COS30049 - Computing Technology Innovation Project

Assignment 1 for Group Set 1
Design Document

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1 Project background and introduction

In the age of blockchain technology and cryptocurrency, the possibilities for innovation seem limitless. One such groundbreaking project is the creation of a blockchain-based web platform that allows users to purchase exclusive cooking recipes from renowned restaurants using cryptocurrency. This project aims to bridge the worlds of culinary excellence and blockchain technology, creating a unique marketplace where the art of cooking meets the security and transparency of blockchain.

Cooking is an art form, and the recipes from famous restaurants hold a special allure. Imagine being able to recreate the Flavors of your Favorite Michelin-starred dish in the comfort of your own home. However, these culinary secrets are often closely guarded by chefs and restaurants. Traditional methods of acquiring these recipes involve a great deal of negotiation, secrecy, and high costs.

This project seeks to revolutionize this process by using blockchain technology and smart contracts to offer these coveted recipes for sale in a secure, transparent, and exclusive manner. The core idea is to create a decentralized recipe marketplace, where restaurants can list their exclusive recipes as non-fungible tokens (NFTs) on the blockchain and interested buyers can acquire them using cryptocurrency.

1.1 Key Features of the Blockchain Recipe Marketplace:

1. Smart Contracts: Smart contracts will be the cornerstone of this platform. These self-executing contracts will govern the purchase and access to recipes. Once a user acquires a recipe NFT, they gain exclusive access to that recipe, which cannot be purchased by anyone else.

2. Cryptocurrency Payments: The marketplace will facilitate transactions using cryptocurrencies, making it convenient and secure for both buyers and sellers. Users can use popular cryptocurrencies like Bitcoin or Ethereum to make their purchases.

3. Exclusive Ownership: Ownership of a recipe NFT ensures exclusivity, guaranteeing that the recipe will not be sold to anyone else. Buyers can trust that they hold the sole rights to create the dish.

4. Transparent History: The blockchain ledger will maintain a transparent history of all transactions, providing a verifiable record of ownership and ensuring the authenticity of the recipes.

5. Restaurant Partnerships: Collaboration with renowned restaurants and chefs will be essential to the success of this platform. These partnerships will bring in high-quality, exclusive recipes and enhance the credibility of the marketplace.

6. Community and Reviews: Users will have the opportunity to rate and review the recipes they've purchased, fostering a community of culinary enthusiasts, and encouraging restaurants to maintain the quality of their offerings.

7. User-Friendly Interface: The web platform will be designed with a user-friendly interface, making it accessible to both novice and experienced users of blockchain technology and cryptocurrency.

The web aims to transform the way we experience gourmet cuisine, democratizing access to exclusive recipes while ensuring that the creative efforts of chefs are rewarded. It embodies the intersection of culinary passion and blockchain innovation, offering a tantalizing glimpse into the future of gastronomy. Join us on this exciting journey as we redefine the way we cook and Savor extraordinary dishes through the power of blockchain and cryptocurrency.

2 Team Introduction

Allow us to introduce the talented and dynamic team behind our project, each member bringing unique skills and expertise to the table. Together, we are committed to delivering excellence and driving innovation in every aspect of our endeavor.

1. Tran Quoc Dung

Role: Project Leader and Blockchain Expert

Tran Quoc Dung is our visionary project leader, possessing a deep understanding of blockchain technology. With a proven track record in blockchain development, he guides our team in the technical aspects of the project, ensuring its success.

2. Nguyen Manh Duc

Role: Culinary Specialist and Recipe Curator

Nguyen Manh Duc is our culinary maestro. With a passion for gastronomy and an impeccable palate, he curates the finest recipes from renowned restaurants. His expertise ensures that our platform offers a truly gourmet experience.

3. Khai Kiet Tran

Role: Smart Contract Developer

Khai Kiet Tran is our smart contract guru. His coding prowess and meticulous attention to detail ensure the security and functionality of our smart contracts, the backbone of our blockchain-based marketplace.

4. Do Tuan Dat

Role: User Experience (UX) and Interface Designer

Do Tuan Dat is the creative mind behind our user-friendly interface. He combines his artistic flair with a deep understanding of user experience to craft an intuitive and visually appealing platform.

Together, our team is driven by a shared passion for blockchain technology, gastronomy, and innovation. We are excited to embark on this journey to redefine how the world experiences culinary excellence. With our collective skills and dedication, we are confident in our ability to make our product a resounding success.

3 Project requirement list and description

The world of gastronomy has always been shrouded in mystery, with famous restaurant recipes closely guarded secrets. The web designed to disrupt this status quo by providing a transparent and secure platform for users to access and own these coveted culinary treasures.

Recipe Listing and Storage:

The first core functionality of the Web is the listing and storage of exclusive recipes (Requirement 1). Detailed recipe listings, including restaurant names, descriptions, ingredients, cooking instructions, and pricing, will be available for users to browse and purchase (Requirement 1). These recipes will be securely stored in a blockchain-based database, ensuring the authenticity and integrity of the information (Swan, 2015).

Blockchain technology's immutable ledger ensures that once a recipe is listed, its details remain unaltered and trustworthy. This aligns with the project's goal of enhancing transparency and trust in the culinary marketplace.

Description: The platform will offer a comprehensive catalo of exclusive recipes from renowned restaurants. Each listing will include detailed information such as the restaurant's name, a description of the dish, a list of ingredients, step-by-step cooking instructions, and pricing. All this data will be securely stored in a blockchain-based database. Users can access and explore these recipes, making informed decisions about their purchases.

Smart Contract Integration:

Smart contracts, as specified in Requirement 2, play a pivotal role in securing recipe purchases and acting as digital escrow. These self-executing contracts will execute transactions only when predefined conditions are met (Requirement 2). Once a user acquires a recipe, the smart contract holds the exclusive rights to the recipe, preventing further purchases (Requirement 2). This mechanism ensures that ownership is exclusive and immutable (Dorri et al., 2019).

Description: Smart contracts, self-executing contracts with predefined conditions, will be utilized to facilitate and secure recipe transactions. When a user decides to purchase a recipe, a smart contract will be initiated. The smart contract will hold the recipe's ownership and funds in escrow until all conditions of the transaction are met, ensuring the security and integrity of the purchase process.

Cryptocurrency Payments:

The ability to make payments using cryptocurrencies (Requirement 3) is a crucial feature of the marketplace. Cryptocurrencies like Bitcoin or Ethereum are secure and offer a borderless payment method, making them ideal for international culinary enthusiasts (Requirement 3). The platform's integration with cryptocurrencies opens up new avenues for culinary exploration and transactional convenience (Catalini & Gans, 2020).

Description: To enhance flexibility and accessibility, the platform will support cryptocurrency payments. Users can pay for recipes using popular cryptocurrencies like Bitcoin or Ethereum. This feature allows for seamless international transactions, eliminating the need for traditional banking intermediaries.

Exclusive Ownership:

The Web introduces the concept of non-fungible tokens (NFTs) to represent exclusive ownership of recipes (Requirement 4). Each NFT serves as a digital certificate of ownership, ensuring that the recipe cannot be sold to anyone else (Requirement 4). This concept aligns with the broader trend of NFTs in representing ownership rights in the digital realm (Roy et al., 2021).

Description: Ownership of recipes will be represented by non-fungible tokens (NFTs), unique digital certificates stored on the blockchain. Each NFT will be linked to a specific recipe, and owning the NFT guarantees exclusive ownership rights to that recipe. This exclusivity ensures that the recipe cannot be sold or owned by anyone else, adding value to the ownership experience.

Transparent History:

Requirement 5 emphasizes the need to maintain a transparent history of transactions. The blockchain ledger will record all recipe transactions, providing a verifiable history of ownership (Requirement 5). This transparency enhances trust, enabling users to track the provenance of recipes and ensuring their authenticity (Swan, 2015).

Description: Every recipe transaction will be recorded on the blockchain ledger, creating a transparent and immutable history of ownership transfers. Users can view this ledger to verify the authenticity and provenance of a recipe, instilling trust in the marketplace. This transparency is essential to ensure the credibility of the platform.

Restaurant Partnerships:

Collaborating with renowned restaurants to offer exclusive recipes (Requirement 6) is a cornerstone of the project's credibility and appeal. Partnerships with famous restaurants and chefs bring high-quality, sought-after recipes to the marketplace, enhancing its credibility (Dorri et al., 2019). Such partnerships are a testament to the project's potential to bridge the culinary world with blockchain technology.

Description: The Web will establish partnerships with famous restaurants and chefs. These collaborations will bring high-quality, sought-after recipes to the platform, enhancing its credibility and appeal. Renowned restaurants will contribute their signature dishes, enriching the culinary diversity of the marketplace.

User Community and Reviews:

Requirement 7 encourages user engagement through ratings and reviews for recipes. User-generated content fosters a sense of community among culinary enthusiasts and provides valuable feedback to restaurants (Requirement 7). The impact of online reviews on consumers' decisions is well-documented in various industries (Sparks & Browning, 2008).

Description: To foster a sense of community and provide valuable feedback, users will have the opportunity to rate and review recipes they've purchased. These user-generated ratings and reviews will help others make informed decisions and enhance the overall engagement within the culinary enthusiast community.

SSUser-Friendly Interface:

The user-friendly interface design (Requirement 8) is essential to accommodate both blockchain novices and experienced users. Usability principles outlined in "Don't Make Me Think" by Krug (2006) can guide the design, ensuring that the platform is intuitive and accessible.

Description: The platform's user interface will prioritize ease of use and accessibility. It will be designed to accommodate both blockchain novices and experienced users. Usability principles and best practices will guide the design process to ensure that users can navigate the platform effortlessly and enjoy a seamless experience.

4 Project Design
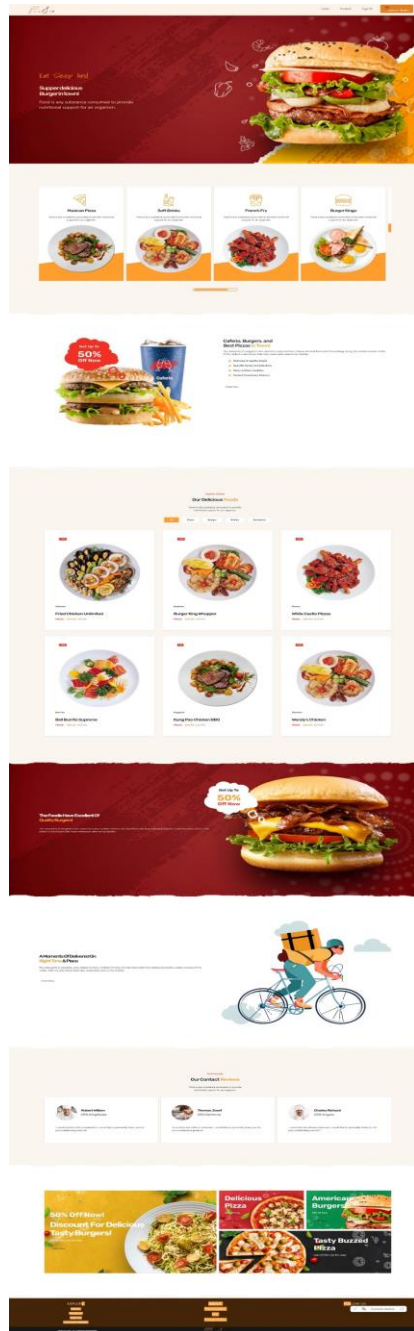
Figure 1: The Home Page (home.html)

The web home design is a harmonious blend of essential elements that contribute to an engaging and immersive user experience. At the top of the webpage, a streamlined navbar simplifies navigation, ensuring users can effortlessly explore the site. Below, a captivating hero section captures visitors' attention with its visually stunning imagery and concise messaging, setting the tone for the entire web experience. Enticing promotions are prominently displayed in the promo section, drawing users' focus to special offers and featured items. An informative about section provides valuable insights into the brand, its history, values, and mission, fostering a deeper connection with users. The extensive food menu, complete with mouthwatering images and descriptions, invites users to explore a diverse range of culinary offerings. A persuasive call to action (CTA) guides users toward specific actions, whether it's making a reservation, placing an order, or subscribing to updates. The user-friendly delivery section offers details on delivery areas and hours of operation, enhancing convenience. Trust-building testimonials from satisfied customers reinforce the credibility of the brand. Eye-catching banners serve various purposes, from announcing upcoming events to promoting seasonal specials. Finally, an informative footer houses essential links and information, offering users easy access to contact details, privacy policies, terms of service, and copyright notices.

This meticulously designed web home seamlessly combines aesthetics and functionality, ensuring that users not only enjoy an attractive visual experience, but also find the information they need effortlessly. The website's visual consistency in terms of colours, typography, and imagery fosters a cohesive and professional appearance, enhancing the overall user experience. Furthermore, the design considers mobile responsiveness, ensuring that the site adapts seamlessly to different screen sizes and devices, catering to the growing number of users accessing websites on mobile platforms. With its holistic approach, the web home design aims to engage users from the moment they land on the page, guiding them through an informative journey that encourages action and builds trust. This comprehensive approach not only enhances the website's usability but also aligns with the business's goals of attracting and retaining customers while showcasing its culinary offerings in the best possible light.
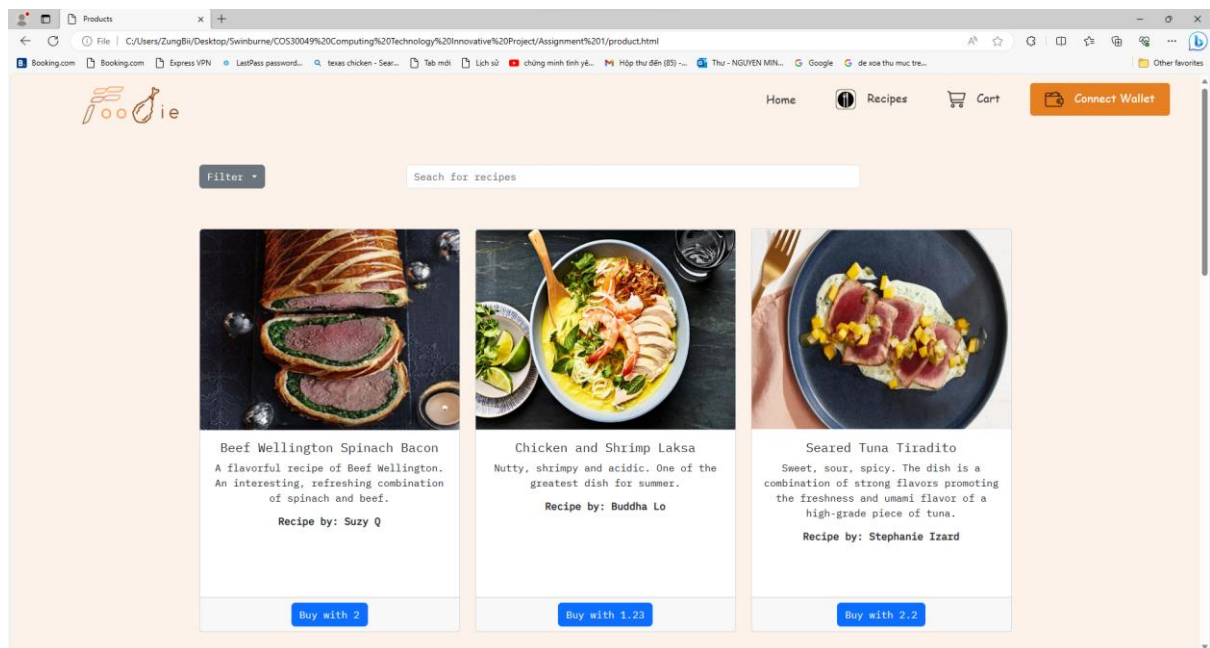
Figure 2: The Recipes page (product.html)

The product page is designed to provide users with easy access to a wide range of products while enabling them to refine their search based on specific criteria. At the top of the page, prominently displayed, is a search bar where users can enter keywords, product names, or other relevant search terms. This search bar is a quick and convenient way for users to find products they are specifically looking for.

Beneath the search bar, there is a set of filter options or categories. Users can select filters to narrow down their search results based on various attributes such as price range, product type, brand, size, colour, and more. These filters help users refine their search and quickly locate products that match their preferences.

As users input their search terms or select filters, the product listing on the page dynamically updates to display relevant results. Each product is typically presented with an image, product name, price, and a brief description. Users can click on individual products to view more details or make a purchase.

The combination of the search bar and filter function provides users with a flexible and efficient way to explore the product catalo, making it easier to find the items they desire. This approach enhances user satisfaction and helps drive sales by facilitating a smoother shopping experience.
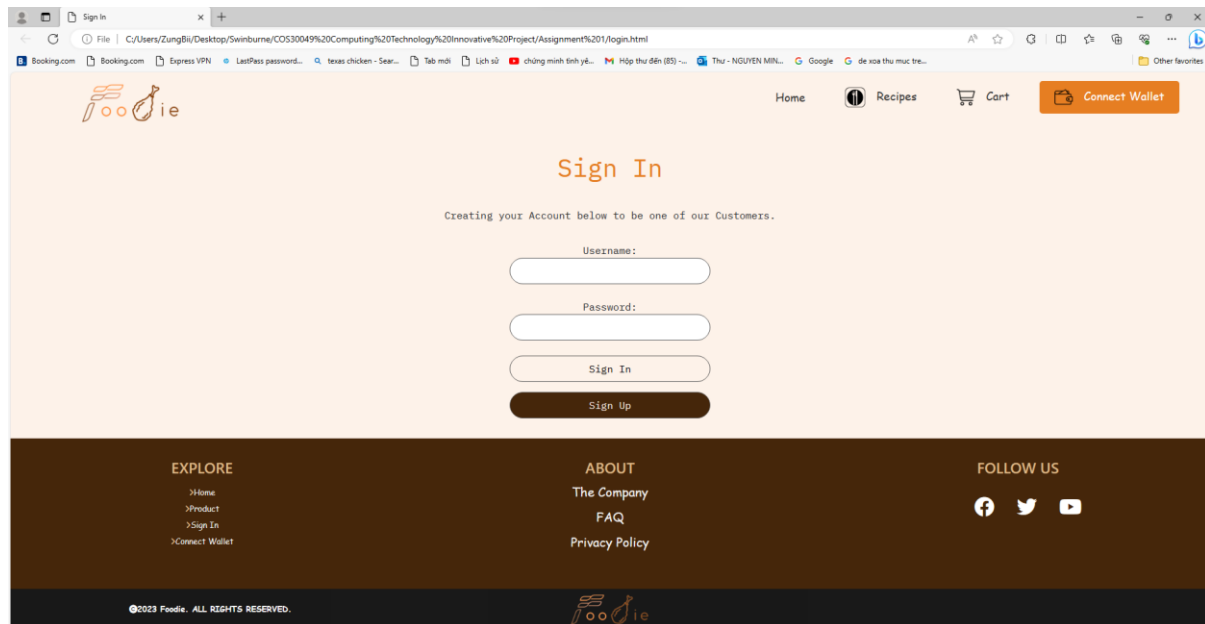
Figure 3: The Sign In page (login.html)

A simple login page featuring just a username and password input provides users with a straightforward and uncluttered way to access their accounts. The page consists of two primary fields: one for entering a unique username or email address and another for inputting the associated password. Clear and concise error messages are displayed in the event of incorrect login attempts, guiding users on resolving issues. With a minimalist design and mobile responsiveness, this simple login page prioritizes usability, making it quick and intuitive for users to log in and access their accounts with minimal complexity.
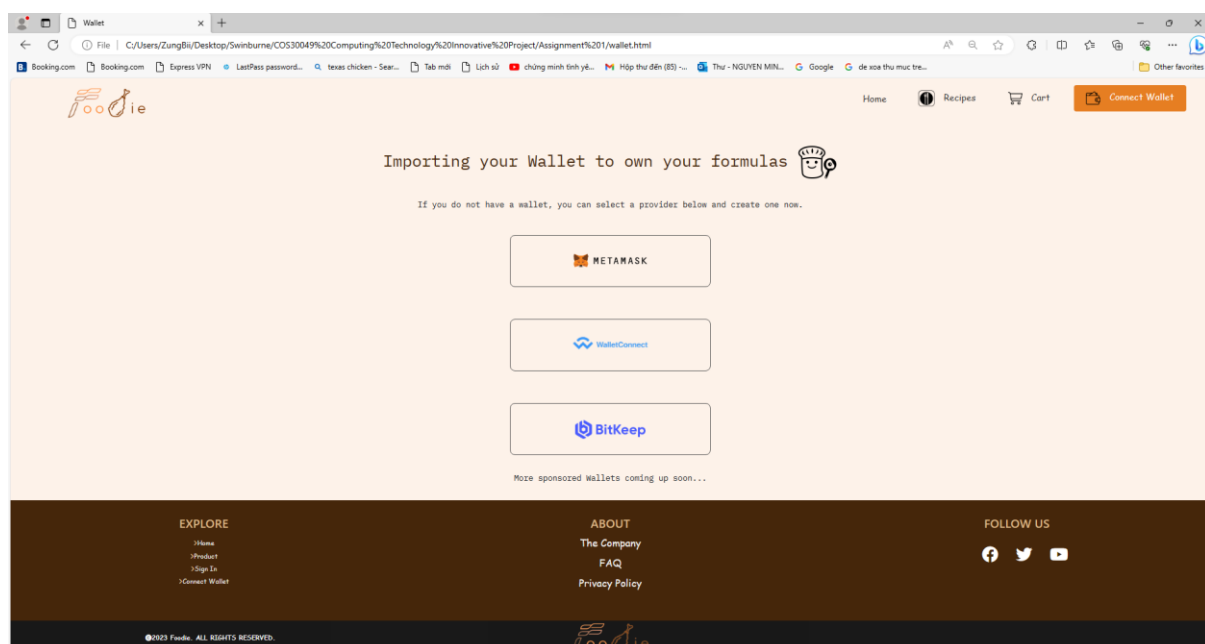

Figure 4: The Wallet page (wallet.html)

The cryptocurrency wallet page is the digital hub for users to manage their digital assets effortlessly. Users can securely connect external wallets such as MetaMask, enabling them to access and control their holdings within the platform. The page offers a comprehensive overview of wallet balances and transaction histories, empowering users to monitor their cryptocurrency assets.

With features for sending and receiving cryptocurrency, checking real-time conversion rates, and accessing transaction details, users have the tools needed for efficient asset management. Integration with Bit Keep provides users with seamless access to assets stored on the Bit Keep platform, enhancing the wallet's versatility. Moreover, robust security measures, including backup options and two-factor authentication, are in place to safeguard users' assets and information. This cryptocurrency wallet page prioritizes user-friendliness and security, offering a comprehensive solution for managing digital assets and connecting with external wallets.

Outlined Prototype
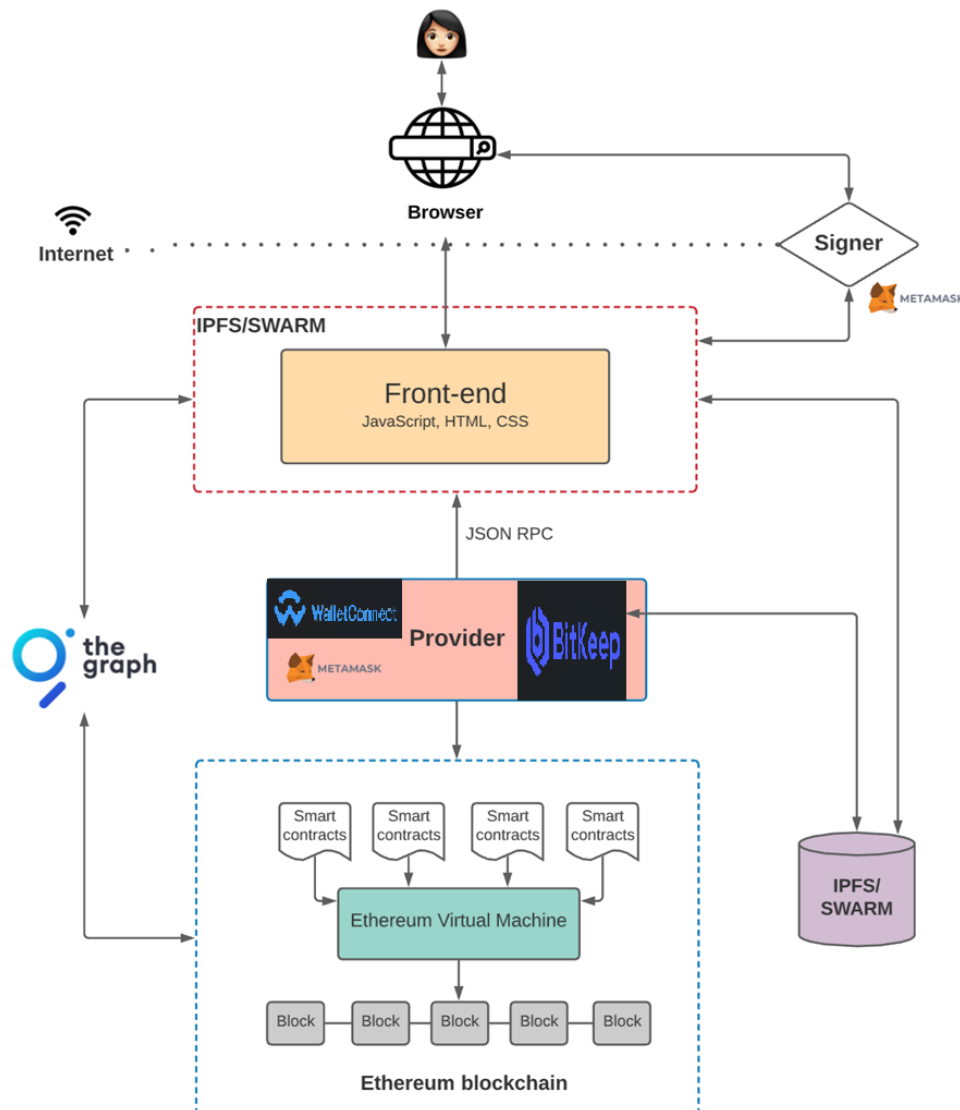
* Front-end

The system architecture of the web begins with a well-designed front-end interface. This interface is carefully crafted to provide an engaging and intuitive user experience. Users can seamlessly browse a wide array of exclusive restaurant recipes, with each listing featuring essential details such as restaurant names, descriptions, ingredients, cooking instructions, and pricing. The front-end incorporates advanced search and filter functionalities, allowing users to refine their recipe discovery process based on criteria like cuisine type or difficulty level. This user-centric design ensures that culinary enthusiasts can easily explore and select recipes that match their preferences.

Moreover, the front-end seamlessly integrates with blockchain technology. When users decide to acquire a recipe, they initiate transactions directly from the interface. These transactions are facilitated through smart contracts, which are a core part of the system. Smart contracts play a crucial role in ensuring secure and transparent recipe purchases. Once a transaction is initiated, the smart contract holds the exclusive rights to the recipe, guaranteeing that it cannot be sold to anyone else. This blend of user-friendly design and blockchain integration creates a marketplace where culinary excellence is easily accessible through cryptocurrency transactions.

* Back-end Functionality and Security

Behind the scenes, the back end of the Web comprises a robust architecture that manages user interactions and transactional processes. The back-end server handles user requests, manages user accounts and recipe data, and interacts with smart contracts on the blockchain network. It plays a pivotal role in securing the integrity of user data and transactions. The integration with the blockchain network is seamless, allowing the back end to communicate with the blockchain to verify transactions, validate recipe ownership, and ensure the reliability of the entire system.

A secure and scalable database serves as the repository for recipe information, user accounts, transaction history, and smart contract data. The database management system guarantees data integrity and supports the platform's scalability as more users and recipes are added. Moreover, stringent security measures are in place to protect sensitive user data, payment information, and recipe ownership. This includes encryption, secure authentication protocols, and adherence to blockchain security standards, ensuring that user assets and personal information remain safeguarded.

* Communication and Interaction

Communication between the front-end and back-end components is facilitated through well-defined API endpoints. Users initiate actions such as recipe purchases, transaction history viewing, and user account management from the front-end. These requests are then processed by the back end, which interfaces with the blockchain network to execute transactions and validate recipe ownership. This bidirectional communication ensures that user interactions are seamlessly translated into blockchain transactions, guaranteeing the secure and transparent transfer of recipe ownership.

In summary, the system architecture of the Web harmoniously blends an intuitive front-end interface with a robust and secure back-end. This architecture leverages blockchain technology and smart contracts to provide users with an accessible and secure means of accessing exclusive restaurant recipes through cryptocurrency transactions. It not only prioritizes user engagement and data security but also offers culinary enthusiasts an innovative and transparent marketplace to explore and own the secrets behind famous restaurant recipes.

5 Refences

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