Course Plan

Advanced React JS (v18)

Title: short line

# Duration

4 Days or 32 Hours

# Audience

This course is for Web Developers who know HTML, CSS and Basic JS

# Objectives

1. Learn and master React JS
2. Making single page application using the best SPA Library - React JS
3. Become Advanced ReactJS Developer after completing this course.

# Prerequisites

* This course requires basic HTML, CSS, Basic JS experience
* Laptop with minimum of 8GB RAM and [NodeJS](https://nodejs.org/en/download/current/) and [Visual Studio Code](https://code.visualstudio.com/) Editor Preinstalled.

# Notes

* This course does not include ES2015 (ES6). But Essential TypeScript
* This course does not include class component in React JS as it is not recommended in 2024.
* This course doesn’t include Classic Redux (Not Recommended any more as it is no longer preferred by corporates). But includes Redux-Toolkit which is recommended in 2024.

# Course Outline

**React JS**

**Day 1 (4 Hours)**

* Modern web app Development
* Big picture of SPA Frameworks and JS libraries.
* **Module 1: Essential TypeScript for React JS**
  + Introduction to TypeScript:
  + Understanding what TypeScript is and its benefits over plain JavaScript
  + Setting Up TypeScript
  + Installing and configuring TypeScript in your development environment.
  + Type System
    - Basic data types (string, number, boolean, etc.).
    - Type inference and type annotations.
    - Type compatibility and type errors.
  + Variables and Functions:
    - Declaring variables with types.
    - Function parameter and return type annotations.
    - Type aliases.
  + Interfaces:
    - Creating and using interfaces.
  + Arrays:
    - Working with arrays and generics.
* **Module 2: NodeJS as Runtime and Ecosystem**
  + npm commands
  + npm packages
  + Understanding 2 types of dependencies

**(We will not build any project on this day as we will learn the essential skillset for**

**ReactJS App Development)**

**Day 2 (4 Hours)**

* **Module 3: Introduction to React JS**
  + Introduction to What’s ReactJS and Why?
  + Dev and Project Environment Setup
  + First React Component
  + Introduction to JSX
  + Virtual DOM
  + **Module 3.1: Components and JSX**
    - Functional Components
    - Components & Hierarchy
    - Dynamic content in JSX
    - Deep dive into JSX
    - Props

**Day 3 (4 Hours)**

* + - Styles and Various Component Styling Options in ReactJS
      * Inline Styles
      * Internal Styles
      * External CSS
      * CSS modules in ReactJS
    - Events
  + **Module 3.2: State Management**
    - States with useState Hook

**Day 4 (4 Hours)**

* + - useEffect Hook intro
    - Context API and Global State Management with useContext Quick Intro
    - Lists and Keys
    - How to update state immutably?
  + **Module 3.3: React Router** 
    - Introduction to React Router
    - Setting up React Router in our App
    - URL Params and Query Params
    - Routing through Program

**Day 5 (4 Hours)**

* + **Module 3.4: Advanced React JS**
    - Fragments
    - Controlled vs Uncontrolled Components
    - Forms
      * Form libraries like Formik (not to be covered) or React Hook Form (will be covered)
      * Validation techniques in React Hook Form

**Day 6 (4 Hours)**

* + - useReducer, useRef Hook and develop a Todos App
    - Async Actions - Ajax Requests in React JS
      * useEffect Hook
      * Using Axios or fetch
      * Handling Loading State, Positive and Negative States
    - Custom Hooks
    - Context API - Detailed Demo

**Day 7 (4 Hours)**

* + **Module 3.5: Debug**
    - To do write debuggable code
    - How to debug ReactJS App?
    - How to debug on production
    - Errors (Compilation Error and Runtime Errors)
    - Error Boundary
    - Performance Tuning
      * Performance Optimization in React Apps
      * Lazy Loading
      * 14 Tips for Optimizing components

**Day 8 (4 Hours)**

* **Module 4: Redux Toolkit**
  + What’s Redux?
  + Concept of Store
  + Slice, Reducer
  + Dispatch and Selector
  + Debugging Redux app with Redux Devtools
  + Best Practices in React App Development

**Course Materials**

* **The entire session will be hands-on. All modules mentioned here will help the participants to build enterprise style CRUD App + E-Commerce app + Netflix app + Todo App as course project**
* 2 **Demo Apps** – Source Code in [GitHub.com](http://GitHub.com)
* **E-Book (100+ pages) written by Arun Vijayarengan (the trainer)**