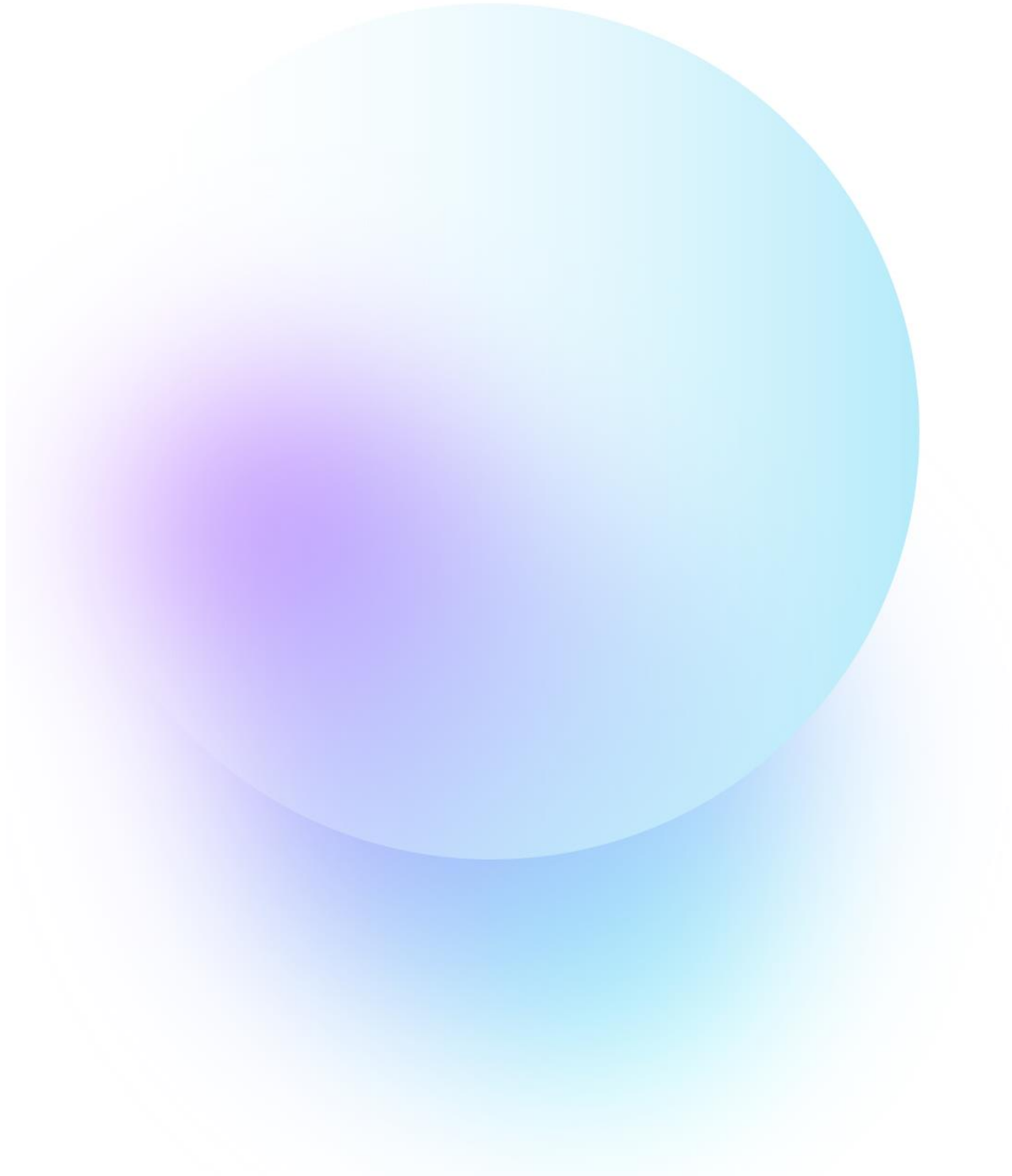
Decentralized Trading Platform - Project Design Document

COS30049 – Computing Technology Innovation Project

Group 1.5



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Project background and introduction

Blockchain technology has ushered in a new era of digital ownership and decentralized ecosystems. Non-fungible tokens (NFTs), a type of cryptographic asset, have become extremely popular in recent years. These tokens reflect ownership of digital or physical assets, offering a safe and transparent method of determining validity and provenance. The increased interest in NFTs has resulted in the establishment of several platforms and markets, each catering to a unique set of makers and collectors.

This project aims to enrich the burgeoning NFT ecosystem by creating **a cutting-edge virtual fashion trading website**. Our platform guarantees consumers a smooth and visually appealing experience by using the capabilities of React, a prominent JavaScript toolkit for creating user interfaces, and Tailwind CSS, a utility-first CSS framework. The combination of these technologies enables us to develop a responsive and dynamic web application that meets current industry requirements.

Our project begins with a focus on frontend development, laying the groundwork for a decentralized trading platform. The frontend, built with React.js and TailwindCSS, showcases a futuristic aesthetic, emphasizing user experience. While we currently use mock data, future stages will integrate backend, blockchain, and smart contracts for a comprehensive and secure trading ecosystem.

Team introduction

Our team is called Maverick Mates (a legacy of teamwork efforts in previous units) and consists of Ta Quang Tung, Nguyen Quang Huy, Tran Hoang Hai Anh, Phan Sy Tuan, Vu Xuan Sang, and Nguyen My Hanh. The team has been working together to create a decentralized trading platform with a blockchain system. Below we describe in more detail the contributions made by our team members:

Tung, the team's leader, is the sole web designer and lead programmer of the project. The reason he takes on the designing task alone is to ensure stylistic consistency throughout the website. This does not mean other members have no say in the process; their feedback is also considered and incorporated into the design. Using Figma as the design tool, Tung has created a UX-focused and futuristic-looking website for trading virtual fashion NFTs. Tung was also responsible for choosing the tech stack and the front-end architecture, programming some pages, and reviewing the code written by the other members.

Huy is responsible for coding perhaps the most important page of the website - the Marketplace page. This page is the highlight of our decentralized platform and acts as the entry point to trading where users can search for assets of interest.

Hai Anh programs the Item information page, which displays detailed information about a specific asset. This page is where the user makes one of the most important interactions on the platform: purchasing an item. To increase the likelihood that the user decides to buy an item, the page has to be visually pleasing and present the item's information logically.

Hanh and Sang are responsible for programming the user profile page, based on Tung's Figma design. The profile page is meant to be a hub where the user can see their personal information and trading history on the platform. To this end, Hanh and Sang have to ensure all the expected information and user interactions are presented intuitively on the page.

Tuan handles the header and footer, seemingly simple components that play a key navigational role on the website. These components link all the pages together and allow the user to quickly navigate the website.

Project requirement list and description

The vision of the project is to build a decentralized trading platform with a fully-featured frontend, backend, and blockchain system. For the first assignment, the task is to develop most (and hopefully all) of the frontend interactions required to use the platform's features. However, because this stage does not yet require the backend and blockchain system, additional frontend interactions may be necessary in the future to cater to these unforeseen functions.

Our design is based closely on the platform's requirements as specified on Canvas. Below we present our analysis of these requirements and map them to the necessary frontend functions.

- **Users can view digital assets available for trading:** This requirement hints at a place where the user can see all the available assets on the platform. We will achieve this by designing a Marketplace page that will list the available assets.

- **All the listed digital assets information should be stored in the database:** At this stage, we do not yet have a backend and a database. As such, we have to generate and put mock data inside of the frontend code. To show how this information would be shown, we have designed an Item information page, which displays all the information (price, description, owner, etc.) related to an item. This page is accessible by clicking on an item in the Marketplace.

- **The system should provide a search and filter functionality for users to discover specific assets of interest:** To fulfil this requirement, we will add a search bar with search and filter options on the Marketplace page.

- **The website will implement smart contracts to act as escrow during the trading process, and smart contracts should ensure that assets are held securely until the trade is completed or cancelled:** At this stage, we

do not have the blockchain system yet, so this requirement is not relevant to the assignment.

- **Users should have access to a transaction history to view their past trades:** This requirement suggests the creation of a page where users can see their trading activity on the platform. To achieve this, we will design a User Profile page that lists all the items that the user has bought or sold and the crypto transactions they have made. We will also use this page to display other information related to the user such as name, username, profile picture, account balance, etc.

Project design

The architecture of the complete project will include both the frontend and backend. The user will interact with the frontend, which in turn will send the necessary requests to the backend and blockchain system to perform transactions. Transactions will be securely stored in the blockchain system and cannot be tampered with once created. At this stage, we will focus on the frontend only.

To build the frontend website, we use the **React.js** library and the **TailwindCSS** framework. React is a popular JavaScript library for building UI components which makes the development process faster than writing traditional HTML. Tailwind is a utility-first CSS framework that is easy to use and enables our designs to be consistent.

Our frontend architecture consists of six pages:

1. The **homepage**, which is the entry point of the website.
2. The **marketplace**, which lists the available trading assets and offers search, sort, and filter functionalities.
3. The **item information** page, which displays all the information related to an item and the option to purchase it.
4. The **user profile** page, which shows the user's information, including their transaction history, wallet balance, and items they have traded.
5. The **signup** page, which enables a new user to create an account on the platform.
6. The **login** page, which enables a user with an existing account to log into the platform.

Since the website is for a virtual fashion NFT trading platform, we have decided to follow a futuristic aesthetic. For this, we have chosen modern-looking fonts

and a space-esque color palette consisting of dark purples and bright pinks. We have also incorporated glass morphism design into our website, which makes certain objects appear like glass, to lend it a more futuristic feel (Design Studio, 2024). To enable a smooth user experience, all of our pages have been designed to be responsive.

Before beginning the coding process, we designed all our pages in Figma first. Our homepage was inspired by a Behance design (Jahangir Ali, 2024) and our user profile was inspired by OpenSea's user profile page (OpenSea, n.d.). Below are images of our Figma designs:

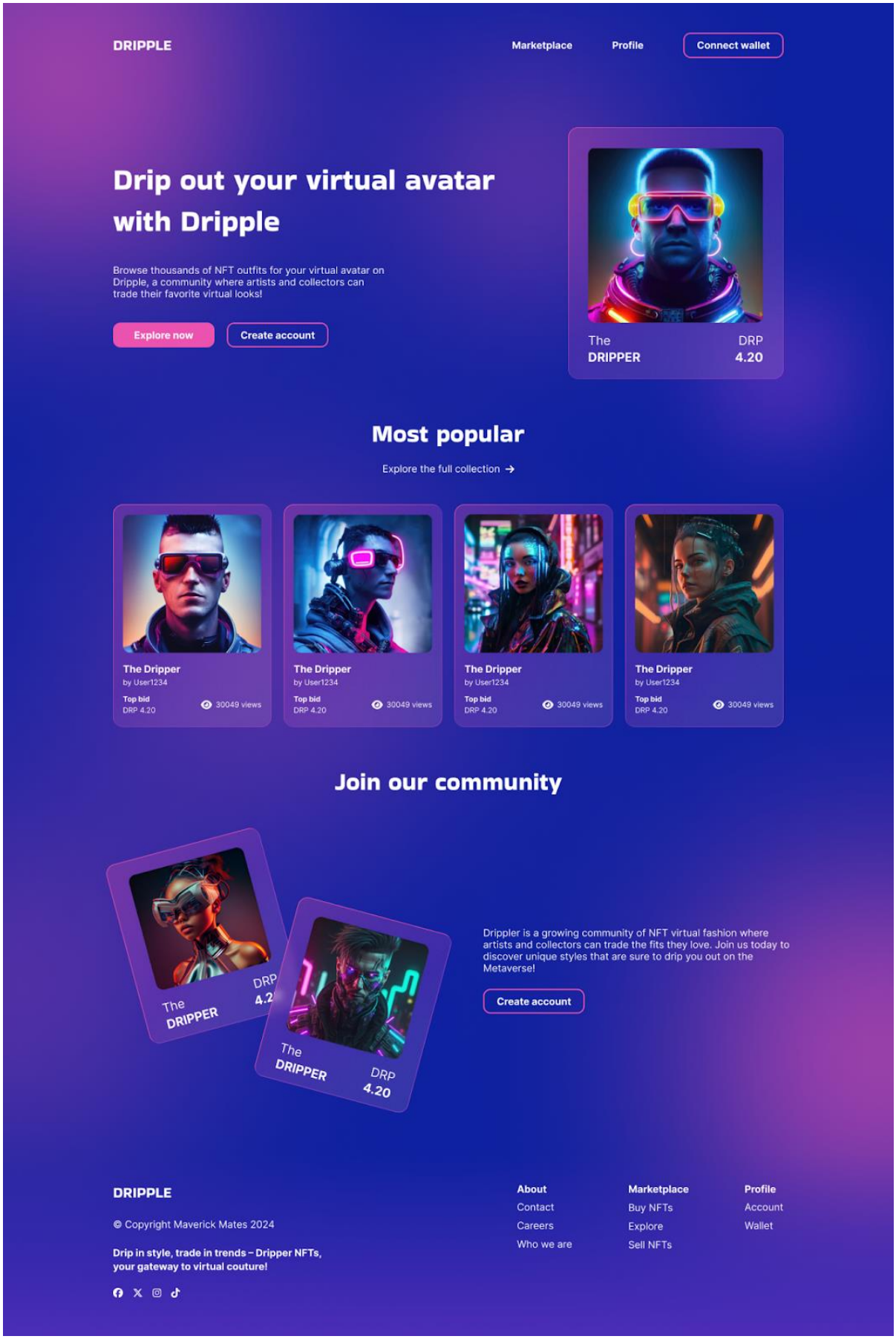

Fig. 1: The website's homepage.

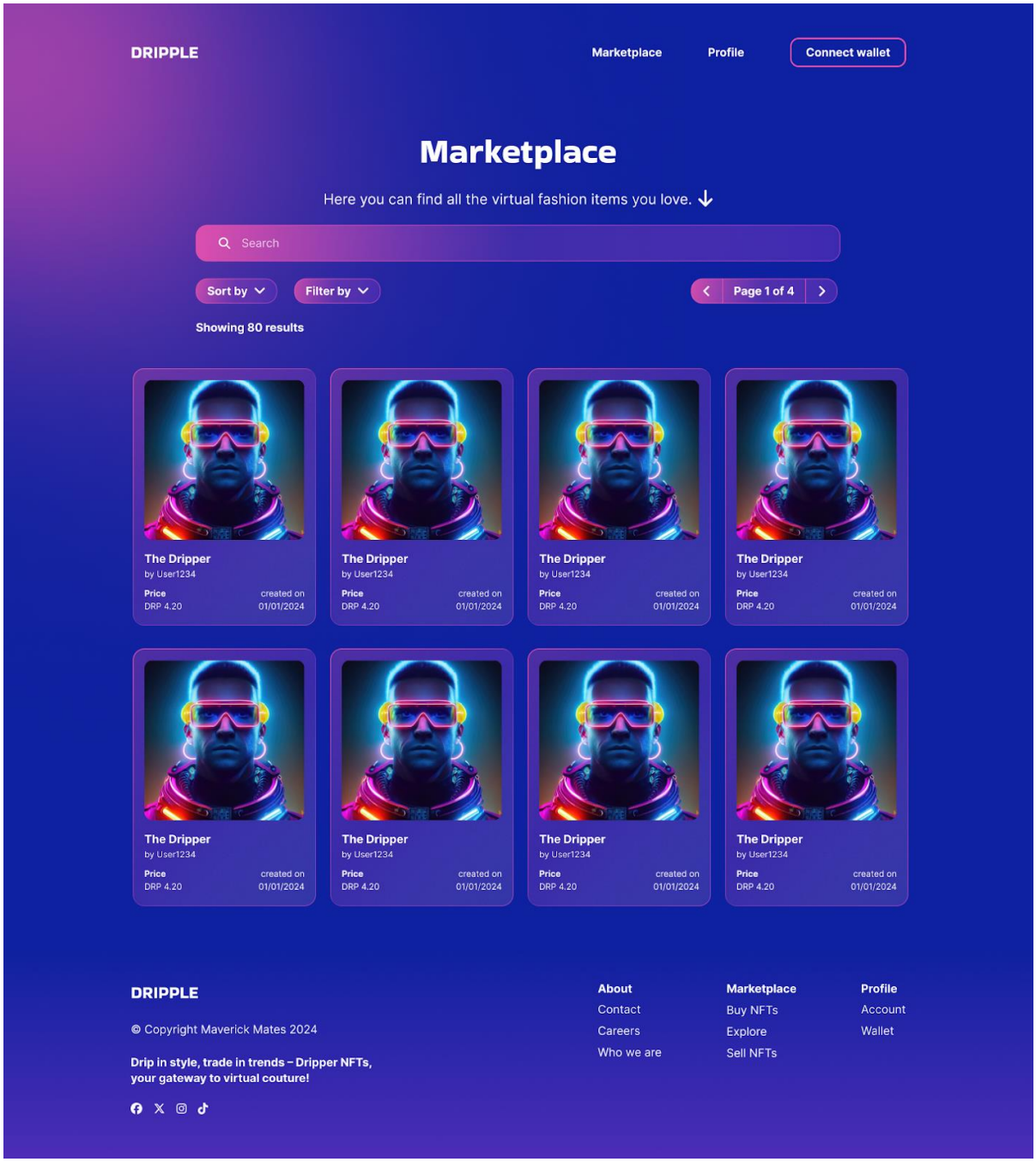

Fig. 2: The website's marketplace page.

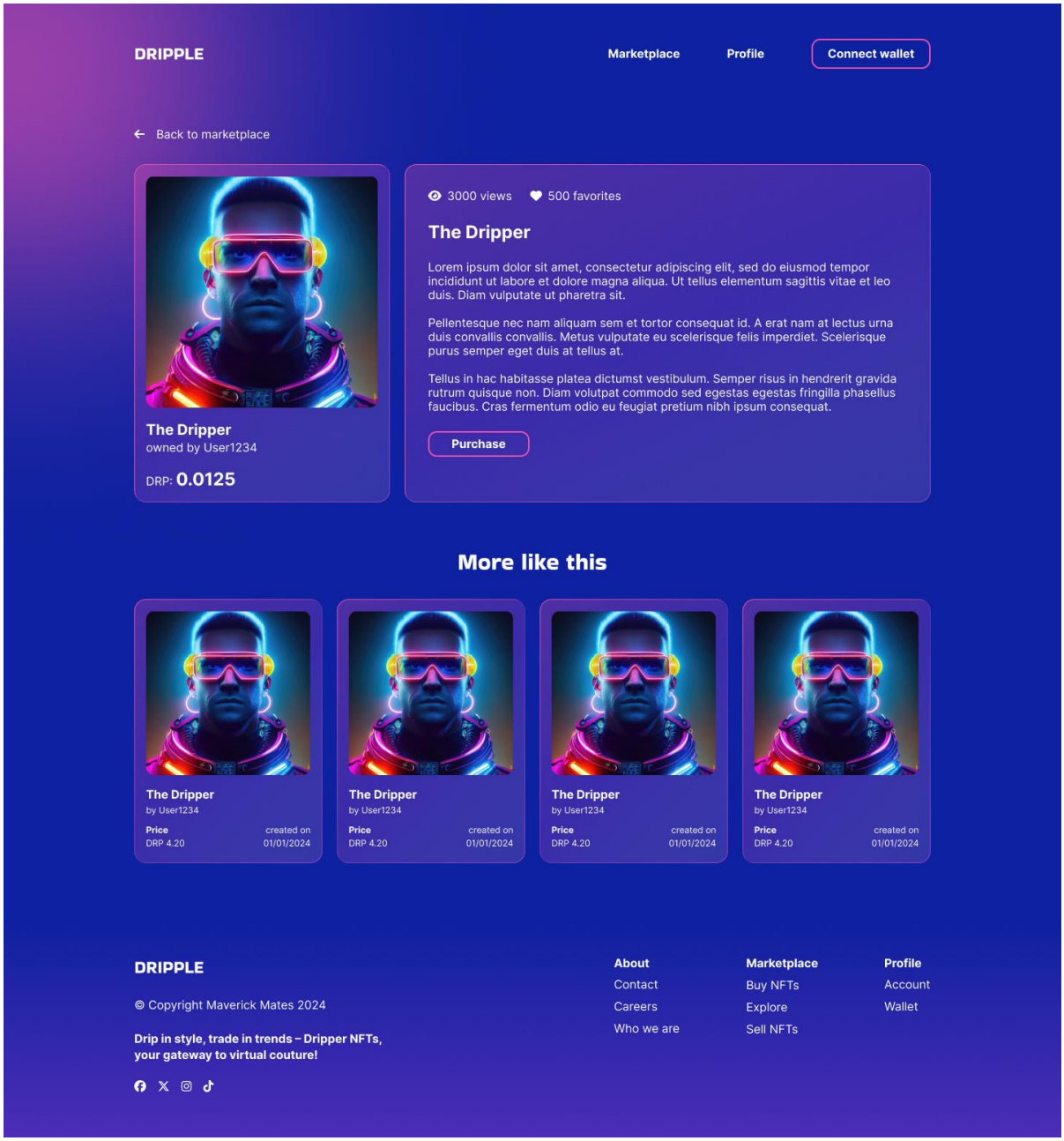

Fig. 3: The item information page.

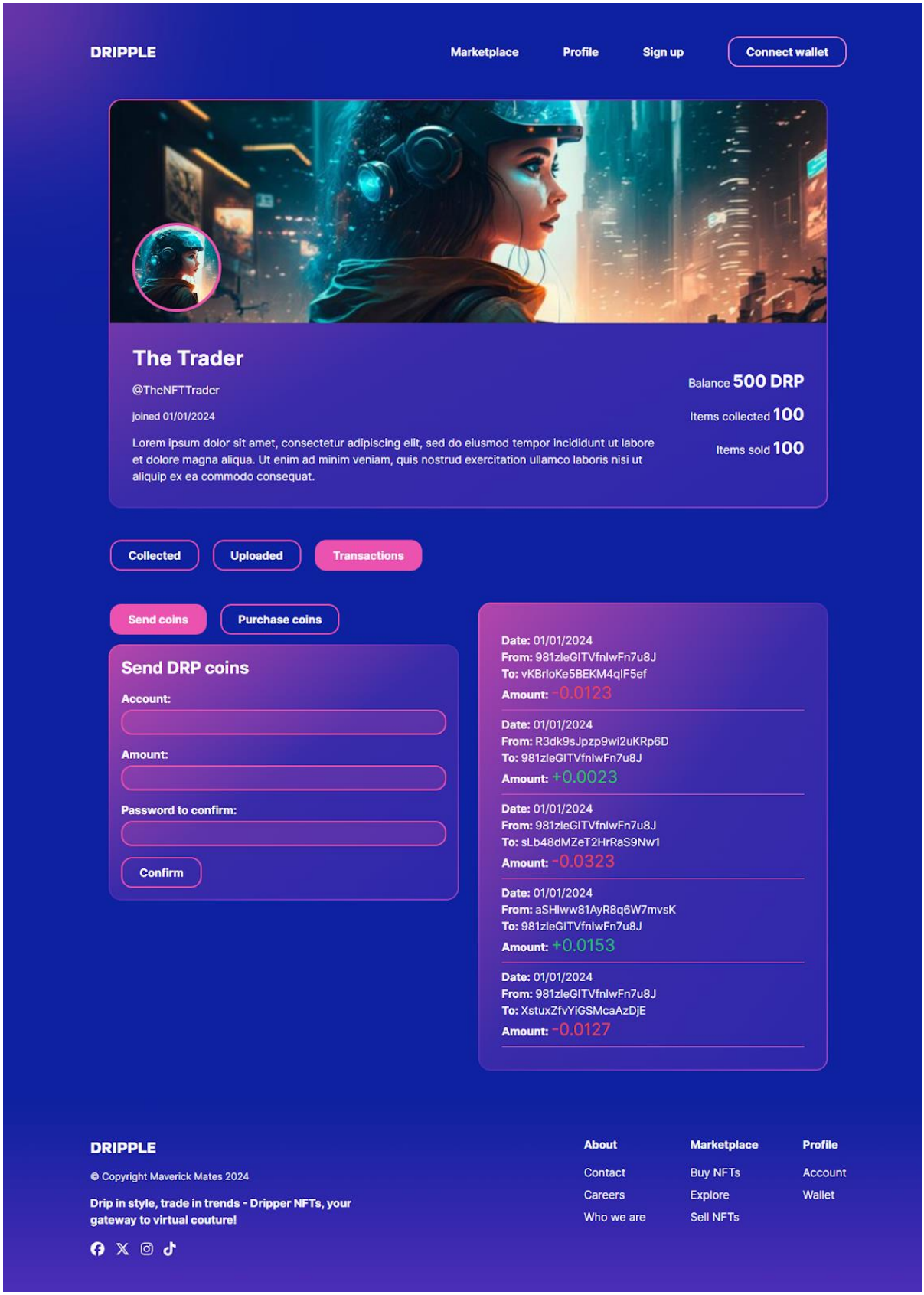

Fig. 4: The user profile page, which shows the user's transaction history.

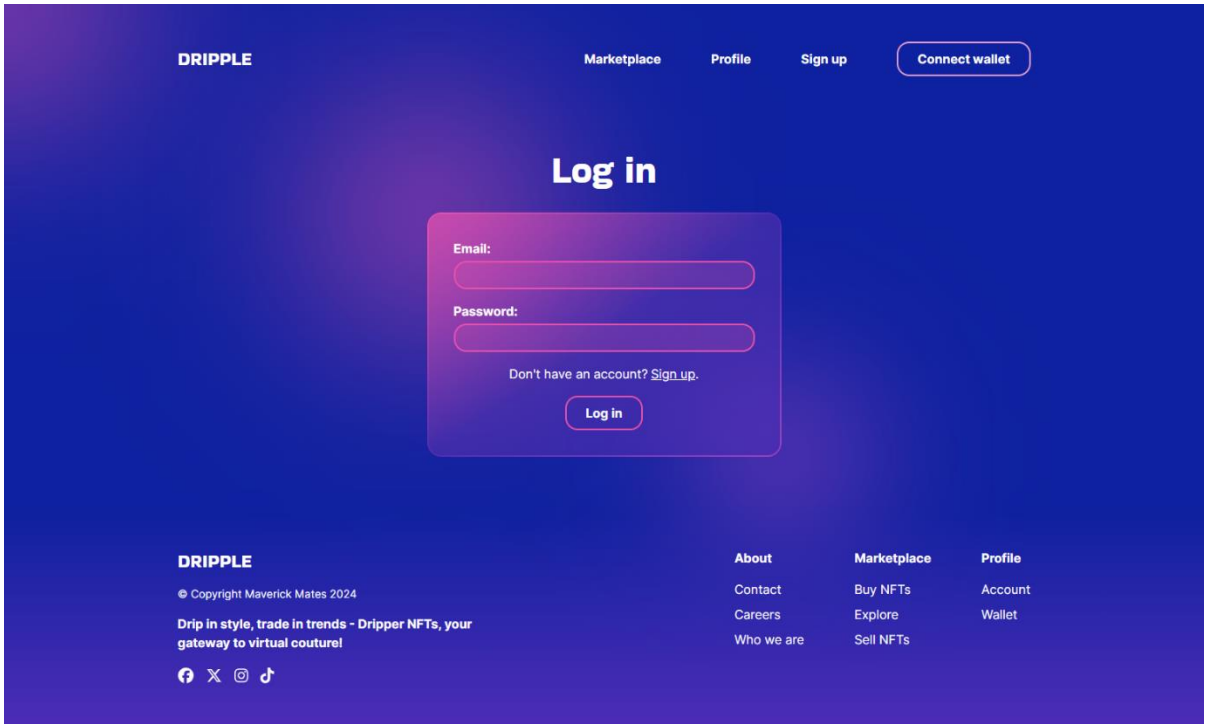

Fig. 5: The login page.

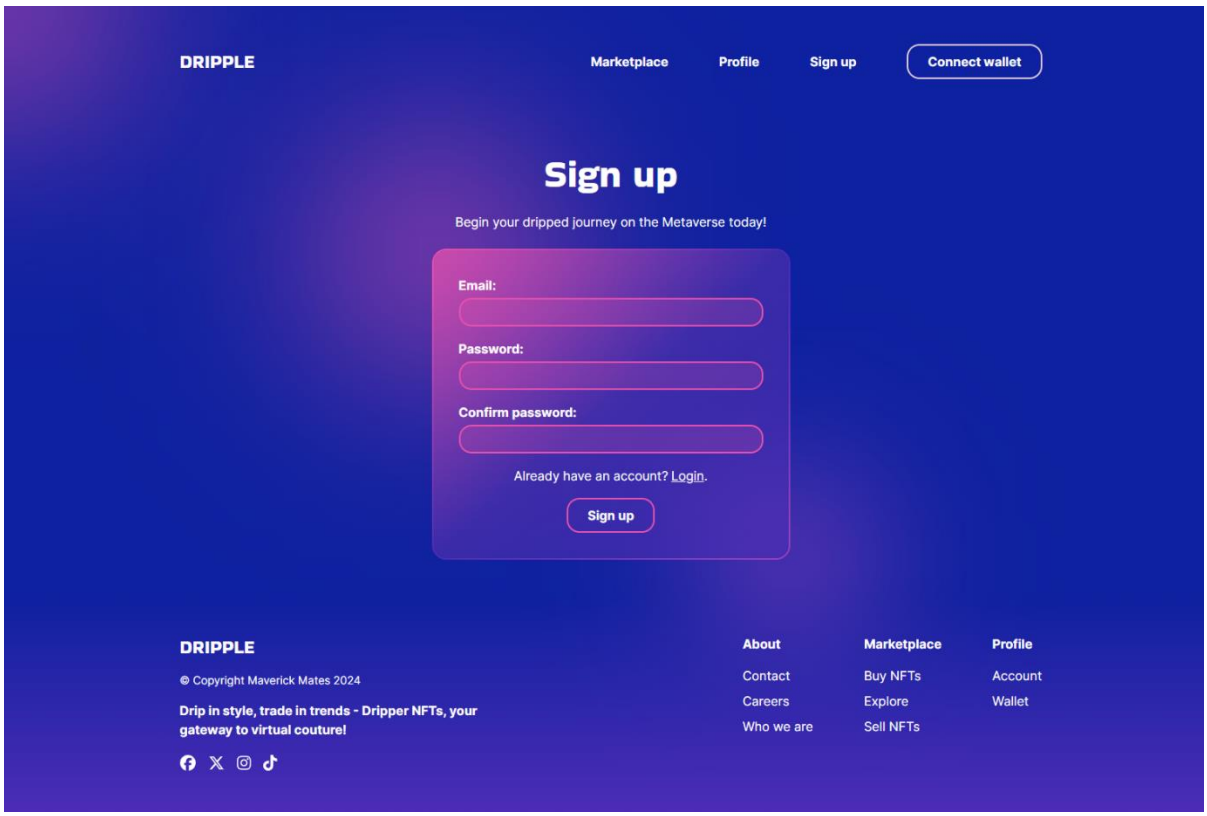

Fig. 6: The signup page.

References

Design Studio (2024). *What is Glassmorphism? UI Design Trend 2024*. Available at: https://www.designstudiouiux.com/blog/what-is-glassmorphism-ui-trend/ (Accessed: 2 Feb. 2024).

Jahangir Ali (2024). *NFT website - landing page design*. Available at: https://www.behance.net/gallery/187980483/NFT-website-landing-page-design (Accessed: 2 Feb. 2024).

OpenSea (n.d.). *Your Profile*. Available at: https://opensea.io/account. (Accessed: 2 Feb. 2024).