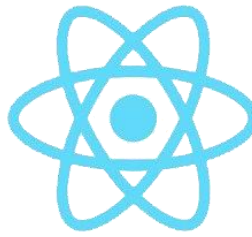




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MERN STACK



Programming & development

Course Curriculum

Basic – 240 Hours



MERN STACK (MongoDB, Express.js, ReactJS, and Node.js)

Module 1 : Introduction to Web Development

- HTML Basic
- HTML Elements
- HTML Attributes
- HTML Styles
- HTML Forms
- HTML Form Elements
- HTML Input Element Types
- HTML Input Attributes
- HTML File Paths Script tag and its uses

Module 2 : Introduction to CSS

- HTML & XHTML CSS
- Introduction CSS Syntax CSS Selectors CSS Styling



Module 3 : Java Script

- Introduction to JavaScript
- JavaScript Statements
- JavaScript Keywords
- JavaScript Functions
- JavaScript Programs
- JavaScript Operators
- Function Parameters
- Function Return Values
- JavaScript Data Types
- Primitive Types



Module 4 : Java Script & Objects

- Object Overview
- Object Oriented Programming
- Object creation
- Adding Properties to Objects
- Adding Methods to Objects
- JavaScript Conditional Statements
- JavaScript Loops & Iteration
- Enumerating properties
- Call-backs
- JSON

Module 5 : Introduction to MERN Stack

- Overview of MongoDB, Express.js, ReactJS, and Node.js

Module 6 : Introduction to MongoDB

- Introduction to Mongo DB
- Why use MongoDB?
- Installation of MongoDB

Module 7 : Aggregation in MongoDB

- Introduction to Aggregation
- Syntax
- Parameters Count, Sum, Average, Match and Operations with arrays

Module 8 : Introduction to Express.js

- Introduction to Express.js
- What is Express.js?
- How Express.js Works
- Installation



Module 9 : MVC Structure

- The model-view-controller pattern
- Configuring Express
- Postman configuration
- Hello world example

Module 10 : ReactJS Basics

- What is React JS
- Advantages of React JS
- Limitation of React JS
- Installation

Module 11 : React JS – JSX, Components

- Overview of JSX
- Rendering an Element into the DOM
- Naming Conventions
- Overview of Components
- Props
- State



Module 12 : Node JS Basics

- Introduction to Node.JS
- What is Node JS?
- Advantages of Node JS
- Traditional Web Server Model
- Node.js Process Model

Module 13: Environment setup for Node.js

- Install Node.js on Windows
- Installing in mac os
- Working in REPL
- Node JS Console

Module 14: Backing up and Restoring Data in MongoDB

- Mongoimport with JSON
- Mongoimport with CSV

Module 15: Bulk Operations

- Converting a field to another type
- Updating the entire collection in Bulk.

Module 16: Collections in MongoDB

- Create a Collection
- Drop Collection
- Starting mongo with a specific config file

Module 17: Request parameters in Express JS

Request object holds all the HTTP request information

- .app
- .BaseUrl
- .body
- .cookies
- .hostname
- .ip
- .method
- .params
- .path
- .protocol
- .query
- .secure
- .signedCookies
- .xhr

Module 18: JSON Data in Express



- HTTP methods
- JSON DATA and Routers
- CRUD Operations
- Adding middleware

Module 19: ReactJS Components Life Cycle

- Life Cycle methods
- Reusable Components

Module 20: ReactJS – Forms and Props Validation

- Creating a form app.jsx
- Creation of main.js
- Debugging the app using react.js
- Using props
- Using App.propTypes in app.
- Using App.defaultProps in app.



Module 21: Node JS Modules

- Functions
- Buffer
- Module
- Module Types
- Core Modules
- Local Modules
- Module Exports

Module 22: Node Package Manager

- What is NPM
- Installing Packages Locally
- Adding dependency in package.json
- Installing packages globally
- Updating packages



Module 23: CRUD Database Operations in MongoDB

- Basic Syntax
- Create, Read, Update and Delete Databases
- More Update operators
- List all databases
- List all collections in database

Module 24: Indexes in MongoDB

- Basic Indexes Syntax
- Single field
- Compound
- List
- Index Creation Basics

Module 25: Mongo as Shards

- Sharding Environment Setup
- Config Server
- Replica Sets
- Mongos



Module 26: MongoDB – Configure

- Introduction
- Create the Root Certificate
- Generate the Certificate Requests and the Private Keys
- Sign your Certificate Requests
- Concat each Node Certificate with its key
- Deploy your ReplicaSet
- Deploy your ReplicaSet for Mutual SSL / Mutual Trust
- No Mutual SSL
- With Mutual SSL

Module 27: Express JS with MongoDB



- Connecting to RDBMS and MongoDB databases
- Performing CRUD operations

Module 28: Full Stack Application

- Building a full – stack application with Node.js, Express.js and ReactJS
- Exploring the Front-end
- Creating the front-end UI

Module 29: ReactJS Events

- Using onClick in app.
- Using event to call trigger useState function in app.

Module 30: Webserver Creation using Node.js

- Creating web server
- Handling http requests
- Sending requests



Module 31: Debugging Node JS Application

- Core Node JS debugger
- Debugging with Visual Studio

Module 32: Database Connectivity using Node.js

- Connection string
- Configuring
- Working with select command
- Updating records
- Deleting records

Module 33: MongoDB Aggregation(Advanced)



- Aggregate query
- Match , Project, Group , Sum, Average, Minimum and Maximum
- Minimum with Maximum
- Push and addToSet
- Boolean Aggregation operator in projection
- Boolean Aggregation operator in match
- Left Outer Join with Aggregation (\$Lookup)

Module 34: MongoDB Authorization Model and Pluggable Storage Engines

- Introduction to Authorization Model
- Build-in Roles and Database User Roles
- MMAP, WiredTiger, In-memory, Mongo-rocks, Fusion-io, and TokuMX

Module 35: Express JS -Serving static files

- Multiple Static Directories
- Virtual path prefix
- Setting up Mongoose and Models



Module 36: Learning Express Routes

- starting a server
- Writing your first route
- Sending a response
- Matching route paths
- Getting a single expression
- Setting status codes
- Matching longer paths
- Other HTTP methods

Module 37: ReactJS – API Calls

- Calling the services using React
- Rendering the element into DOM
- Using WebApi

Module 38: ReactJS - Flux

- Overview of Flux
- Flux Elements
- Limitations of Flux
- Advantages of Flux

Module 39: Node JS Template Engine

- Why Template Engine
- What is Jade
- What is vash
- Example

Module 40: Serving Static Resources in Express JS

- Serving static files
- Working with middle ware



POSITIVE QUADRANT
TECHNOLOGIES
SERVING INFORMATION WORLDWIDE

Module 41: MongoDB Python and Python Driver

- Syntax and parameters
- Connect to MongoDB using pymongo
- PyMongo queries
- Update all documents in a collection using PyMongo

Module 42: Querying for Data and Projection in MongoDB

- Find(), findOne(), and Query Document – Using AND, OR AND IN Conditions
- Find() method
- Limit, skip, sort and count the results of the find() method

Module 43: Replication and Update Operators in MongoDB

- Basic configuration with three nodes
- Creating data folders



- Starting mongod instances
- Configuring replica set
- Syntax parameters and Examples

Module 44: Express.js

- Building RESTful APIs with advanced features
- Cookies, Sessions, Scaffolding and Error Handling
- Debugging

Module 45: ReactJS Animations

- Install React CSSTransitions Group
- Adding css file
- Creating a react component using **ReactCSSTransitionGroup**
- Using **transitionAppear** , **transitionAppearTimeout**,**transitionEnter** and **transitionLeave**

