indexing Text for Search
Understanding Text Search Operators
What is Geospatial Search
Understanding and using Geospatial data
Geospatial Indexes and Queries
Aggregation Operations
Understanding Aggregation Operations
Using Aggregation Pipelines
Pipeline Expressions and Behaviors
Understanding Map-Reduce Functions in MongoDB
Understanding Map and Reduce
Using Map-Reduce
Using Map-Reduce Javascript Functions
Map-Reduce results
Understanding Incremental Map-Reduce
Understanding and using Map-Reduce Concurrency
Exploring Aggregation References

Understanding Data Models and Schema
Introduction to Data Modelling
Understanding Schema in MongoDB
Flexible Schema and References
Understanding Schema Validation
Create Validation Rules
Using Query Expression to Validate Data
Bypassing the Document Validation
Deep dive into Data Modeling Concepts

Handling Transactions in MongoDB
Understanding Transactions and Transactions API
Understanding Atomicity
Executing Multi-document Transactions or Distributed Transactions
Transactions Operations and Restricted Operations
Production Considerations
Handling Indexes in MongoDB
What is Indexing and Advantages of Indexes
Single Field and Compound Indexes
Multi key Indexes, Text Indexes, Wild-card Indexes
Hashed Indexes
Managing Indexes

Managing Security
Implementing Security in MongoDB
Understanding and Enabling Access Control
Handling Authentications
Understanding and Configuring Encryptions
Configuring and Managing Auditing

Replication
Importance of Replication for High Data Availability
Implementing Replication in MongoDB with Replica Sets
Understanding Asynchronous Replication
Change Stream

Sharding in MongoDB
Understanding the purpose of uses of Sharding
Understanding Sharded Cluster Components
Harshed Sharding and Ranged Sharding
Handling Collation in Sharding
Understanding Zones
Introduction to Sharded Cluster Administration

Node.js

Understanding the Web

Architecture of a Web Application
Server Side Scripting
Client Side Scripting
Importance of Performance

Introduction to Node.js

What is Node.js
Advantages of Node.js
Installing Node.js and Configuring Node.js
Architecture of Node.js
Appreciating the Performance of Node.js
Understanding Event Driven code execution and Asynchronous Events in Node.js
Understanding Event Emitters

Implementing Node.js

The Node lifecycle
Creating and running a Node Server
Handling Requests and Responses
Routing and Redirecting Requests
Handling Streams, buffers and Events
Handling Multi-processing in Node.js
Handling Run time Errors

Modules in Node.js

Understanding Modules in Node.js
Exploring various built-in Modules
Third party Modules for Node.js
Introduction to Node Package Manager - NPM
Understanding Global and Local NPM Packages
Installing and Updating a Module
Deleting a Module
Introduction to various NPM Modules

ExpressJS Framework

Introduction to ExpressJS Framework
Why the need for Express Framework
Overview of ExpressJS framework
Installing ExpressJS

Understanding Request and Response Objects
Exploring ExpressJS
Configuring ExpressJS
Understanding Middleware

Understand How Middleware Works in ExpressJS
Add a Middleware
Creating Custom Middleware
Handling Requests and Responses
Handling Routing
Using ExpressJS Router
Path Filtering
Creating and Serving HTML Pages
Using Jade Templates
Navigating Datasets
Using REST in ExpressJS
Handling POST
Handling JSON data
Handling Errors

ReactJs:

React Overview

Introduction

What are SPA apps

What is React

How react works internally

What are the alternatives

What problem does it solve

When to use React

Component based architecture

JSX

Introduction

Write your first jsx code

How to compile jsx to Javascript

Write class based components with jsx

Renderig jsx to DOM using react DOM

Dom manipulation

Introduction

Select elements using ref

Other ways to select elements

Props vs States

Introduction

What are Props

What are states

Proptypes validation

Lifecycle Methods in React

Introduction

How componentWillMount works

How componentDidMount works

How componentWillReceiveProps works

How shouldComponentUpdate works
How componentWillUpdate works
How componentDidMount works
How componentWillUnmount works
Understanding When to use which life cycle method

Forms & validations

Introduction
How to get input from users using Forms
Form validations

Style React Components

Introduction
Using css in react
Inline styles
Importing external styles

Event Handling in React

Introduction
How events work in react world
What are synthetic events
Mouse events
Keyboard events

Redux and State management

Introduction
What is state management
Flux architecture
Redux Introduction
How to manage state in large applications with redux

Routing

Introduction
Navigating between components
React Router
Creating and managing routes
Integrating redux with react router

Real Time Project using MERN Stack