

# **NEXT JS Full Stack Web Development with React 19**

**Duration:** 5 days / 40 hours

**Prerequisites:** Working Knowledge of React JS and JS ES6

## **Day 1: Next.js 15 & React 19 – Core Concepts and Setup**

### **Topics Covered:**

- Overview of Full Stack Development with Next.js
- What's New in Next.js 15?
  - Updated Compiler (Turbopack improvements)
  - Enhanced Partial Prerendering (PPR)
  - Streaming improvements
- React 19 New Features:
  - useFormStatus, useOptimistic, Server Actions
- Project Setup:
  - Node.js, VS Code, Git/GitHub
  - Create a Next.js 15 App using create-next-app with App Router
  - Understanding app/, pages/, public/, and components/ structure
  - Server vs Client components

### **Labs:**

- Initialize a Next.js 15 project with TypeScript
  - Create a basic app with Home, About, Contact pages
  - Use server/client components effectively
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## **Day 2: App Routing, Navigation & Styling in Next.js 15**

### **Topics Covered:**

- File-System Based Routing (app/ directory)
- Route Groups, Layouts, Parallel Routes
- Dynamic Routes & Catch-All Routes
- Navigation with <Link> and useRouter, usePathname()
- Styling Strategies:
  - CSS Modules
  - Global CSS
  - Tailwind CSS Setup & Theming
  - CSS Variables & Dark Mode

### **Labs:**

- Create user dashboard with nested and grouped routes
  - Add Tailwind CSS and implement responsive design
  - Implement **sticky navbar with active state using usePathname()**
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## **Day 3: React 19 Forms, Server Actions & State Handling**

### **Topics Covered:**

- Building Forms with <form action={} in React 19
- Server Actions in Next.js 15 (with optimistic updates)
- Form State with useFormState, useFormStatus
- React State Management:
  - useState, useEffect, useOptimistic
- Client vs Server Rendering
- Intro to Validation (**Zod/Yup with Server Actions**)

#### Labs:

- Create contact form with server action and validation
- Add optimistic UI using useOptimistic
- Build a **small To-Do App with form and state handling**

### Day 4: API Routes, Database Integration & Backend Services

#### Topics Covered:

- REST API in Next.js 15: app/api/ structure
- Connecting to Databases:
  - Prisma ORM with MySQL / SQLite
  - Migrations and Model Generation
- Secure Environment Config (.env.local)
- CRUD Operations via Server Actions and API Routes
- Error Handling & Middleware

#### Labs:

- Setup Prisma & create schema for a Task model
- Create CRUD APIs in /app/api/tasks
- Connect frontend to API using fetch() & Server Actions

### Day 5: Final Project, Deployment & Optimization

#### Topics Covered:

- Final Project Walkthrough: Task Tracker App
- SEO & Metadata with Next.js 15 (generateMetadata)
- Static vs Dynamic Rendering
- Deployment to Vercel (with ENV variables setup)
- Performance Optimization **Tips**

#### Final Project:

##### Task Tracker Web App

- Add, update, delete tasks
- Uses Prisma + SQLite/MySQL
- Tailwind-based responsive UI
- Form submission via Server Actions