

# ASSIGNMENT 6

## 1 Next.js

Next.js is a modern, open source web development framework built on top of React, maintained by Vercel. By 2025 it is recognized as one of the most powerful, flexible and future-rich solutions for building web applications and websites.

Next.js extends React basic capabilities, predominantly client-side rendering by natively supporting robust features for server-side rendering (SSR), static site generation (SSG) and hybrid sites giving developers the tools for high performance, scalable and SEO friendly web application.

### Core principle and philosophy

Performance first

Flexibility

Developer Experience

Full Stack Capabilities

### Key Architectural Features

App Directory & file based routing

Rendering options

Turbo Pack Compiler

Image and Asset Optimization

Advanced SEO tools

## Why Adapt Next.js

Improved scalability, performance and SEO out of the box

Optimally manage frontend, backend in one codebase

Intuitive, file based setup reduces boilerplate

Stays compatible with cutting edge tooling, including react servers components, streaming and edge computing.

Future proof - Built in with trends such as WASM, headers CMS, module first strategies and AI integration in mind.

## 2 Next.js Features

Server Side Rendering (SSR) - Render pages on the server per request improving both load speed and SEO for dynamic content

Static Site Generation (SSG) - Prerenders pages at build time, but for pages that don't change often, resulting in fast load times

Incremental Static Regeneration (ISR) - Combines strengths of SSG and SSR allowing static pages to be updated after deployment as data changes without rebuilds

API Routes -

API Routes - Enables to create backend endpoints within app eliminating the need for separate server

File based routing - Automatic creation of routes based on file structure in the pages or app directories

Automating Code Splitting - Loads only necessary JS for each page speeding up loading and navigation

Hot Module Replacement (HMR) - Updates modules in real time during development for faster workflows

Result in CSS/SaaS support straightforward integration of CSS and SCSS files into components

Image Optimization - Responsive image delivery and compression for improved performance

Streaming and edge rendering - Supports modern feature like React server components and edge function for low-latency location aware apps

SEO and Accessibility Enhancements - Integrate meta tag control and compound Schema markup

Advanced performance tool - Turbopack bundles for rapid builds and improved resource management

### 3 ReactJS vs NextJS

ReactJS

Javascript library for UI

Client side only

Use third party libraries

Poor out of box for dynamic content

Easy, basic webapp development

SPAs, UIs, Module apps

NextJS

Framework built on top of React

Server Side Rendering, Static support (SSR/SSG)

Built in file based routing

Excellent due to SSG, SSR  
Require React knowledge/advance concepts

Full stack apps, JAM stack, hybrid

### 4 ESlint

ESlint is popular Javascript and TypeScript JSX, etc static code analysis tool can lintin. It helps developers find and fix problems, enforce coding standards and maintain code quality. Eslint rules are completely configurable and extensible via plugins, enabling both style and code quality checks. Common use case include identifying syntax errors, enforcing best practices and catching bugs before runtime.

## 5 Prettier

Prettier is an opinionated code formatter. Its main job is to consistently enforce a consistent coding style across entire codebase handling whitespace, semicolons, quotes and more. Unlike ESLint, prettier does not perform error checking, it simply formats code to look uniform, depending upon workflows and reducing code review own kind.