

Data Fetching & API Routes Assignment

Mastering Next.js Techniques for Efficient Data Handling

Assignment: Data Fetching & API Routes

🎯 Objective

This assignment is designed to strengthen your understanding of data fetching strategies and API routes within Next.js. By the end of this task, you will be able to:

- Implement different data fetching strategies: Static Site Generation (SSG), Server-Side Rendering (SSR), and Client-Side Rendering (CSR).
- Utilize Next.js functions: `getStaticProps`, `getServerSideProps`, and Incremental Static Regeneration (ISR).
- Create and use API routes in Next.js.
- Practice client-side data fetching using `useSWR`.

📚 Prerequisites

Before beginning this assignment, ensure you have completed the following:

- Assignment 1: Getting Started & Routing
- Module 4: Data Fetching
- Module 9: Pages & File-Based Routing
- Module 10: Page Pre-Rendering and Data Fetching

🛠️ Tasks

1. Products Page (SSG)

- **Objective:** Create a `/products` page using Static Site Generation.
- **Steps:**
 - Use `getStaticProps` to fetch product data from the Fake Store API.
 - **Display:**
 - Product title
 - Price

- Thumbnail image

2. Product Details Page (SSR)

- **Objective:** Implement a dynamic route /products/[id] for server-side rendering.
- **Steps:**
 - Use getServerSideProps to fetch single product details at runtime.
 - **Display:**
 - Product title
 - Description
 - Category
 - Price
 - Image

3. Dashboard Page (CSR with SWR)

- **Objective:** Create a /dashboard page using Client-Side Rendering with useSWR.
- **Steps:**
 - Fetch data from a public API, for example, JSONPlaceholder.
 - **Display:**
 - List of post titles
 - Implement auto-refresh every 10 seconds

4. Custom API Route

- **Objective:** Develop a custom API route.
- **Steps:**
 - Create /pages/api/hello.js that returns JSON:
 - ```
export default function handler(req, res) {
 res.status(200).json({ message: "Hello from Next.js API Route!" });
}
```
  - Fetch this API from the homepage and display the message.

## 5. Styling

- **Objective:** Apply consistent and responsive styling using Tailwind CSS.
- **Requirements:**
  - Style product cards with a grid layout.
  - Style the dashboard list.
  - Implement a loading state with a spinner or “Loading...” text.

## Deliverables

- **Pages & Features:**
  - /products page using SSG.
  - /products/[id] page using SSR.
  - /dashboard page using CSR with SWR.
  - Custom API route at /api/hello.

- **UI:** Ensure a fully responsive and clean user interface.

## Submission Guidelines (For Next.js)

### 1. Project Name

- Name your project folder **my-nextjs-app** (or use a meaningful project name).

### 2. Push to GitHub

- Upload the full project folder to GitHub (except node\_modules, which is ignored by default using .gitignore).
- Please make sure package.json, next.config.js, and all pages are included.

### 3. Deploy on Vercel or Netlify

- **Preferred:** Deploy on **Vercel** (the official Next.js hosting platform).
  - Go to <https://vercel.com>
  - Import your GitHub repo
  - Click **Deploy**
- **Alternative:** Deploy on **Netlify** (also supports Next.js).
  - Watch this guide: [Deploy Next.js on Netlify](#)
  - In Netlify, make sure the **build command** is next build and the **publish directory** is .next

### 4. Submit the Following:

- **GitHub Repository Link**
- **Live Deployed Link** (Vercel or Netlify)

By following these instructions, you will successfully complete the assignment and enhance your understanding of Next.js. Good luck!