

## ***HTML5***

### ***Content (Part: 1)***

#### ***Introduction to HTML***

- Introduction to HTML
- Structure of HTML document
- HTML headings
- HTML paragraphs
- HTML DIV tag
- HTML Span tag
- HTML text formatting tags
- HTML List tags
- HTML Image tag
- HTML Tables
- HTML Links
- HTML Iframes
- HTML First Mini Project

### ***Content (Part: 2)***

- HTML Forms
- HTML form elements
- HTML form input types
- HTML input attributes
- HTML5 form input attributes
- HTML Fieldset and Legend Tags
- Development of Online job application form
- HTML5 Layout elements
- Development of Company Website

## **PURE CSS**

- Introduction to Pure CSS
- Pure CSS Hiding Elements
- Pure CSS Images
- Pure CSS Layouts
- Pure CSS Buttons
- Pure CSS Tables
- Pure CSS Forms
- Pure CSS Grids
- Pure CSS Menus

## **JavaScript**

- Introduction to JavaScript

- How to insert JavaScript in HTML
- JavaScript Output
- JavaScript Variables and Operators
- JavaScript Control Statements
- JavaScript Functions
- JavaScript Arrays
- JavaScript Strings
- JavaScript Dates
- JavaScript Events
- JavaScript Error Handling
- JavaScript Validations
- JavaScript Animation
- JavaScript Multimedia

## React JS

### **1. Getting Started**

- React JS Introduction
- First React Code
- React Alternatives
- Single Page Applications and Multi Page Applications

### **2. Basic Features & Syntax**

- The Workflow
- Create React App
- Folder Structure
- Component Basics
- JSX
- Functional Component
- Working with Props
- Understanding the "children" Prop
- Understanding & Using State Props & State
- Handling Events with Methods
- Manipulating the State Function
- Components Naming
- Using the useState() Hook for State Manipulation
- Stateless vs Stateful Components
- Passing Method References Between Components
- Adding Two Way Binding
- Adding Styling with Stylesheets
- Working with Inline Styles

### **3. Lists and Conditionals**

- Rendering Content Conditionally
- Outputting Lists
- Lists & State

- Updating State Immutably
- Lists & Keys
- Flexible Lists

#### 4. Components & React Internals

- Project Structure
- App Into Components
- Comparing Stateless and Stateful
- Components Class-based vs Functional Components
- Class Component Lifecycle Overview
- Component Creation Lifecycle in Action
- Component Update Lifecycle (for props Changes)
- Component Update Lifecycle (for state Changes)
- Using useEffect() in Functional Components
- Controlling the useEffect() Behavior
- Cleaning up with Lifecycle Hooks &useEffect()
- Cleanup Work with useEffect() – Example
- Using shouldComponentUpdate for Optimization
- Optimizing Functional
- Components with React.memo()
- PureComponents instead of shouldComponentUpdateReact.
- Fragment
- Higher Order Components (HOC) –
- Introduction Passing Unknown Props
- Setting State
- Correctly Using
- PropTypesUsing

#### ➤ Refs

- Refs with React Hooks
- Understanding Prop Chain
- Problems Using the Context
- API contextType&useContext()

#### 5. Http /Ajax

- Http Requests in React
- Project with Axios
- Http Request to GET
- Data Making a Post Selectable
- Fetching Data on Update (without Creating Infinite Loops)
- POSTing Data to the Server
- DELETE Request
- Adding Interceptors to Execute Code Globally
- Removing Interceptors
- Setting a Default Global Configuration for Axios
- Creating and Using Axios Instances

## 6. Multi-Page-Feeling in a Single-Page-App: Routing

- Routing and SPAs
- Setting Up Links
- Setting Up the Router Package
- react-router vs react-router-dom
- Preparing the Project For Routing
- Setting Up and Rendering Routes
- Rendering Components for Routes
- Switching Between Pages
- Using Links to Switch Pages
- Using Routing-Related Props
- The "withRouter" HOC & Route Props
- Absolute vs Relative Paths
- Absolute vs Relative Paths (Article)
- Styling the Active Route
- Passing Route
- Parameters Extracting
- RouteParameters
- Parsing Query Parameters & the Fragment
- Using Switch to Load a Single Route
- Navigating Programmatically
- Additional Information Regarding Active Links
- Understanding Nested Routes
- Creating Dynamic Nested Routes
- Redirecting Requests
- ConditionalRedirects
- Working with Guards
- Handling the 404 Case (Unknown Routes)
- Loading Routes Lazily
- Routing and Server Deployment



## 7. Forms and Form Validation

- Custom Dynamic Input Component
- JS Config for the Form
- Create Inputs based on JS
- Config Adding a Dropdown
- Component Handling User Input Form Submission
- Custom Form Validation
- Adding Validation Feedback
- Showing Error Messages
- Handling Overall Form Validity

## 8. Redux

- Understanding State
- Understanding the Redux Flow Reducer and Store
- Actions Subscriptions
- React to Redux Store to React
- Dispatching Actions
- Passing and Retrieving Data with Action
- Switch-Case in the Reducer

- Updating State
- Immutably Updating
- Arrays Immutably
- Immutable Update
- Patterns Outsourcing
- Action Types
- Combining Multiple
- Reducers
- Understanding State
- Types
- Combining Local UI
- State and Redux

### **9. Redux Advanced**

- Adding Middleware
- Redux Devtools
- Asynchronous Code
- Action Creators
- Action Creators & Async Code Handling
- Asynchronous Code
- Restructuring Actions
- Action Creators and Get
- State Using Utility Functions
- Switch Case Statement

### **10. Testing**

- Testing?
- Required Testing Tools
- Jest and Enzyme
- Documentations Testing
- Components

### **11. Deploying the App to the Web**

- Deployment Steps
- Building the Project
- Example: Deployment on Firebase

## **NODE JS**

### **1. Node JS Introduction**

- Node.js
- Installing Node.js and Creating our First App

### **2. de.js as a Build Tool & Using**

- **Npm**
- npm & Node.js
- Using npm

- Versioning in package.json
- Build Tool?
- Using Node.js in Build Processes
- Useful Resources & Links

### **3. Modern JavaScript & NodeJS**

- Working with ES Modules & Node
- More on ES Modules
- Node Core Modules & Promises
- Module Resources

### **4. NodeJS&TypeScript**

- TypeScript Setup
- Assigning Types
- Type Inference & Type Casting
- Configuring TypeScript Working with
- Union Types Using Object & Array Types
- Working with Type Aliases & Interfaces
- Understanding Generics
- Node & TypeScript: Setup
- Getting Started with Node and TypeScript
- Writing TypeScript Express.js Code Adding
- REST Routes with TypeScript
- Finishing the REST Routes
- Testing the API Using
- Type Casting

## **Introduction to Java**

- First step towards Java programming
- Data types , Literals and Variables
- Control statements in Java
- Object oriented programming
  - a) Introduction
  - b) Creation of classes and objects
  - c) Encapsulation in Java
  - d) Relationship between the objects
  - e) Inheritance in Java
  - f) Polymorphism in Java
  - g) Abstract classes
  - h) Interfaces
- Arrays
- String API
- Exception handling
- Wrapper classes
- Generics in Java
- The Collection Framework
- Arrays class and StringTokenizer class
- Multithreading in Java
- Java I/O
- Enumeration in Java
- Annotations in Java
- Lamda expressions
- Stream API
- Joda-Time API to represent Date and Time from Java8.0
- Other new features in Java based on versions



### **1. JDBC**

- a) Introduction
- b) Steps to develop JDBC application
- c) PreparedStatement interface
- d) CallableStatement interface
- e) Batch processing
- f) Transaction Management
- g) Types of ResultSets

### **2. Servlet**

- a) Introduction to web application
- b) Introduction to servlet
- c) Creation of servlet
- d) Reading request parameters into the servlet
- e) Servlet to database communication
- f) Servlet to servlet communication
- g) Session tracking in servlet

### 3. JSP

- a) Introduction to JSP
- b) JSP action tags

### AI Tools

- Introduction to AI Productivity Tools
- AI Chat Assistants
- AI for Research
- AI for Grammar & Writing
- AI for Email Writing
- AI Design Tools
- AI Scheduling & Calendar Management
- No-Code/Low-Code App Builders
- AI for Coding & Debugging
- Project & Task Management Tools

### MONGODB

- Introduction to databases
- No SQL databases
- Installation of MongoDB
- Working with MongoDB
- MongoDB document
- Data modelling
- MongoDB with JavaScript
- Indexes
- Administering databases

### SQL

- ERDiagram
- Constraints
- Datatypes
- DQL
- SelectionandProjection
- Differenttypesofsqlclause
- SqlFunction
- SingleRowFunction
- MultiRowFunction
- Subquery

- Co-related Subquery

**Group Functions**

- Joins
- Equi
- Self
- Non-equi
- Outer

**DDL**

- Create
- Alter
- Rename
- Drop
- Truncate

**DML**

- Insert
- Update
- Delete

**DTL**

- Commit
- Rollback
- Savepoint

**DCL**

- Grant
- Revoke
- Basics PL/SQL

c) JSP JSTL Tags

### **Spring Framework**

1. Introduction to Spring Framework
2. Spring Core Module
3. Spring JDBC framework
4. Spring MVC
5. Introduction to Spring Boot and Micro Services