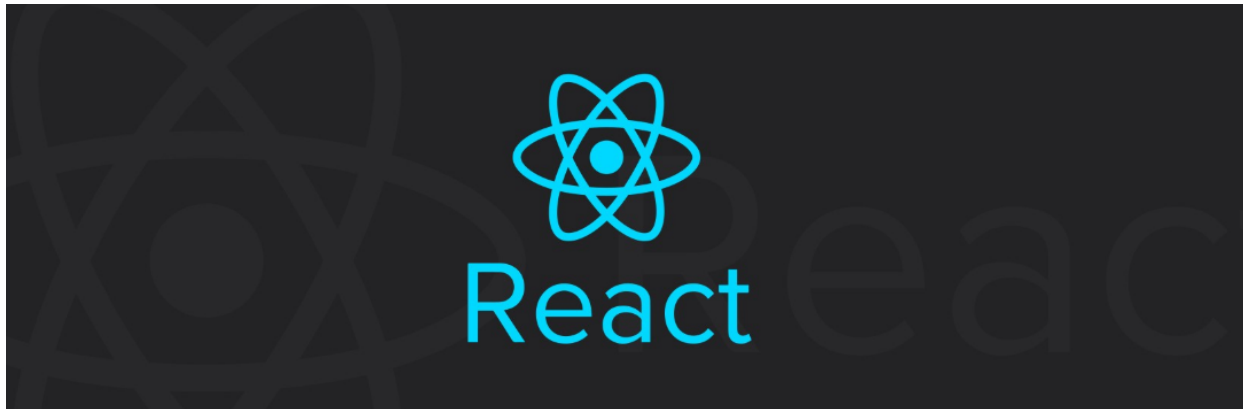# Working With React & Redux

The course is focused on understanding and learning the advanced concepts of React and Redux. We are focussed on the latest versions of React (16.13.1), with emphasis on React functional Programming (React Hooks). The session is based on working with Live code and understanding each concept with Practical Implementation.

Working with JavaScript

Day 1

1. **Working With JavaScript Basics**
   a. Working with Variables
   b. Understanding Data Types in JavaScript
   c. Working with Loops
      i. Working with For Loops
      ii. Working with Do While
      iii. Working With While Loop
   d. Working with Conditional Statements
   e. Working with Arrays
   f. Working with Array Functions

g. Working With Generators

h. Single Threaded Execution in JavaScript

i. Asynchronous Programming in Javascript

2. Getting Started With JavaScript

a. Understanding JavaScript Single-Threaded Execution Model

b. Working with Web APIs.

c. Understanding Callback Queue and Execution Stack

d. Asynchronous Programming with JavaScript

e. Understanding JavaScript Interpretation

3. Working with Objects

a. Working with Object Literals

b. Creating Object with Object.create

c. Using JavaScript Object Descriptors

d. Using Getter and Setters

e. Working with Writable, Enumerable and Configurable

4. Working with Functions

a. Creating Functions in JavaScript

b. Returning Values from Function

c. Working with Inner Functions

5. Understanding Closures in JavaScript

a. Understanding Closures in JavaScript

b. Lexical Scoping in JavaScript

c. Working with Inner Functions

d. Working with Closures

e. Working with Module Pattern

6. Understanding Context in JavaScript

 a. Working with "this" keyword

 b. Impact of "new" keyword

 c. Working with Prototype Pattern

 d. Creating Object with Prototype

 e. Working with Bind and Apply

Day 2

7. Working with ES6

 a. Working with Let and Const

 b. Working with Spread Operators

 c. Working with Rest Operator

 d. String Literals

 e. Working with Arrow Functions

 f. Cloning Object and Arrays

 g. Export and Import Modules

8. Working with Promises

 a. Understanding Asynchronous Programming with Promises

 b. Working with Existing Promise Libraries

 c. Working with "fetch" keyword

 d. Creating Custom Promise

 e. Returning Data from Custom Promises

 f. Working with Async and Await

9. Working with Classes

 a. Understanding Classes with ES6

 b. Adding properties to classes

 c. Adding Functions to Classes

 d. Inheritance in Classes

 e. Using the "super" keyword

10. Working with DOM Manipulation

    a. Attaching Event to DOM Elements

    b. Working with "addEventListener"

    c. Understanding Event Delegation

    d. Capturing Events

Working With React Basics

1. Introduction To React

    a. Introduction To React

    b. What is React?

    c. Setting Up React Development Environment

    d. Advantages and Disadvantages

    e. React vs Angular

    f. Working with Virtual DOMs

2. Working with Functional Components

    a. Understanding React Functional Component

    b. Defining a Component

    c. Component Rendering

    d. Understanding JSX

    e. JSX vs Native JavaScript Implementation

    f. Multiline JSX

    g. Understanding the parameters in "ReactDOM"

3. Working with Data in Functional Component

    a. Understanding Props Data

    b. Passing Props data to the Component

    c. Understanding and Updating Props

    d. Interpolating Data in Component

    e. Invoking Functions in React Component

f.   Raising Event with React Components

g.   Working With Spread and Rest Operators

Day 3

4. **Creating State Components with Classes**

   a.   Understanding State Components

   b.   Adding State to the Component

   c.   Passing State to Child Components

   d.   Updating Component State

   e.   Understanding State Update impact on props

   f.   Working with "setState"

   g.   Understanding "setState" asynchronous behavior

5. **Understanding React Lifecycle**

   a.   Working with Lifecycle Events

   b.   Working with "shouldComponentUpdate"

   c.   Understanding "shouldComponentUpdate" complexity

   d.   Optimizing code with "shouldComponentUpdate"

   e.   Working with Force Update

6. **Working with React State Hooks**

   a.   Understanding Hooks Concepts

   b.   Advantages and Use cases for React Hooks

   c.   Creating React Components with Hooks

   d.   Using "useEffect" Hooks in React

   e.   Using "useCallback" Hooks in React

   f.   Creating Custom Hooks

   g.   Understanding other React Hooks

   h.   Working with "useRef" Hook

   i.   Working with "useMemo" hooks

7. **Working with React Hooks**

    a. Introduction to React Hooks

    b. Benefits and Disadvantages of Hooks

    c. Working with "useState" React Hooks

    d. Working with "useEffect"

    e. Using Other React Hooks

    f. Creating Custom React Hooks

8. **Working with Child Components**

    a. Adding Child Component to Parent Components

    b. Passing Data to Child Components

    c. Lifting the State

    d. Updating the Parent Data from Child Component

9. **React Basics Introduction**

    a. Working with Conditional Operators

    b. Working with Iterations

    c. Working with Keys in Iteration

    d. Incorrect Usage of Keys

    e. Performance Impact of Keys in Iteration

    f. Working with Events

    g. Parent and Child Components in React

    h. Passing Data from Parent to Child in React

    i. Working with Props and State Variables

    j. Props are Read Only

    k. Updating State Data

10. **Styling React Component**

    a. Including External Style Sheet

    b. Including Bootstrap in Application

    c. Including Inline Styling

    d. Import Style Files in Component'

e. Working with Themes

f. Working with SASS

Day 4

11. Working with Routing in React

    a. Understanding the dynamics of Single Page Architecture

    b. Creating Single Page architecture with React Routers

    c. Defining React Router and Switch and Links

    d. Nested Routing in React

    e. Working with Render Props

    f. Creating Private Routes

    g. Prompt User on Page Redirection

    h. Creating Custom Routes and Links

12. Working with Forms

    a. Capturing Events from Forms

    b. Updating Forms Data

    c. Working with Uncontrolled Elements

    d. Working with TextArea, Inputs, etc

13. Working with Asynchronous Data

    a. Creating Dummy APIs with "json-server"

    b. Including "rxjs" in Application

    c. Making Data Calls with Axios

14. Handling Errors and Validations

    a. Working with React Validation

    b. Understanding Error Boundaries

    c. Capturing React Errors and Fallback Mechanism

15. Understanding Higher-Order Components

a. Understanding React Component Composition

b. Understanding Higher-Order Components

c. Creating Higher-Order Components

d. Analysis of Benefits of Higher-Order Components

16. Understanding Uncontrolled Elements

a. Uncontrolled vs Controlled Elements

b. Understanding "ref" in React

c. Advantage and Disadvantages of Uncontrolled Elements

Day 5

17. Performance Optimization with React 16.8

a. Working with Pure Components

b. Working with React Fragments

c. Function binding with Arrows vs "bind" keyword.

d. Working with "memos"

e. Working with Lazy and Suspense

18. Working With Context APIs

a. Understanding React Context APIs

b. Creating React Context

c. Working with Context Provider and Consumer

19. Working with Redux

a. Understanding Redux Concepts

b. Creating Actions, Reducers, and Stores

c. Updating Store Data in Redux

d. Triggering User Actions with Redux

e. Working with Redux Thunk

20. Testing React Application with Jest