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Full Stack Developer Masters Program

About Edureka

Edureka is a leading e-learning platform providing live instructor-led interactive online training. We cater to professionals and students across the globe in categories like Big Data & Hadoop, Business Analytics, NoSQL Databases, Java & Mobile Technologies, System Engineering, Project Management and Programming.

We have an easy and affordable learning solution that is accessible to millions of learners. With our students spread across countries like the US, India, UK, Canada, Singapore, Australia, Middle East, Brazil and many others, we have built a community of over 1 million learners across the globe.

About the Program

Edureka's Masters Program will provide you in-depth knowledge of front-end and back-end technologies including JavaScript, HTML, CSS, NodeJS, Python, AngularJS, MongoDB and many more thereby making you an expert full stack web developer. The program provides access to 200+ hours of interactive online learning, 10+ industry-based use cases, skills specific assessments and other resources. There are no prerequisites for enrollment to the Masters Program. It is designed and developed to accommodate diverse professional backgrounds. Our Masters Program recommends the ideal path for becoming a Full Stack Developer, however, it is learner's preference to complete the courses in any order they intend to.

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Full Stack Web Developer Masters Program

Elective Courses:

- PHP & MySQL with MVC Frameworks Certification
- Git and GitHub

Index

1	Web Development Certification Training
2	JQuery UI Development
3	Angular Certification Training
4	React with Redux Certification Training
5	Node.js Certification Training
6	MongoDB Certification Training

**Depending on industry requirements, Edureka may make changes to the course curriculum*

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Web Development Certification Training

Module Curriculum

About the Course

The Complete Web Developer Course - Build 5 Websites course at Edureka starts from the basics of web development like HTML elements, styling the HTML elements with CSS, using newly introduced features in HTML5 and CSS3 to deploying the websites on Amazon Simple Storage Service.

Module Outline

Module 1: Deploying the first Website to Amazon S3

Learning Objective:

At the end of this Module, you will learn the basics of web development, deploy your first website on Amazon Simple Storage Service.

Topics:

- Writing HTML code using Header Tags, Paragraphs, Ordered and Unordered lists, Forms, Links, Tables, Iframes, Images, Text Formatting, Image Maps
- Creating an Amazon Web Services (AWS) account and how to deploy a static website to AWS Simple Storage Service (S3)

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Module 2: Creating web pages with HTML5

Learning Objective:

At the end of this Module, you will learn the use all elements in HTMLS and their features.

Topics:

- Encoding URL
- Handling of multiple file upload using multiple attribute
- HTML5 Local Storage
- HTML5 web workers and server sent events
- Introduction to XHTML, Using HTML5 introduced features
- HTML5 form validate/no validate, HTML5 canvas, embedding audio and video in a webpage, drag and drop

Module 3: Styling web pages using CSS

Learning Objective:

At the end of this Module, you will learn to define style the HTML elements, elaborate ways to write CSS like external, internal, inline.

Topics:

- Styling of HTML elements-text, links, lists and tables
- Creating Navigation Bars
- Writing Media Rules, hide visibility of an element
- Different ways to write CSS, e.g. external, internal, inline
- CSS Image Sprites and Gradients
- CSS Pseudo Classes and Pseudo Elements

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Module 4: CSS3 effects and animations

Learning Objective:

At the end of this Module, you will learn text Effects using different text fonts, creating 2D and 3D transformations, apply animations, transitions to HTML elements, discuss CSS3 resize UI and multiple columns feature.

Topics:

- CSS3 Text Effects using different text fonts
- Applying animations, transitions to HTML elements
- Creating 2D and 3D transformations
- CSS3 resize UI and multiple columns feature

Module 5: Handling events with JavaScript

Learning Objective:

At the end of this Module, you will learn the basics of JavaScript and how to manipulate DOM elements.

Topics:

- Java Script datatypes, variables, arrays
- Defining and calling JavaScript functions on events
- Creating loops and writing if-else decision-making statements
- Manipulating DOM elements

Module 6: Twitter Bootstrap 3

Learning Objective:

At the end of this Module, you will learn CSS and JS framework Twitter Bootstrap 3, demonstrate Bootstrap in the project, apply Bootstrap features, fixed dropdown menu carousel, text and image grids.

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Topics:

- Getting started with Twitter Bootstrap 3
- Using Font Awesome Icons
- Bootstrap features like fixed dropdown menu, carousel, text and image grids, custom thumbnails, bootstrap modal

Module 7: Twitter Bootstrap 3 Project

Learning Objective:

At the end of this Module, you will be able to create a complete website using Twitter Bootstrap 3 features.

Topics:

- Building a real-world website using Twitter Bootstrap 3 features e.g. bootstrap fixed dropdown menu, carousel, bootstrap modal, font awesome icons, custom thumbnails, text and image grids
- Accordions, signing/signup form and jumbotron

Module 8: Bootstrap Scroll Spy, jQuery and jQuery UI

Learning Objective:

At the end of this Module, you will learn how to build a website using Bootstrap Scroll Spy feature, explain jQuery, use jQuery UI components (E.g.) Date picker into your HTML pages, create a Countdown timer using one of the jQuery timer API which can be used to create a timer for an upcoming event.

Topics:

- Bootstrap Scroll Spy, Including jQuery in HTML pages
- Creating a Countdown timer using jQuery timer API
- Using jQuery UI components e.g. Date picker into your HTML pages

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Module 9: Ajax, Google APIs, Social Plugins

Learning Objective:

At the end of this Module, you will learn how to define JavaScript and XML popularly known as AJAX, create ajax calls to Google APIs and process the response, develop social plugins on your web page provided by LinkedIn, Facebook, Quora and Twitter.

Topics:

- AJAX XML Http Request object, making an AJAX call and retrieving the response.
- Working with Google APIs Adding social plugins on your web page provided by LinkedIn, Facebook, Quora and Twitter

Module 10: Project - Building Website Tourt

Learning Objective:

At the end of this Module, we will integrate tour feature in the website using Bootstrap tour JavaScript.

Topics:

- Integrating Bootstrap tour into website, starting and stopping the tour

Project Work

Problem Statement:

Build a web application with Bootstrap which includes following features:

1. Google Charts API to show Pie Charts (i.e. popularity of programming languages)
2. Google Maps API to include Maps on web pages
3. Bootstrap Carousel
4. Use the Lobster font on web pages (http://www.fontsquirrel.com/fonts/Lobster)
5. Deploy the web application on Amazon S3

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JQuery UI Development

Course Curriculum

About the Course

The jQuery UI training course is designed to provide knowledge and skills to become a successful UI Developer. It starts with the fundamental concepts of jQuery DOM Traversing, jQuery Events API, jQuery Effects to advance topics of jQuery UI Widgets, jQuery Mobile etc. Participants will also get to implement one real-time UI Project to a web application and mobile app.

Course Outline

Module 1 – Introducing jQuery

Learning Objective:

In this module, you will understand about jQuery and overview of what jQuery does for web pages. You will also learn Basics of HTML & CSS and how jQuery is used to manipulate your DOM & CSS Selectors.

Topics:

- Introduction to jQuery & History
- Basic DOM HTML Document/Page Types
- IDE's for jQuery
- Selectors
- jQuery CDN & Installation
- jQuery Functions

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- DOM Traversing
- The jQuery Object($)
- CSS Selectors
- Querying DOM
- Traversing the DOM. jQuery Selectors
- jQuery Basic Functions

Module 2 – DOM Manipulation & jQuery Effects

Learning Objective:

In this module, you will learn how jQuery is used manipulate DOM easily, Also you will learn about readily available jQuery effects that can be applied to web page to make Rich Interactive Websites.

Topics:

- Adding and Removing DOM elements
- DOM elements
- jQuery Filters
- Hide/Show
- Fading methods
- Animate Function
- Iterating with each()
- Modifying Properties and Attributes
- jQuery Effects
- Chaining

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Module 3 – jQuery Forms & Events

Learning Objective:

In this module, you will learn jQuery Event, event delegation and various events type in.

Topics:

- jQuery Form Selectors
- Form Submission, Events
- jQuery on() & off()
- Form Validation
- Event Handling
- Custom Events and Triggers

Module 4 – jQuery AJAX & Utilities

Learning Objective:

In this module, you will learn about AJAX and how you can communicate with server using jQuery inbuilt functions and other jQuery utilities.

Topics:

- AJAX using jQuery
- PHP and $.each and Templating
- Deferreds
- Interacting with Server-Side
- Twitter/Github API

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Module 5 – jQuery Plugins

Learning Objective:

In this module, you will learn about jQuery plugins, how to use them into your web projects and basic plugin development.

Topics:

- jQuery 3rd party plugins
- Plugin Development
- Plugin Implementation

Module 6 – jQuery Ult

Learning Objective:

In this module, you will learn about jQuery UI and single UI Component. We will look through the APIs of each Component.

Topics:

- Accordion Widget
- Tooltip Widget
- Widget
- jQuery Mobile
- Tabs Widget
- Menu Widget
- Datepicker Widget

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Module 7 – jQuery Mobile Introduction

Learning Objective:

In this module, you will learn about Basics of jQuery Mobile. And also various UI components available in jQuery Mobile.

Topics:

- jQuery Mobile CSS Framework
- Mobile Widgets
- jQuery Mobile Events

Project Work

Project 1: Developing Admin for Content Management System.

Type: CMS (Web Application)

Data: You will be developing a real time UI Web pages and UI Components for a Content Management System.

Project 2: jQuery Mobile App

Type: Corp Event

Data: You will be developing an Event Mobile App using jQuery Mobile.

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Angular Certification Training

Course Curriculum

About the Course

Edureka's Angular Certification Training will enable you to build dynamic, responsive and interactive web applications by mastering the concepts of Angular 12. Our Angular 12 Training covers Angular 12 concepts such as Angular Modules, Angular Components, Data binding, Angular Animations, Angular Forms, DOM manipulation using Directives and Pipes, Component interaction using Services and Dependency Injection (DI), Communicate with backend services over HTTP protocol, Perform Routing and Authentication with JWT plus Application Deployment using Nginx and Docker.

Course Outline

Module 1 – Getting Started with Angular

Learning Objective:

This module will introduce you to the basic constructs of web application development, MVC architecture, what is Angular and the differences between single and multiple page applications. You will also learn how to install Angular and make use of NPM packages.

Topics:

- Building Blocks of Web Application Development
- Web Application Architecture
- Introduction to Angular
- Comparison between front-end tools
- Angular Architecture
- Building blocks of Angular

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- Angular Installation
- Angular CLI
- Angular CLI commands
- Angular Modules
- Understanding files in Angular

Hands-On:

- Installation of Node.js, Angular CLI and Visual Studio Code
- Creating First Angular Application

Module 2 – Angular Components and Data Binding

Learning Objective:

In this module, you will learn about Angular Components and Data Binding. You will also learn how to build the application layout using selectors, templates, and styles.

Topics:

- Working of Angular Applications
- Angular App Bootstrapping
- Angular Components
- Creating A Component Through Angular CLI
- Ways to specify selectors
- Template and styles
- Installing bootstrap to design application
- Data Binding
- Types of Data Binding
- Component Interaction using @Input and @Output decorator
- Angular Animations
- Component Life-cycle Hooks

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Hands-On:

- Build a shopping list Application using Components and Data Binding

Module 3 – Directives and Pipes in Angular

Learning Objective:

In this module, you will learn how to manipulate DOM and add filters using Angular directives and pipes.

Topics:

- Understanding Angular Directives
- @Component Directive
- Structural Directives
- Attribute Directives
- Custom Directives
- Pipes
- Built-in Pipes
- Chaining pipes
- Custom pipes
- PipeTransform Interface & Transform Function
- Pure and Impure pipes

Hands-On:

- Add built-in directives and create custom directives to manipulate DOM in a shopping list application
- Use built-in pipe and custom pipe to transform the output in a shopping list application

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Module 4 – Angular Services and Dependency Injection

Learning Objective:

In this module, you will learn how to create Angular services and inject it using dependency injection. You will also learn how to perform HTTP requests and receive response from the backend servers.

Topics:

- Angular service
- Need for a service
- Dependency Injection
- Creating a service
- Hierarchical Injector
- Injecting A Service into Another Service
- Observables
- RxJS Library
- Angular's Interaction with Backend
- Parts of an Http Request
- HttpClient

Hands-On:

- Build a weather forecast application to display weather data using dependency injection
- Fetch data for the weather forecast application using HttpClient and observables

Module 5 – Angular Routes and Navigation

Learning Objective:

In this module, you will learn how to configure Angular routes and navigate between different components.

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Topics:

- Angular Router
- Setting Up Routes
- Adding Routes Using RouterLink
- Wildcard and Redirecting Routes
- Adding Navigation Programmatically
- Passing Route Parameters
- Extracting Parameters Using ActivatedRoute
- Optional Route Parameters
- Child Routes
- Route Guards
- Location Strategies

Hands-On:

- Build a server management application and make use of routing
- Make use of route guards to prevent navigation to different pages

Module 6 – Handling Forms in Angular

Learning Objective:

In this module, you will learn how to deal with building a form using two approaches- template-driven and reactive. You will also learn about underlying building blocks of form model and types of directives with respect to the two types of forms.

Topics:

Angular forms

Types of forms

- Underlying building blocks of the form model
- Template-driven vs Reactive forms
- Template-driven forms

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- Reactive Forms
- Dynamically adding data to a form

Hands-On:

- Build a user registration form using a template-driven approach
- Build a user registration form using a reactive approach

Module 7 – Validating Angular Forms

Learning Objective:

In this module, you will learn how to deal with reactive forms.

Topics:

- What is Form Validation?
- Types of Form Validation
- Built-in Validators
- Form control's status and validity
- Form Validation methods
- CSS classes for Form control
- Custom validators in Template Driven Forms

Hands-On:

- Add validation using custom validator for different fields in user registration form

Module 8 – Authentication with JWT and Security in Angular

Learning Objective:

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In this module, you will learn how to perform authentication of the application using JWT (JSON Web Tokens)

Topics:

- What is Authentication?
- Authentication and authorization
- Types of Authentication
- Where to store tokens?
- JSON Web Tokens (JWT)
- Authentication in Angular application
- Security threats in web application

Hands-On:

- Create Login and registration form and store user data using fake-backend provider
- Authenticate a user using JWT authentication for login form

Module 9 – Testing and Application Deployment in Angular

Learning Objective:

In this module, you will learn how to perform application testing and later deploy the application using Docker and Nginx.

Topics:

- Testing
- Why should we perform testing?
- Types of testing
- Testing Angular application using Jasmine and Karma
- Maintaining application code using Git
- Version control system
- Why should we use Git?
- Git file workflow
- Running application on production server: Nginx
- Architecture of Nginx

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- How to configure Nginx?
- Deployment of an application using Docker
- Problems before containers
- How containers solve the problems
- What is Docker?
- Docker file
- Docker image
- Docker containers
- Docker hub
- Basic Docker commands

Hands-On:

- Testing Angular application
- Application Deployment via Docker

Module 10 – Instrument Monitoring, Logging & Scalability of Apps & Services

Learning Objective:

In this module, you will perform an in-class project based on all the Angular 8 concepts you have learned in the entire Edureka Angular course.

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React with Redux Certification Training

Course Curriculum

About the Course

Edureka's React with Redux Certification Training will train you to build efficient React applications by mastering the concepts of React, Redux and React Native. In this course, you will learn how to build simple components & integrate them into more complex design components. After completing this training you will be able to build the applications using React concepts such as JSX, Redux, Asynchronous Programming using Redux Saga middleware, Fetch data using GraphQL, perform Testing using Jest, successively Deploy applications using Nginx and Docker plus build Mobile applications using React Native

Course Outline

Module 1 – Introduction to Web Development and React

Learning Objective:

In this module, you will learn about MVC architecture, what is React and difference between single and multiple page applications. You will also learn how to install React, make use of NPM packages and ES6 concepts.

Topics:

- Building Blocks of Web Application Development
- Single-page and Multi-page Applications
- Different Client-side Technologies
- MVC Architecture
- Introduction to React
- Installation of React

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- JSX and its use case
- DOM
- Virtual DOM and its working
- ECMAScript
- Difference between ES5 and ES6
- NPM Modules

Hands-on:

- Installation of Node.js, React and Visual Studio Code
- Creating First React Application

Module 2 – Components and Styling the Application Layout

Learning Objective:

In this module, you will learn React core concepts like Components, State and Props. You will also learn how to build the application layout using forms and style sheets.

Topics:

- React Elements
- Render Function
- Components
- Class Component
- Component Constructor
- Functional Components
- Multiple Components
- Props
- Props with Class based Component
- Props with Function based Component

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- States
- Component Lifecycle
- React Events
- React Forms
- Different Form Concepts
- Styling in React
- Inline Styling
- CSS Stylesheet
- Building Music Shop Application using React Components

Hands-on:

- Build a Music Store Application using React Components

Module 3 – Handling Navigation with Routes

Learning Objective:

In this module you will learn to build an application using different route techniques and consume remote data by integrating API in React applications.

Topics:

- Routing
- react-router
- Features of react-router
- Configuration of routing using react-router
- Navigation using Links
- 404 page (Not found Page)
- URL Parameters
- Nested Routes
- Implementing styles using NavLink

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- Application Programming Interface
- Build a REST API using json-server
- API consumption in React application using Fetch method
- Build a dynamic Music Store application using Routing and API connectivity

Hands-on:

- Dynamic Music Store Application with Routing and API connectivity

Module 4 – React State Management using Redux

Learning Objective:

In this module, you will learn how to integrate Redux with React. Also, you will understand the other key terminologies associated with Redux to build a web application.

Topics:

- Need of Redux
- What is Redux?
- Redux Architecture
- Redux Action
- Redux Reducers
- Redux Store
- Principles of Redux
- Pros of Redux
- NPM Packages required to work with Redux
- More about react-redux package

Hands-on:

- Building an application to list the food items using React and Redux
- Building News application using React, Redux, and promise middleware

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Module 5 – Asynchronous Programming with Saga Middleware

Learning Objective:

In this module, you will learn how to write and handle the Asynchronous actions using Redux-Saga Middleware.

Topics:

- Need of Async operations
- Async Workflow
- Action Creators
- How to write Action Creators?
- Handling Async Actions via Reducers
- Middleware
- Redux-Saga
- Generators in Redux-Saga
- Saga Methods()
- Major Sections of Redux-Saga
- Building a Product List application using Redux-Saga Middleware
- Debugging application using Redux Devtools

Hands-on:

- Building a Product list application using Redux-Saga Middleware

Module 6 – React Hooks

Learning Objective:

In this module, you will learn how to implement Class component- Stateful features within Functional components using React Hooks.

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Topics:

- Caveat of JavaScript classes.
- Functional components and React hooks
- What are React hooks?
- Basic hooks
- useState() hook
- How to write useState() hook when state variable is an array of objects
- useEffect() hook
- Fetch API data using useEffect() hook
- useContext() hook
- Rules to write React hooks
- Additional hooks
- Custom hooks

Hands-on:

- Fetch API data using useEffect() hook
- Pass multiple Context using useContext() hook
- Writing custom hooks
- Building weather application using React hooks

Module 7 – Fetch Data using GraphQL

Learning Objective:

In this module, you will learn how to augment React components with GraphQL to query the data.

Topics:

- What is GraphQL?
- Cons of Rest API
- Pros of GraphQL

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- Frontend backend communication using GraphQL
- Type system
- GraphQL datatypes
- Modifiers
- Schemas
- GraphiQL tool
- Express framework
- NPM libraries to build server side of GraphQL
- Build a GraphQL API
- Apollo client
- NPM libraries to build client side of GraphQL
- How to setup Apollo client

Hands-on:

- Build a GraphQL API and execute queries using GraphiQL tool
- Fetch Space Launch Data using Apollo-GraphQL

Module 8 – React Application Testing and Deployment

Learning Objective:

In this module, you will learn how to perform application testing using Jest and later deploy the application using Docker and Nginx.

Topics:

- Define Jest
- Setup Testing environment
- Add Snapshot testing
- Integrate Test Reducers
- Create Test Components

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- Push Application on Git
- Deploy App on Nginx
- Create Docker for React Application

Hands-on:

- Testing application using Jest
- Application Deployment via Nginx and Docker

Module 9 – Introduction to React Native

Learning Objective:

In this module, you will understand React Native terminologies, learn how to integrate React Native with Redux and build a mobile application using React Native.

Topics:

- Native Applications
- React Native
- React Native Elements
- Expo CLI
- Build a shopping cart mobile application using React Native
- React Native installation and setup
- Working with Styles and Layout

Hands-on:

- Shopping Items list using Native React

Module 10 – Building React Native Application with API

Learning Objective:

In this module, you will build and release an Android mobile application using React Native.

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Topics:

- Native modules
- Native Navigation libraries
- Integration of Redux with React Native
- React Native and Redux major components
- Redux Thunk middleware
- NPM libraries
- Shopping cart application using React Native and Redux
- Integration of Redux actions, store and reducers In React Native application

Hands-on:

- Dynamic Shopping cart using React Native

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Node.js Certification Training

Course Curriculum

About the Course

Edureka's Node.js Certification Training helps you to learn how to develop scalable web applications using Express Framework and deploy them using Nginx. You will learn how to build applications backed by MongoDB and gain in-depth knowledge of REST APIs, implement testing, build applications using microservices architecture and write a real-time chat application using Socket IO.

Course Outline

Module 1 – Introduction to Node.js

Learning Objective:

In this module, you will learn what is Node.js and what makes Node.js so popular. You will also learn how to use Node Package Manager (NPM) and Nodemon.

Topics:

- What is Node.js?
- Why Node.js?
- Installing NodeJS
- Node in-built packages (buffer, fs, http, os, path, util, url)
- Node.js Modules
- Import your own Package
- Node Package Manager (NPM)
- Local and Global Packages

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- Push code to GitHub

Hands On:

- Installation of Node.js and Visual Studio Code
- Installation of GIT and push codes to GIT repository

Module 2 – File System Module and Express.js

Learning Objective:

In this module, you will learn how to get user inputs via Command Line Arguments and store data using File system. You will also learn how to create the applications using Express Framework, whereas manage and deploy them using PM2 and Nginx.

Topics:

- Get Input from Users
- Pass Multiple Arguments with Yargs
- File System Module
- Operations associated with File System Module
- JSON Data
- Http Server and Client
- Sending and receiving events with EventEmitters
- Express Framework
- Run a Web Server using Express Framework
- Routes
- Deploy application using PM2 and Nginx

Hands-on:

- Build an API using express, read file with FS module, and deploy application using PM2 and Nginx

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Module 3 – Asynchronous Programming

Learning Objective:

In this module, you will learn how to develop asynchronous Node.js applications using Call stack, Callback queue and Event Loop mechanism. You will also gain knowledge on how to work with HTTP request, Promises and EJS templates.

Topics:

- Call Stack
- Callbacks, Callback Queue and Event Loop
- Callback Abstraction
- Callback Chaining
- Promises
- Promise Chaining
- Request Package
- Customizing HTTP Requests
- Error handing with appropriate HTTP codes
- Introduction to template engine (EJS)

Hands-on:

- Create A HTML Page Using EJS Template
- Create A Weather Application

Module 4 – Integration with MongoDB and Email Servers

Learning Objective:

In this module, you will learn how to work with NoSQL Database – MongoDB. Also, you will learn how to send emails via Node.js application.

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Topics:

- Introduction to NoSQL Databases and MongoDB
- Installation of MongoDB on Windows
- Installation of Database GUI Viewer
- Inserting Documents
- Querying, Updating and Deleting Documents
- Connect MongoDB and Node.js Application
- Exploring SendGrid
- Sending emails through Node.js application using SendGrid

Hands-on:

- Installation of MongoDB and MongoDB Compass
- Connecting MongoDB And Node.js
- Sending Email Via Node.js Application Using SendGrid

Module 5 – REST APIs and GraphQL

Learning Objective:

In this module, you will learn how to run queries via Node.js application along with some important aspects of Node.js like REST APIs, setting up Mongoose, Postman Installation and GraphQL.

Topics:

- REST API
- REST API in Express
- Postman
- MongoDB Driver API
- Express Router
- Mongoose API

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- GraphQL
- GraphQL Playground

Hands-on:

- Working Of mongodb API
- Working With Mongoose API
- Working With GraphQL API

Module 6 – Building Node.js Applications using ES6

Learning Objective:

In this module, you will learn how to write your application using ES6. Also, you will learn how to Design Dashboard and perform CRUD operations.

Topics:

- ES6 variables
- Functions with ES6
- Import and Export withES6
- Async/Await
- Introduction to Babel
- Rest API with ES6
- Browsing HTTP Requests with Fetch
- Processing Query String
- Creating API using ES6
- Transpilation
- Building Dashboard API
- Creating dashboard UI with EJS
- ES6 Aside: Default Function Parameters
- Data Validation and Sanitization

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Hands-on:

- Build a Dashboard Application Using ES6 concepts

Module 7 – User Authentication and Application Security

Learning Objective:

In this module, you will learn how to secure your application by implementing API Authentication and User authentication using JSON Web Tokens (JWT).

Topics:

- Authentication
- Types of Authentication
- Session Vs Tokens
- JSON Web Tokens
- Bcrypt
- Node-localstorage

Hands-on:

- Build a Login Application

Module 8 – Dynamic Client-Server Interaction using Socket.IO

Learning Objective:

In this module, you will learn how Build Realtime Chat Application using Socket.IO.

Topics:

- Web Sockets
- Web Sockets

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- Socket.io
- Broadcasting Events
- Sharing Your Location
- Event Acknowledgements
- Form and Button States
- Rendering Messages
- Working with Time and Timestamps for determining Location of Messages
- Storing Users, Rendering User List, Tracking Users Joining and Leaving
- Deploying the Chat Application
- Redis - Building API with Redis

Hands On:

- Creating a Realtime Chat Application using Socket.io
- Build an API using Redis

Module 9 – Testing Node.js Applications

Learning Objective:

In this module, you will learn how to test your Node.js applications using Mocha and Chai, along with some important testing concepts related to Node.js Application.

Topics:

- Writing Tests and Assertions
- Testing Asynchronous Code
- Testing an Express Application
- Setup and Teardown
- Testing with Authentication
- Advanced Assertions
- Mocking Libraries
- Wrapping up User Tests

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- Setup Task Test Suite
- Testing with Task Data

Hands On:

- Perform Testing with Mocha and Chai

Module 10 – Microservices Application

Learning Objective:

In this module, you will learn how to build a Node.js application based on Microservices architecture and also how to deploy them to Docker containers.

Topics:

- Why Microservices?
- What is Microservices?
- Why Docker?
- What is Docker?
- Terminologies in Docker
- Child Processes
- Types of child process

Hands On:

- Microservices with Docker
- Working of Child Processes

Project Work

Project 1: LeaveTheMarks Application http://www.leavethemarks.org

Project Description: LeaveTheMarks is a story sharing application where users share their stories. This application have the following features :-

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1. Unregistered users will be able to create accounts
2. Registered users will be required to login to create a story, once login user can logout
3. A user is not required to login to read the stories
4. To leave comments on a story user will be required to Login
5. Application uses MongoDB to store authentication details (username, password, email) and user stories
6. Passwords are encrypted using bcrypt before storing them into MongoDB
7. User session is maintained once a user login
8. Application is deployed on Heroku and we set a custom domain for our Heroku app
9. Application uses Express framework and EJS template engine
10. Note that we use MongLab provided hosted MongoDB as our database in production

Project 2: Socket IO Realtime Chat Application

https://awesome-socket-io.herokuapp.com Project Description: We will build a realtime chat application using Socket IO. This application have the following features :-

1. To join the chatroom you just require a shortname
2. If a shortname is already taken by an another user an error message is shown
3. Once a user joins a chatroom, user can broadcast messages to all the users that are currently logged in
4. Rather than broadcasting message to all the users, a user can also send a private message to a single user
5. If you try to send a private message to a user that is not currently online you will get an error message
6. Once a user joins the chatroom, the user can see all the users that are currently online
7. All the messages that a user sends are displayed on the chat window, note that private messages are displayed in a different way than broadcast messages
8. Note that we don't store chat messages into database so if a user reloads the application previous messages will not be shown
9. Chat messages are stored in sockets.

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Project 3: iLoveMyCity Application https://ilovemycity-ejs.herokuapp.com using EJS template engine Project Description: We will build a simple website with Express framework using EJS template engine. This application have the following features :-

1. Describes a city in a few pictures
2. How many pictures to show, is controlled by the data passed to views?
3. The common code is separated into EJS partials to allow code reusability
4. EJS partials are included in EJS views

Project 5: iLoveMyCity Application http://ilovemycity-jade.herokuapp.com using Jade template engine Project Description: We build the same iLoveMyCity application with Express framework using Jade template engine. This application have the following features :-

1. Describes a city in a few pictures
2. Uses Jade template engine to create views
3. The common code is separated into Jade partials to allow code reusability
4. Jade partials are included into Jade views

Project 6: iLoveMyCity Application https://ilovemycity-handlebars.herokuapp.com using Handlebars template engine Project Description: We build the same iLoveMyCity application with Express framework using Handlebars template engine. This application have the following features :-

1. Describes a city in a few pictures
2. Uses Handlebars template engine to create views
3. The common code is separated into Handlebars partials
4. Handlebars partials are included in Handlebars views
5. Templates are displayed using default layout

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Discover Learning

MongoDB Certification Training

Course Curriculum

About the Course

MongoDB® Training Certifcation course will help to master one of the most popular NoSQL databases. This course is designed to provide knowledge and skills to become a successful mongoDB® expert. The course covers a range of NoSQL and mongoDB® topics such as CRUD Operations, Schema Design and Data Modelling, Scalability etc.

Course Outline

Module 1 – Design Goals, Architecture and Installation

Learning Objective:

At the end of this Module, you should be able to understand Database Categories, Mongo DB Overview, design Goals for MongoDB Server and Database, Mongo DB Tools, introduction to JSON and BSON, installation of MongoDB on Windows, Linux, MAC OS etc., environment Setup for MongoDB.

Topics:

- Understanding Base Concepts of Database
- Types of NoSQL Database, and NoSQ vs. SQL Comparison, ACID & Base Property
- Overview of MongoDB, Design Goals for MongoDB Server and Database, MongoDB Tools
- How to modularize code by separating routes
- Installation/Running MongoDB on various platforms Windows, Linux, MAC OS, etc.

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- Project: Problem Statement.
- Database Categories, What is NoSQL?
- Why NoSQL? Benefit over RDBMS, CAP Theorem, and Implementing NoSQL, What is MongoDB?
- Depth Understanding of Database, Collection, Documents and Key /Values etc.
- Introduction to JSON and BSON Documents
- Environment Setup (Live Hands on), Usage of various MongoDB Tools available with MongoDB Package

Module 2 – CRUD Operations

Learning Objective:

At the end of this Module, you should be able to understand MongoDB's development and production architecture, read and write concepts of MongoDB, how Journaling works, Use mongo shell for CRUD operations, understand different mongoDB® data types.

Topics:

- MongoDB Development Architecture
- MongoDB CRUD Introduction
- Concern Levels, Journalling etc.
- Distributed Read & Write Queries
- MongoDB Datatypes
- MongoDB Production Architecture
- MongoDB CRUD Concerns
- Cursor Query Optimizations, Query Behaviours in MongoDB
- MongoDB CRUD Syntax & Queries (Live Hands on)

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Module 3 – Schema Design and Data Modelling

Learning Objective:

At the end of this Module, you should be able to understand different concepts of data modeling in MongoDB®, different types of data model, the challenges of designing data model in MongoDB®, apply the knowledge in a real world use case.

Topics:

- Data Modelling Concepts
- Type of Data Modelling
- Data Model Examples and Patterns
- Model Tree Structures
- Model Relationships between Documents
- Use Case of Data modelling
- Type of Data Modelling
- Analogy between RDBMS & MongoDB Data Model, MongoDB Data Model (Embedding & Linking)
- Challenges for Data Modelling in MongoDB
- Model Specific Application Contexts

Module 4 – Administration

Learning Objective:

At the end of this Module, you should be able to take database backup and restore MongoDB®, export and import data from/to a MongoDB® instance, check server status, db status, monitor various resource utilization of a mongod instance, understand various optimization strategies, create capped collection, use TTL in MongoDB®.

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Module 5 – Scalability and Availability

Learning Objective:

At the end of this Module, you should be able to understand the concepts of replica set, concept of sharing in MongoDB®, create a production like sharded cluster.

Topics:

- Introduction to Replication
- What is Replica Set and Master Slave Replication?
- Introduction to Sharding
- Concepts around Sharding, What is shards, Key
- How to setup a Sharding
- Concepts around Replication
- Type of Replication in MongoDB
- How to setup a replicated cluster Managing Replica Sets etc.
- Confg Server, Query Router etc.?
- Type of Sharding (Hash Based, Range Based etc.), and Managing Shards

Module 6 – Indexing and Aggregation Framework

Learning Objective:

At the end of this Module, you should be able to use various type of indexes in MongoDB®, use hint, explain plan of a query, work with Geospatial indexes, aggregation Pipeline in MongoDB®, use MapReduce framework.

Topics:

- Index Introduction
- Index Types

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- Index Creation
- Aggregation to Introduction
- Type of Aggregation (Pipeline, MapReduce & Single Purpose)
- Index Concepts
- Index Properties
- Index Tutorial
- Indexing Reference
- Approach to Aggregation
- Performance Tuning

Module 7 – Application Engineering and MongoDB Tools

Learning Objective:

At the end of this Module, you should be able to use MongoDB® tools, understand Jaspersoft integration with MongoDB®, know other popular use case of MongoDB®, know various API drivers available for MongoDB®, run few query operators through http interface.

Topics:

- MongoDB Package Components
- MongoDB Limits and Thresholds
- MMS (MongoDB Monitoring Service)
- HTTP and Rest Interface
- Integration of MongoDB with Hadoop and Data Migration MongoDB with Hadoop (MongoDB to Hive).
- Confguration File Options
- Connection String URI Format/ Integration of any compatible tool with MongoDB API and Drivers for MongoDB

Module 8 – Project, Additional Concepts and Case Studies

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Learning Objective:

At the end of this Module, you should be able to know security concepts in MongoDB®, understand how Authentication and Authorization works, integrate MongoDB® with Java, integrate MongoDB® with Jaspersoft, apply MongoDB® in a real life project.

Topics:

- Security Introduction
- Security Tutorial
- Integration of MongoDB with Pentaho
- Integration of MongoDB with Java
- Integration of MongoDB with GUI Tool Robomongo
- Security Concepts
- Integration of MongoDB with Jaspersof
- Integration of MongoDB with Hadoop/Hive
- Project on MongoDB and Java

Project Work

1. Design a HR schema and Perform All CRUD Operation
2. Setup a MongoDB on Windows/Linux and Perform Import and Export Activities
3. Monitor and Tune MongoDB Database Performance with Monitoring Tools
4. Take Backup and Restore
5. Setup a Replication, Load Some Data and Visualise Through All Replica
6. Setup a Sharding and Load Some Data and Visualise from All Shards
7. Create, Rebuild and Remove Indexes on a Collection
8. Perform all Aggregation Activities (Pipeline, MapReduce and General Purpose aggregation
9. Install a Robomongo GUI Tool and Explore All Schema and Data inside the MongoDB
10. Install a Jaspersoft (iReport) Reporting Tool and Generate Some Reports on MongoDB Data:4
11. Install JDK (Java) and Develop a Small Application to Perform CRUD Operation on MongoDB

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