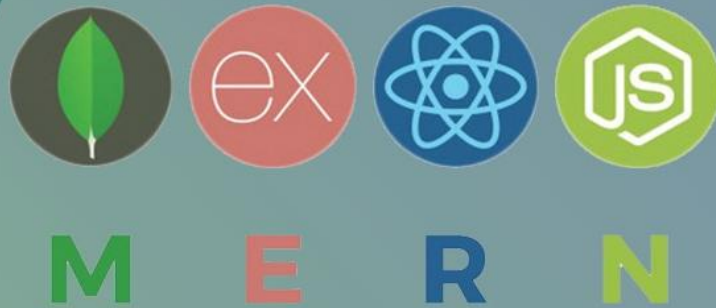


MERN Stack



Detailed
Course Syllabus

Internet Introduction

- Internet
- How does the internet work?
- What is HTTP?
- What is a Domain Name?
- What is hosting?
- DNS and how it works?

HTML Introduction

- History of browser
- Why HTML?
- Structure of Hypertext Markup language

Parts of HTML document

- Head
- Body

Tags

- Paragraph
- Heading
- List (unordered, ordered, description list)
- Layout elements
- Exploring elements
- Table

Form tags

- Input Types
- Text Area
- Dropdown

CSS Introduction

- Importance of CSS
- Advantages
- Structure of a CSS rule

CSS Type

- Inline CSS

CSS Properties and Values

- Display and visibility properties
- Text related properties
- Font related properties
- Border related properties
- Background related properties

CSS Type

- Internal/Embedded CSS
- External CSS

Introduction of Selector

Types of selectors

- Simple selectors
- Combinator selectors
- Pseudo class selectors
- Pseudo elements selectors
- Attribute selectors

Position

- Static
- Relative
- Absolute
- Sticky
- Fixed

Flexbox Layout

- Introduction
- Basic and Terminology
- Flexbox properties
- Examples
- Flexbox Tricks

Grid Layout

- Introduction
- Basic and Terminology
- Grid properties
- Examples
- Grid Tricks

Media Query

- Introduction
- Using media queries
- Examples

Keyframes

- Introduction
- Creating animations
- Keyframes properties

Responsive Design

- Introduction
- CSS units
- Methods
- Tips & Tricks

Sass

- Nesting
- Variables
- Partial and Imports
- Mixins
- Extend/Inheritance

Bootstrap

- Introduction of Bootstrap
- Bootstrap Introduction and Installation.
- How to use Documentation

Bootstrap concepts - Basic to Advanced

- Bootstrap Progress Bar Bootstrap Grid System.
- Bootstrap Buttons, Glyphicons, Tables.
- Bootstrap Vertical Forms, Horizontal Forms, Inline Forms.
- Bootstrap DropDowns and Responsive Tabs and Jumbotron.
- Bootstrap Alerts , Wells, Pagination and Pager.

JavaScript

- Introduction to JavaScript
- Difference types of Javascript engine?
- Where is Javascript used?
- Difference between Javascript and Java?
- Who introduced Javascript language?
- Official name of Javascript?
- What is ECMAScript?

Fundamentals of JavaScript

- Basic syntax
- JS in <head> or <body>
- Comments
- JS Outputs

Variables & Data Types

- Variable Declarations
- Variable Naming Rules
- Variable Scopes
- Reserved words

Operators

- Arithmetic Operators
- Assignment Operators
- Comparison Operators
- String Operators
- Logical Operators
- Bitwise Operators
- Ternary Operators
- Type Operators

Type Casting

- Difference between Type conversion vs Type coercion
- Explicit Type Casting
- Implicit Type Casting

Conditional Statement

- if else
- else if
- nested if
- Switch

Looping Statement

- For
- While
- DO While

Control Statement

- Break
- Continue

Strings

- Length
- IndexOf
- LastindexOf
- Substring
- Substr
- To uppercase
- To lowercase
- Slice

Number

- Number properties
- Number methods

Array

- Introduction to array
- Accessing elements
- Array methods

Objects

- Object definition
- Object properties
- Accessing properties and methods
- Object methods

ES6 Concepts

- Destructuring
- Spread operator
- Rest operator

JS primitive type and reference type

Function

- Function Statement / Function Definition
- Difference between arguments and parameters
- Default Params/Rest Params
- Function return
- Function Expression
- Anonymous function
- Arrow function

Scopes

- Global
- Block
- Script
- Function / Local

Looping through array and object

- Array iteration methods
 - For each
 - Map
 - Filter
 - Reduce
 - For of
- Object iteration methods
 - Entries
 - Keys
 - Values
 - For in

Built-in-methods

- Math
- Dates

Regular expression

Exception Handling

- Try
- Catch
- Throw
- Finally

Javascript Async

- setTimeout
- setInterval

Working with API

- XMLHttpRequest
- Fetch(CRUD)

Window object

- About window object
- DOM (Document object module)
 - i) HTML DOM elements
 - ii) HTML Attributes
 - iii) HTML Events
 - iv) HTML Events Objects
 - v) Difference between HTML collections and Node List
 - vi) HTML Styles
- BOM (Browse Object Module)
 - i) Screen
 - ii) Location
 - iii) Popup alert
 - iv) Cookies
 - v) History
 - vi) Navigator
 - vii) Timing

Advanced Concepts

Topics to Know

- How does Js work ?
- Difference between Var | Let | Const
- What is the TDZ?
- What is Hoisting?

Functions

- Lexical Scoping
- IIFE
- Recursive function
- Argument object
- Scope & Stack
- HOF
- Closures, First Class Function

Using This keyword

- In a method(object)
- In a function
- Using it alone
- In event handlers
- In arrow functions

Explicit Binding

- call
- apply
- bind

Javascript Asynchronous

- Callbacks
- Callback Hell
- Promises
- async/await
- Brower Environment

Prototype

- Prototypal Inheritance
- Examples

Modules in JavaScript

- Common JS
- ECMAScript Modules

Classes

- Inheritance
- Polymorphism
- Encapsulation
- Abstraction

Memory Management in JavaScript

- Memory LifeCycle
- Garbage Collection

Using Dev Tools

- Debugging Memory Leaks
- Debugging Performance

NODE JS

- Introduction
- Who introduced NodeJs
- Benefits
- Node architecture
- How NodeJs work
- How to install NodeJs

Node Module System

- os
- fs
- events
- Http
- Introduction to NPM
- About NVM and how to use
- How to create package.json
- About package.json
- Developing-time-dependencies

Express JS

- Introduction
- How to start server
- Project Structure(MVC)
- Routing
- How to use Postman

HTTP Methods

- GET
- POST
- PUT
- DELETE

Middleware

- Application level middleware
- Router level middleware
- Built-in middleware

- Error handling middleware
- Third party middleware

MongoDB

- How to create Model(schema)
- Create operations
- Read operations
- Update operations
- Delete operation
- JWT
- User Authentication
- User Authorization
- Deployment

React JS

- What is React?
- What is Virtual DOM ?
- Difference between Virtual DOM and Real DOM

Using Preferred CLI Tools

- Vite(Recommended)
- Create React App(CRA)

Start with Vite from scratch

Using react & react dom library

- How to create an element?
- How to create components?
- How to render it?

JSX

- Introduction to JSX?
- Why JSX?
- How does it convert JSX to JS?

Components

- Functional Components(Recommended)
- Class Components
- Class Lifecycle methods

Topic to know

- How to create and nest components
- How to add markup and styles
- How to display data
- How to render conditions and lists
- How to respond to events and update the screen
- How to share data between components

Data sharing

- What is Props?
- How to use it?
- Pros & Cons

Hooks

- What is Hooks?
- useState
- useEffect
- useContext

- useReducer
- useCallback
- useRef

Understanding of react(In-Depth)

- React components
- React elements
- Component instances

How does react work behind the scenes?

- Reconciliation
- Virtual DOM
- Rendering
- Diffing Algorithm

Forms

React Router

Tailwind CSS

- Introduction of Tailwind CSS
- What is Tailwind CSS?
- Setting up the development Environment
- Install Tailwind CSS using CDN link
- Install Tailwind using PostCSS
- Add build watcher script

Tailwind CSS concepts - Basic to Advanced

- How to use Documentation
- Most Used Classes in Tailwind CSS

- Hover, focus & active effect
- Responsive Design
- Dark Mode
- Customize default style
- Directives and function

Libraries to Explore

- shadcn/ui
- Framer motion
- Aceternity UI

State Management

Client side state

- Introduction
- Flux Architecture
- Redux

Server side state

- Introduction
- React Query/Tanstack Query

API Integration

- Fetch / Axios
- CRUD Operations

Real Time Example

- Student Management System
- Deployment