Frontend Development with React.js

Project Documentation format

1. **Introduction**
   - **Project Title**: Fit Flex: Your Personal Fitness Companion
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   - **Team Members**:
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2. **Project Overview**

   - **Purpose**:

   Fit Flex is a revolutionary fitness app designed to transform the workout experience by providing an intuitive interface, dynamic search, and a vast library of exercises for all fitness levels. The goal is to create an accessible platform for individuals passionate about fitness, exercise, and holistic well-being. Fit Flex aims to reshape how users engage with fitness by offering personalized workout plans, fostering a supportive community, and integrating advanced search and recommendation features

   - **Features:**

   ✔ **Exercises from Fitness API**: Access a diverse array of exercises from reputable fitness APIs, covering a broad spectrum of workout categories and catering to various fitness goals.

   ✔ **Visual Exercise Exploration**: Engage with workout routines through curated image galleries, allowing users to explore different exercise categories and discover new fitness challenges visually.

   ✔ **Intuitive and User-Friendly Design**: Navigate the app seamlessly with a clean, modern interface designed for optimal user experience and clear exercise selection.

   ✔ **Advanced Search Feature:** Easily find specific exercises or workout plans through a powerful search feature, enhancing the app's usability for users with varied fitness preferences.

3. Architecture

- **Component Structure:**

  The project is structured into three major folders:

  Components: Contains reusable UI elements like Footer, Search Bar, and Exercise Cards.

  Pages: Stores files that act as pages at different URLs in the application (e.g., Home, Exercise Details, and Categories).

  Styles: Contains CSS files for styling the application.

- **State Management**:

  Fit Flex uses **Reacts use State and use Effect hooks** for managing local state.

- API data (like exercise categories and details) is fetched using **Axios** and stored in state variables.
- The **use Effect** hook ensures data is fetched on component mount.
- For global state management, **Context API** or **Redox** can be integrated if needed.

- **Routing**:

  The application uses **React Router Dom** for navigation.

- Users can navigate between different pages seamlessly.
- `/` → Home Page
- `/categories` → Displays different exercise categories
- `/exercise/:id` → Detailed view of a specific exercise
- The **Route Parameters** help fetch and display specific exercise details dynamically.

4. Setup Instructions

- **Prerequisite:**

  Here are the key prerequisites for developing a frontend application using React.js:

  ✔ **Node.js and npm:** Node.js is a powerful JavaScript runtime environment that allows you to run JavaScript code on the local environment. It provides a scalable and efficient platform for building network applications.
  Install Node.js and npm on your development machine, as they are required to run JavaScript on the server-side.
  ● Download https://nodejs.org/en/download/

✔ **React.js:** React.js is a popular JavaScript library for building user interfaces. It enables developers to create interactive and reusable UI components, making it easier to build dynamic and responsive web applications.
Install React.js, a JavaScript library for building user interfaces.

● Create a new React app: npx create-react-app my-react-app

● Navigate to the project directory: cd my-react-app

● Running the React App:
With the React app created, you can now start the development server and see your React application in action.

✔ HTML, CSS, and JavaScript: Basic knowledge of HTML for creating the structure of your app, CSS for styling, and JavaScript for client-side interactivity is essential.

✔ Version Control: Use Git for version control, enabling collaboration and tracking changes throughout the development process. Platforms like GitHub or Bitbucket can host your repository.
• Git: Download and installation instructions can be found at: https://git-scm.com/downloads

✔ Development Environment: Choose a code editor or Integrated Development Environment (IDE) that suits your preferences, such as Visual Studio Code.

• Visual Studio Code: Download from https://code.visualstudio.com/download

- **Installation**

• Navigate into the cloned repository directory and install libraries:

```
cd fitness-app-react  npm install
```

✔ Start the Development Server:

• To start the development server, execute the following command:

```
npm start
```

• Open your web browser and navigate to http://localhost:3000.

• You should see the application's homepage, indicating that the installation and setup were successful.

5. Folder Structure

- **Client**:

The FitFlex React application is organized into three major folders:

```
/fitness-app-react
│── /src
│    ├── /components       # Reusable UI elements
│    │    ├── Navbar.js
│    │    ├── Footer.js
│    │    ├── SearchBar.js
│    │    ├── ExerciseCard.js
│    │    ├── CategoryList.js
│    ├── /pages            # Main pages
│    │    ├── Home.js
│    │    ├── Categories.js
│    │    ├── ExerciseDetails.js
│    ├── /styles           # CSS styles
│    │    ├── global.css
│    │    ├── navbar.css
│    │    ├── footer.css
│    ├── /assets           # Images, icons, fonts
│    ├── /utils            # Helper functions and API calls
│    ├── App.js            # Main application component
│    ├── index.js          # Entry point
│    ├── package.json      # Project dependencies
│── .gitignore
│── README.md
```

- **Utilities**:

  The `/utils` folder contains helper functions, utility classes, and custom hooks for optimized functionality.
  ✔ **API Requests (`api.js`)**
  Handles all API calls using Axios:

```
import axios from "axios";
const API_URL = "https://exercisedb.p.rapidapi.com/exercises";

export const fetchExercises = async (category) => {
  try {
    const response = await axios.get(`${API_URL}/category/${category}`, {
      headers: {
        "X-RapidAPI-Key": process.env.REACT_APP_RAPIDAPI_KEY,
        "X-RapidAPI-Host": "exercisedb.p.rapidapi.com",
      },
    });
    return response.data;
  } catch (error) {
    console.error("Error fetching exercises:", error);
  }
```

✔ **Custom Hook (`useFetch.js`)**
A reusable hook for fetching API data:

```
import { useState, useEffect } from "react";
import axios from "axios";

const useFetch = (url, options) => {
  const [data, setData] = useState(null);
  const [loading, setLoading] = useState(true);
  const [error, setError] = useState(null);

  useEffect(() => {
    const fetchData = async () => {
      try {
        const response = await axios.get(url, options);
        setData(response.data);
      } catch (err) {
        setError(err);
      } finally {
        setLoading(false);
      }
    };
    fetchData();
  }, [url]);

  return { data, loading, error };
};

export default useFetch;
```

6. Running the Application

To start the **FitFlex** frontend server locally, follow these steps:

1. **Navigate to the project directory:**

```
cd fitness-app-react
```

2. **Install dependencies:**

```
npm install
```

- **Frontend**: `npm start`

Access the application:
Open your browser and go to http://localhost:3000.
If everything is set up correctly, the FitFlex homepage should load.

If using **Vite.js**, use the command:

```
npm run dev
```

7. Component Documentation

- **Key Components**:

Component	Purpose	Props
Navbar.js	Displays the navigation menu across all pages.	`links (array)` – List of navigation links.
Footer.js	Shows footer content with links and social media.	None
SearchBar.js	Allows users to search for exercises.	`onSearch (function)` – Callback function to handle search input.
ExerciseCard.js	Displays a single exercise with its details.	`exercise (object)` – Contains exercise name, image, and description.
CategoryList.js	Renders a list of workout categories.	`categories (array)` – List of exercise categories.
ExerciseDetails.js	Shows detailed information about a selected exercise.	`exerciseId (string)` – ID of the selected exercise.

- **Reusable Components**:

These components are used multiple times across different parts of the application.

✔ **Button.js**
A customizable button component.

- `label (string)`: Button text.
- `onClick (function)`: Click event handler.
- `className (string)`: Additional styling classes.

✔ **Loader.js**
Displays a loading spinner while fetching data.

✔ **Modal.js**
A generic modal popup component.

- `isOpen (boolean)`: Controls modal visibility.
- `onClose (function)`: Closes the modal.
- `children (JSX)`: Content inside the modal.

8. **State Management**

- **Global State**:

For **global state**, **React Context API** or **Redux** could be used depending on the scale of the app. In the current implementation, the **Context API** is primarily used to manage and share global state between components that do not have a direct parent-child relationship.

- **User Authentication Context:** Stores user information such as login status or user preferences across different pages.
- **Exercise Data Context:** Shares fetched exercise categories, workout lists, and other data globally so that components like Search, Categories, and Exercise Cards can access the information without re-fetching it.
- **Settings Context:** Handles global settings, such as dark/light mode or language preferences.

- **Local State**:

  Local state is used within individual components to manage the UI's internal behavior. This state is not shared globally but instead scoped to the component that defines it.

  - **Search Input State:** Manages the current value of the search bar for filtering exercises.
  - **Loading State:** Tracks whether the app is currently fetching data or whether an error has occurred during data retrieval.
  - **Modal Visibility:** Determines whether a modal is open or closed.

9. User Interface

The **FitFlex** application provides an intuitive and engaging **User Interface (UI)** that prioritizes ease of use, clarity, and visual appeal. The interface is designed to provide users with a seamless experience when exploring exercises, managing workout routines, or searching for new fitness challenges.

Key UI Elements:

- **Navigation Bar (Navbar):**
  A responsive navbar that includes links to key sections of the app (e.g., Home, Categories, Workout Plans).
- **Search Bar:**
  A prominent search bar allowing users to easily find exercises by name, category, or difficulty level.
- **Exercise Cards:**
  Cards displaying exercise details such as name, type, and an image to help users visually explore and engage with workouts.
- **Category Filters:**
  Categories such as strength training, cardio, flexibility, etc., are organized in filterable buttons or tabs for easy navigation.
- **Modal Windows:**
  Modals are used for showing detailed exercise information or confirming user actions (e.g., saving or removing an exercise).

- **Loading Indicators:**
  An elegant spinner or progress bar to indicate loading or data-fetching states.

10. Styling

- **CSS Frameworks/Libraries**:

  FitFlex uses a combination of **modern CSS frameworks and libraries** to ensure a clean, responsive, and visually appealing design.

  1. **Tailwind CSS:**
     Tailwind CSS is used to style components with utility-first classes. This allows for faster design iterations, easier customization, and better maintainability..
  2. **Bootstrap (optional):**
     If needed, **Bootstrap** can be used for quick prototyping or as a fallback. It provides a set of pre-styled UI components like buttons, cards, and forms.
  3. **CSS Grid/Flexbox:**
     CSS Grid and Flexbox are used to create flexible and adaptive layouts. This ensures that components like cards, buttons, and text align appropriately across different screen sizes.

- **Theming**:

  FitFlex provides theming capabilities to allow users to toggle between light and dark modes.

  1. **Light Mode:**
     - A clean, bright interface with a light background color and dark text for high contrast and easy readability.
  2. **Dark Mode:**
     - A darker interface, primarily using shades of gray and black for the background, with light-colored text. This reduces eye strain in low-light environments.
  3. **Customizable Themes:**
     Users can adjust the primary color scheme, font sizes, and interface elements according to their preferences, ensuring accessibility and personalization.

11. Testing

- **Testing Strategy**:

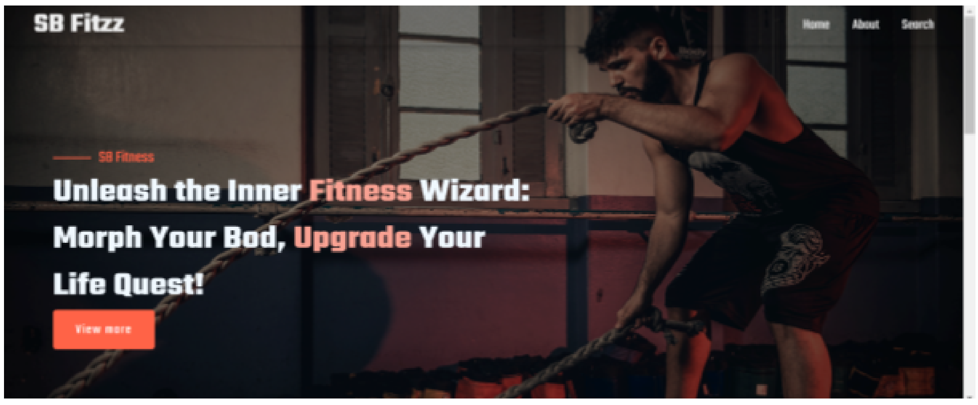
  The **FitFlex** application employs a comprehensive testing strategy to ensure reliability, maintainability, and a smooth user experience. The testing covers the following levels:

1. **Unit Testing:**
   Individual components (e.g., buttons, cards, modals) and helper functions are tested to ensure they work as expected. **Jest** and **React Testing Library** are used to test isolated logic and component rendering.
2. **Integration Testing:**
   Ensures that different components interact as expected. For example, testing if the **Search Bar** and **Exercise List** properly update when a user submits a search query.
3. **End-to-End (E2E) Testing:**
   Cypress or **Puppeteer** could be used to simulate real user behavior, ensuring that the entire application, from login to exercise tracking, works correctly.
4. **Visual Regression Testing:**
   Tools like **Storybook** and **Chromatic** can be used to track UI changes and ensure visual consistency across different screen sizes.

- **Code Coverage**:

  The application uses **Jest** to calculate code coverage, ensuring that the critical paths of the app are well-tested. Code coverage tools help identify areas of the codebase that lack sufficient test coverage.

12. **Screenshots or Demo**


SB Fitzz
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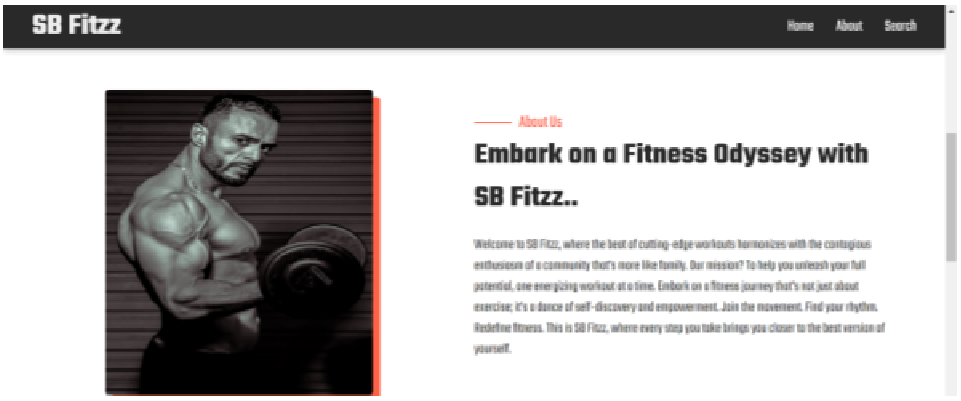
Unleash the Inner Fitness Wizard: Morph Your Bod, Upgrade Your Life Quest!
View more

About

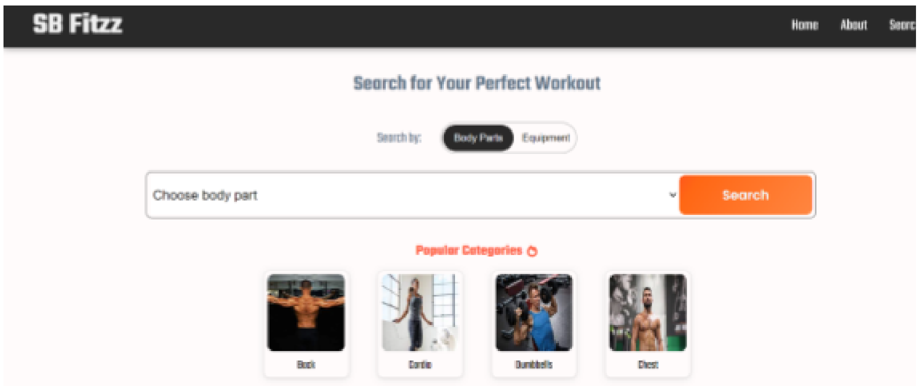


About Us

Embark on a Fitness Odyssey with SB Fitzz..

Welcome to SB Fitzz, where the best of cutting-edge workouts harmonizes with the contagious enthusiasm of a community that's more like family. Our mission? To help you unleash your full potential, one energizing workout at a time. Embark on a fitness journey that's not just about exercise; it's a dance of self-discovery and empowerment. Join the movement. Find your rhythm. Redefine fitness. This is SB Fitzz, where every step you take brings you closer to the best version of yourself.

Search



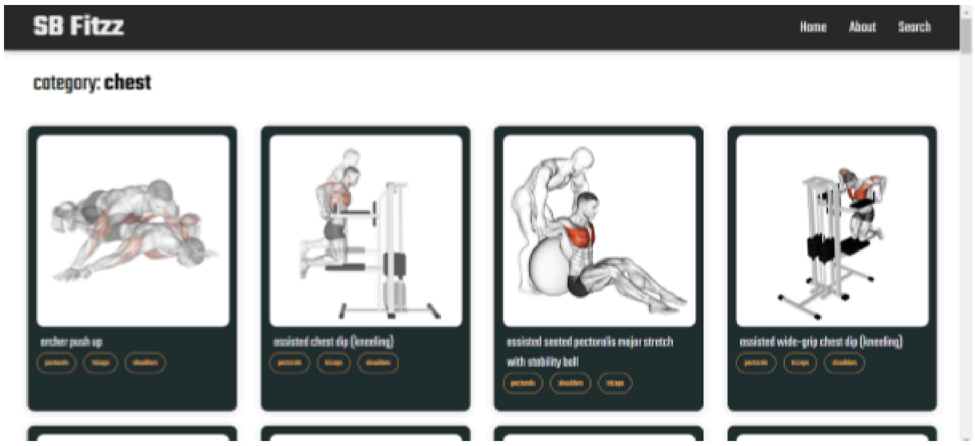
Search for Your Perfect Workout

Search by:

Choose body part

Popular Categories

Category Page



category: chest

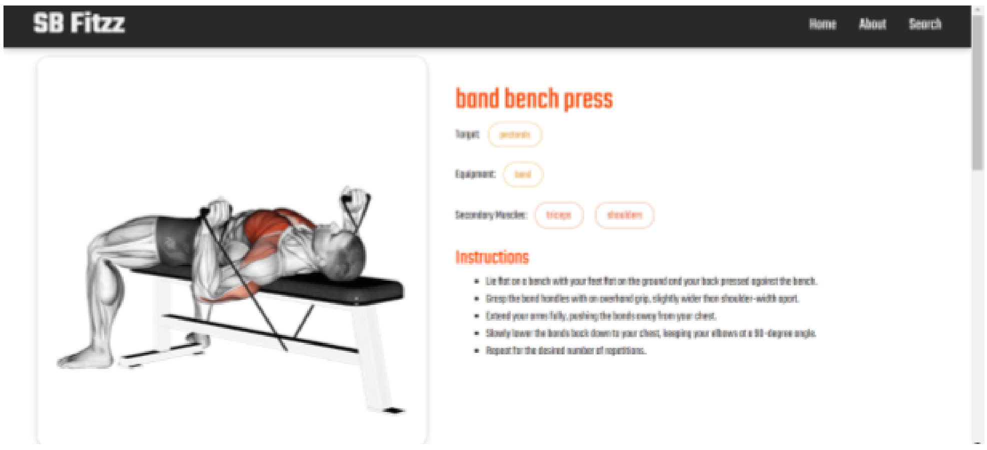
archer push up

assisted chest dip (kneeling)

assisted seated pectoralis major stretch with stability ball

assisted wide-grip chest dip (kneeling)

Exercise Page



bond bench press

Target: pectorals

Equipment: band

Secondary Muscles: triceps shoulders

Instructions

- Lie flat on a bench with your feet flat on the ground and your back pressed against the bench.
- Grasp the band handles with an overhand grip, slightly wider than shoulder-width apart.
- Extend your arms fully, pushing the bands away from your chest.
- Slowly lower the bands back down to your chest, keeping your elbows at a 90-degree angle.
- Repeat for the desired number of repetitions.

13. **Known Issues**

Some known issues or limitations include:

- **Limited Browser Support:**
  The app may have minor styling inconsistencies on older browsers (e.g., Internet Explorer). The application is primarily optimized for modern browsers (Chrome, Firefox, Safari, Edge).
- **API Rate Limits:**
  Depending on the API usage plan (e.g., Rapid API), the number of requests per day may be limited. This can impact the number of exercises available for fetching in a given session.
- **Dark Mode Bug:**
  Occasionally, when toggling dark mode, some components may not adjust their colors correctly, causing readability issues. This is under investigation and will be resolved in a future update.
- **Performance on Mobile:**
  While the app is responsive, some users may experience slower performance on older mobile devices when loading large datasets or images.

14. **Future Enhancements**

Several enhancements are planned to improve user experience and functionality:

1. **Enhanced Search and Filtering:**
   More granular filters, such as filtering by muscle group, equipment type, difficulty, and workout duration.
2. **User Profiles and Progress Tracking:**
   Allow users to create profiles where they can track their workout progress, save favorite exercises, and set fitness goals.

3. **Workout Plans Integration:**
   Offer personalized workout plans based on user fitness goals (strength, endurance, weight loss) and track progress over time.
4. **Gamification Features:**
   Introduce features like badges, achievements, and workout challenges to increase user engagement.
5. **Offline Mode:**
   Allow users to access and save workout plans offline to continue their exercises without an active internet connection.