FSD REPORT
on

MINI PROJECT ON
E-COMMERCE WEBSITE

Submitted by

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PROJECT TITLE

UNIXCHANGE

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OVERVIEW OF VARIOUS FULL STACK TECHNOLOGIES USED IN MINI PROJECT

React JS React is often referred to as a frontend library for creating interactive and dynamic user interfaces. This is built by Facebook (Meta).	**Stripe API** The Payment Methods API allows you to accept a variety of payment methods through a single API.
Firebase Web Firebase is a backend as a service which we can use in our project to make our backend development easier.	**Deep Source** Deep Source looks at things that might create a security problem or a performance problem going forward; or if we're violating a best practice.

REACT JS

React.js, commonly referred to as React, is an open-source JavaScript library used for building user interfaces or UI components, particularly for single-page applications where UI updates are frequent. Developed and maintained by Facebook, React allows developers to create reusable UI components that can efficiently update and render based on changes in data.

Here are some key aspects of React.js:

1. **Declarative Syntax:** React uses a declarative syntax, which means you describe what you want to achieve, and React takes care of updating the DOM (Document Object Model) to match the desired state. This is in contrast to imperative programming, where you specify each step to achieve a result.
2. **Component-Based Architecture:** React applications are built using components, which are modular, reusable building blocks. Each component encapsulates its own logic and state, making it easier to manage and maintain code. Components can be nested to create complex UI structures.
3. **Virtual DOM:** React uses a virtual DOM to optimize the performance of UI updates. Instead of directly manipulating the actual DOM for every change, React creates a virtual representation of the DOM in memory. It then calculates the most efficient way to update the actual DOM, reducing the need for direct manipulation and improving application performance.
4. **One-Way Data Binding:** React follows a unidirectional data flow, where data flows in one direction—from parent to child components. This helps in maintaining a predictable state and makes it easier to debug and understand how data changes propagate through the application.
5. **JSX (JavaScript XML):** JSX is a syntax extension for JavaScript that looks similar to XML or HTML. It allows developers to write UI components using a syntax that resembles HTML, making the code more readable and expressive. JSX is then transformed into standard JavaScript by a build process.
6. **React Hooks:** Introduced in React 16.8, hooks are functions that allow developers to use state and lifecycle features in functional components, which were traditionally reserved for class components. Hooks provide a more concise and readable way to manage state and side effects.

STRIPE JS

Stripe.js is a JavaScript library provided by Stripe, a popular online payment processing platform. This library is designed to facilitate the integration of Stripe's payment functionality into web applications, allowing developers to securely accept online payments.

Here are some key aspects of Stripe.js:

1. **Client-Side Integration:** Stripe.js is used on the client side (in the browser) to interact with Stripe's API and securely collect payment information from users. It helps to create a seamless and secure payment experience without sensitive data passing through your servers.
2. **Tokenization:** One of the key features of Stripe.js is its ability to tokenize sensitive information, such as credit card details. Instead of handling raw credit card information, Stripe.js generates a unique token that represents the card details. This token can be securely transmitted to your server and used to initiate a payment on the server side.
3. **PCI Compliance:** By using Stripe.js and tokenization, developers can reduce the scope of Payment Card Industry Data Security Standard (PCI DSS) compliance requirements for their applications. Since sensitive data is not transmitted through your servers, the burden of PCI compliance is significantly reduced.
4. **Customization and Styling:** Stripe.js provides a set of customizable UI elements, such as the Stripe Elements library, which allows you to design and style your payment forms according to your application's look and feel. It ensures a consistent and user-friendly payment experience.
5. **Payment Methods:** Stripe.js supports various payment methods, including credit cards, debit cards, and alternative payment methods like Apple Pay and Google Pay. This flexibility enables you to offer a range of payment options to your users.

FIREBASE WEB

Firebase is a comprehensive mobile and web application development platform offered by Google. Firebase provides a wide range of services, including real-time databases, authentication, hosting, cloud functions, and more. In the context of web development, Firebase offers several features that are particularly relevant:

1. **Realtime Database:** Firebase's Realtime Database is a NoSQL database that allows you to store and synchronize data in real time. It's particularly useful for applications that require live updates, such as chat applications or collaborative tools. The database is JSON-based, making it easy to integrate with web applications.
2. **Authentication:** Firebase Authentication provides a secure and easy-to-use authentication system, supporting various authentication methods such as email/password, social media logins (Google, Facebook, Twitter), and more. It helps you manage user identities and allows users to sign in to your application with minimal effort.
3. **Hosting:** Firebase Hosting allows you to deploy and host your web applications quickly. It supports the deployment of static content, such as HTML, CSS, and JavaScript files, with the added benefit of SSL support and content delivery through a global CDN (Content Delivery Network).
4. **Cloud Firestore:** Firebase offers Cloud Firestore, a NoSQL document database that complements the Realtime Database. Firestore provides more advanced querying and scalability features, making it suitable for complex data models and larger applications.
5. **Cloud Functions:** Firebase Cloud Functions enable you to run backend code in response to events triggered by Firebase features and HTTPS requests. This allows you to extend the functionality of your application without the need for a separate server.
6. **Firebase Storage:** Firebase Storage provides scalable, secure cloud storage for your web application. It is suitable for storing user-generated content such as images, videos, and other media files.
7. **Authentication:** Firebase Authentication offers a secure and easy-to-use authentication system that supports various authentication methods such as email/password, social media logins (Google, Facebook, Twitter), and more. It helps you manage user identities and allows users to sign in to your application with minimal effort.
8. **Cloud Messaging (FCM):** Firebase Cloud Messaging (FCM) is a cross-platform messaging solution that allows you to send messages to devices in a reliable and efficient way. It is commonly used for sending push notifications to web and mobile applications.
9. **Performance Monitoring:** Firebase Performance Monitoring helps you gain insights into your web application's performance by tracking metrics such as load times, network requests, and user interactions. This can be crucial for optimizing the user experience.

DEEP SOURCE

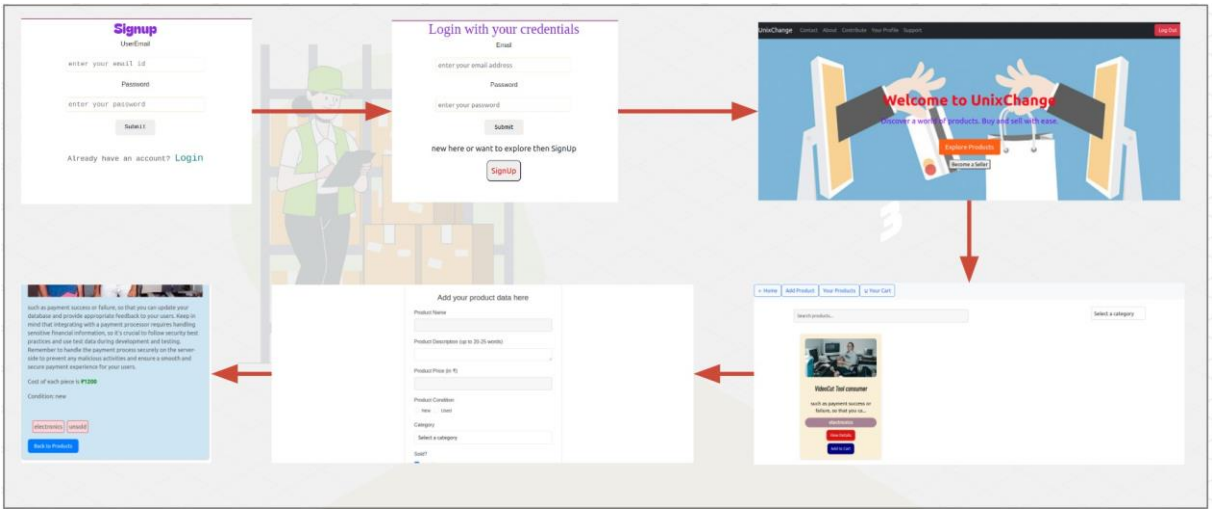
DeepSource is a platform focused on providing automated code reviews and code analysis for software development. It helps developers maintain code quality, identify issues, and adhere to best practices. Here are some key points about DeepSource:

1. **Automated Code Review:** DeepSource automates the code review process by analyzing code changes and providing feedback on potential issues, code quality improvements, and adherence to coding standards. This helps teams catch and address issues early in the development process.
2. **Support for Multiple Languages:** DeepSource supports multiple programming languages, allowing developers to analyze and review code written in languages such as Python, JavaScript, Go, Ruby, and others.
3. **Code Quality Metrics:** The platform provides insights into various code quality metrics, such as code duplication, complexity, and maintainability. These metrics can help teams make informed decisions about code improvements and refactoring.
4. **Security Analysis:** DeepSource includes security analysis tools to identify vulnerabilities, security issues, and potential risks in the codebase. This helps developers address security concerns before code is deployed.

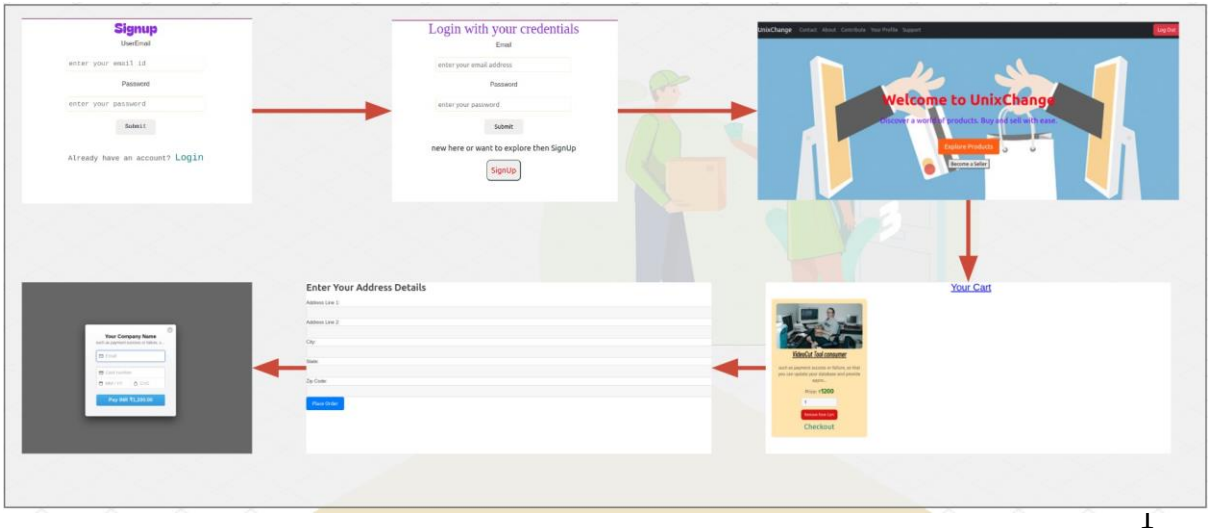
WORKFLOW/ARCHITECTURE DIAGRAM

WITH EXPLANATION

For SELLER



For CUSTOMER



FUTURE SCOPE AND CONCLUSION

The future scope of e-commerce buy-sell websites is promising and dynamic, as the digital landscape continues to evolve. Several trends and areas of development suggest a positive trajectory for e-commerce platforms:

1. **Global Expansion:** E-commerce websites have the potential to reach a global audience. As technology improves and international trade barriers decrease, businesses can tap into new markets, reaching customers around the world.
2. **Personalization and AI:** Advanced technologies like artificial intelligence (AI) and machine learning (ML) are becoming integral to e-commerce. Personalized shopping experiences, product recommendations, and targeted marketing based on user behaviours are areas where AI can significantly enhance the e-commerce experience.
3. **Premium:** We will add an additional feature and name it as 'PREMIUM.' This feature involves taking money from the seller. So in return we will recommend his AD on the top and assign an expert who will check all the products through online video-calling and give a fair price for it. This will make the product fit for the market.
4. **Collaboration with popular e-commerce websites in market:** Once we start to get funds, we can collaborate with top e-commerce websites and publish ads on their websites to catch majority people and connect them with sellers by giving some commission.
5. **Locality friendly:** This website detects the location of seller and recommends the buyers of only that area on their landing page.

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- **Github**
- **Chatgpt**
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