"NFT SALES ANALYTICS DASHBOARD"

A

Project Report

submitted

in partial fulfillment

for the award of the Degree of

Bachelor of Technology

in Department of Information Technology

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Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur
Department of Information Technology

CERTIFICATE

This is to certify that **Ms. Jagrati Sharma**, a student of B.Tech. (Information Technology) VIII th semester has submitted her Project Report entitled **"NFT Sales Analytics Dashboard"** under my guidance.

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Mrs. Anjali Pandey   Mrs. Sanju Chaudhary

Assistant Professor, IT   Associate Professor, IT

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This is to certify that **Mr. Karan Sabnani**, a student of B.Tech. (Information Technology) VIII th semester has submitted his Project Report entitled **"NFT Sales Analytics Dashboard"** under my guidance.

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This is to certify that **Ms. Komal Soni**, a student of B.Tech. (Information Technology) VIII th semester has submitted her Project Report entitled **"NFT Sales Analytics Dashboard"** under my guidance.

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DECLARATION

We hereby declare that the report of the project entitled "NFT Sales Analytics Dashboard" is a record of an original work done by us at Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur under the mentorship of "Mrs. Anjali Pandey" (Dept. of Information Technology) and coordination of "Mrs. Sanju Chaudhary" (Dept. of Information Technology). This project report has been submitted as the proof of original work for the partial fulfillment of the requirement for the award of the degree of Bachelor of Technology (B.Tech) in the Department of Information Technology. It has not been submitted anywhere else, under any other program to the best of our knowledge and belief.

Team Members   **Signature**

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Chapter 1

Introduction

1.1   Problem Statement and Objective

The NFT market is booming now. According to NFTGO statistics, at least one NFT project has launched on chain every day since May 2021. At the same time, similar to DeFi, the quality of NFT projects is varied, and investors may easily fall into the "liquidity trap".In fact, in the world of blockchain, whether as an investor or a beginner, you can rely on data to stay away from "hearsay" and decide which NFT to buy by yourself. Analytics dashboards and reports can be created to know more about NFT. By using analytics tools to identify patterns and discrepancies, traders, builders, and collectors can gain a competitive edge in a brand new market. The objective of this solution is to create dashboard that can visualize NFT Data and grab insights from it that can help buyers as well as Sellers.

1.2   Market Survey

The Market Overview NFT data analytics dashboard provides a rundown of the NFT collections and the fluctuations in their floor price. This allows investors to track trends within the NFT sphere and gauge the general sentiment. By filtering by the change in floor price, investors can find NFT collections rising in prominence and mint or purchase them. Library where users can see the Trending NFTs, Recently Added NFTs, with various functionalities like searching, sorting, filters on Genres, Lyrics, Instrument used etc. for quickly accessing the NFTs.

1.3   Introduction to Project

The NFT market is booming now. According to NFTGO statistics, at least one NFT project has launched on chain every day since May 2021. At the same time, similar

to DeFi, the quality of NFT projects is varied, and investors may easily fall into the "liquidity trap". Analytics dashboards and reports can be created to know more about NFT. By using analytics tools to identify patterns and discrepancies, traders, builders, and collectors can gain a competitive edge in a brand-new market. You can rely on data to stay away from "hearsay" and decide which NFT to buy by yourself.

1.4   Solution

NFT's are a sort of digital ownerships of an asset recorded in the blockchain. These assets can be digital or physical in nature. NFT's are similar in this regard to fungible goods such as cryptocurrencies. However, they differ in that fungible goods can be exchanged for goods of the same kind. By contrast, non - fungible items cannot be exchanged for a similar good because they are unique. My project focuses on analyzing the data of NFT's and making a live dashboard with the most recent sales of NFT's. The Dashboard contains different visualizations showing the data related to NFT collections, prices,transactions and Market cap. The project can be easily implemented under various situations. We can add new features as and when we require, making reusability possible as there is flexibility in all the modules. The language used for developing the project is python as it is quite advantageous than other languages in terms of performance, tools available, cross platform compatibility, libraries, cost (freely available), and development process.

1.5   Scope of the Project

NFT Sales Analytics Dashboard typically support these functions.

- Follow Smart Money

- Keep Track of Latest Market Activity

- Find New Mints

- Track Specific Collections

- Check Rarity

Chapter 2

Software Requirement Specification

2.1 Overall Description

The NFT Sales Analytics Dashboard is a software application designed to provide comprehensive analytics and insights into the sales of Non-Fungible Tokens (NFTs). Its purpose is to help users understand trends, performance, and key metrics in the NFT market.

The dashboard integrates with various sources, including NFT marketplaces and blockchain networks, to retrieve relevant data. Supported integrations may include popular platforms such as OpenSea, Rarible, SuperRare, and the Ethereum blockchain.

The dashboard offers a user-friendly interface with features that allow users to register, login, and manage their account information securely. It provides an overview of key metrics such as total sales volume, average price, and number of transactions, giving users both their own NFT sales insights and global market trends.

Data visualization is a crucial aspect of the dashboard, presenting information through visually appealing charts, graphs, and tables. Users have the ability to customize and filter data to focus on specific analysis requirements.

While this overall description provides an understanding of the NFT Sales Analytics Dashboard, it is essential to refer to the complete Software Requirements Specification (SRS) for a detailed and comprehensive understanding of the project's requirements.

2.1.1 Product Perspective

2.1.1.1 System Interfaces

A typical NFT sales analytics dashboard may have several system interfaces to gather data, analyze it, and present it to users. Here are some key system interfaces that could be part of an NFT sales analytics dashboard:

- **Data Collection Interface:** This interface enables the dashboard to collect data from various sources, such as blockchain networks, NFT marketplaces, and external APIs.

- **Data Processing Interface:** Once the data is collected, it needs to be processed and transformed into a suitable format for analysis.

- **Analytics Engine Interface:** The analytics engine interface provides the core functionality of the dashboard, where data is analyzed and insights are generated.

- **Dashboard Visualization Interface:** This interface is responsible for visualizing the analyzed data in a user-friendly manner. It provides various charts, graphs, tables, and other visual components to represent the NFT sales data and analytics results.

- **User Management Interface:** The user management interface handles user authentication, authorization, and access control for the dashboard. It allows administrators to create user accounts, manage roles and permissions, and track user activity within the system.

These system interfaces work together to collect, process, analyze, and present NFT sales data in an intuitive and informative way, empowering users to make data-driven decisions and gain insights into the NFT market.

2.1.1.2 User Interfaces

The user interface of an NFT sales analytics dashboard is designed to provide users with an intuitive and interactive experience for accessing and analyzing data. Here are some key components and features commonly found in the user interface of an NFT sales analytics dashboard:

- **Dashboard Overview:** The dashboard typically starts with an overview section that provides a high-level summary of key metrics and trends. It may include charts, graphs, and summary cards displaying information such as total sales volume, average prices, top-selling NFTs, and market activity.

- **Data Filters and Search:** Users can apply various filters to narrow down the data based on specific criteria. These filters may include date ranges, NFT categories, artists, collections, or specific marketplaces. A search functionality allows users to find specific NFTs or artists of interest.

- **Visualizations and Charts:** The main part of the dashboard consists of interactive visualizations and charts that represent the analyzed data. Common chart types include line charts, bar charts, pie charts, and scatter plots. These visualizations can be customized, allowing users to choose specific metrics, compare data, and switch between different views.

- **Transaction History:** The dashboard may provide a transaction history section that displays a chronological list of individual NFT sales. Each transaction entry may include details such as the NFT name, price, buyer/seller information, and transaction date.

- **Artist and Collection Insights:** Users can explore insights related to specific artists or collections. This section may showcase metrics like sales volume, average prices, popularity trends, and the top-selling NFTs associated with a particular artist or collection.

- **Price Analysis:** A price analysis section allows users to track the price history of individual NFTs or compare prices across multiple NFTs. Users can view

price charts, analyze price trends, and identify patterns or anomalies in the market.

The user interface of an NFT sales analytics dashboard aims to provide a user-friendly and comprehensive view of NFT sales data, enabling users to gain insights, make informed decisions, and navigate the dynamic NFT market effectively.

2.1.1.3 Hardware Interfaces

The hardware interface of an NFT sales analytics dashboard would typically consist of the following components: Computer or Server, Display Monitor,Input Devices and Internet Connection.

2.1.1.4 Software Interfaces

Following are the software used for the NFT Sales Analytics Dashboard application.

Software used	Description
Operating system	We have chosen a Windows OS operating system for its best support and user-friendliness.
Database	To store and fetch the NFT's related data and details regarding the Dashboard and User.
Tools/IDE	To implement the project, we have chosen Visual studio for its more interactive support.
Platform	Web Application
Technologies and Tools Used	React Js, Node Js, MongoDb, Chakra UI, Express Js.

2.1.1.5 Communications Interfaces

The communication interface of an NFT sales analytics dashboard involves the exchange of data between the dashboard and various external sources. Here are some key components of the communication interface:

- **Application Programming Interfaces (APIs):** APIs allow the dashboard to connect with external platforms and services to retrieve data.

- **Data Feeds:** Real-time or periodic data feeds provide updated information to the dashboard.

- **Database Connectivity:** The dashboard may connect to one or more databases to store and retrieve data efficiently.

- **Web Services:** The dashboard might communicate with web services to perform various functions, such as retrieving metadata, validating data, or fetching additional information. These services can be hosted internally or provided by third-party vendors.

- **Authentication and Security:** To ensure secure communication, the dashboard may implement authentication mechanisms (e.g., API keys, JWT) when accessing external services or data sources. Encryption protocols like HTTPS can also be employed to secure data transmission.

The specific communication interfaces will depend on the architecture, technologies used, and the data sources integrated into the NFT sales analytics dashboard.

2.1.1.6 Memory Constraints

The memory constraints of an NFT sales analytics dashboard project can vary depending on several factors, including the complexity of the analytics being performed, the volume of data being processed, and the software and technologies used. Here are a few memory-related considerations for such a project:

- Data Storage

- Data Processing

- Caching

- Visualizations and User Interface

- Hardware Limitations

Optimizing memory usage is essential to ensure the performance and scalability of the NFT sales analytics dashboard. Techniques such as data compression, efficient data retrieval, and memory management strategies can be employed to optimize memory usage and minimize the impact of memory constraints.

2.1.1.7 Project Functions

The functions of an NFT sales analytics dashboard project can vary depending on the specific requirements and objectives of the project. However, here are some common functions that an NFT sales analytics dashboard may include:

- **Data Visualization:** The dashboard should provide visually appealing and interactive data visualizations such as charts, graphs, and tables to present NFT sales data in an understandable and insightful manner.

- **Sales Analytics:** The dashboard should offer various sales analytics capabilities, such as tracking sales volume, revenue, average sale price, and trends over time.

- **Market Insights:** The dashboard may provide market insights and analytics to help users understand the broader NFT market trends.

- **User Behavior Analysis:** Understanding user behavior is crucial in NFT sales analytics. The dashboard can provide insights into user engagement, bidding patterns, transaction frequency, and other relevant metrics to analyze user behavior and preferences.

- **Data Filtering and Customization:** The dashboard should allow users to filter and customize the data based on their specific requirements. Users should be able to apply filters, select specific metrics or time periods, and create custom reports to focus on the information most relevant to them.

- **User Management and Access Control:** Depending on the project's requirements, the dashboard may include user management functionalities, allowing administrators to manage user accounts, roles, and permissions to control access to the analytics dashboard.

2.1.1.8   User Characteristics

The user characteristics of an NFT sales analytics dashboard can vary depending on the intended audience and stakeholders. Here are some user characteristics for an NFT sales analytics dashboard:

- **NFT Investors:** NFT investors are individuals or entities interested in monitoring and analyzing NFT sales data to make informed investment decisions.

- **Artists and Creators:** Artists and creators in the NFT space may use the dashboard to track sales of their own NFTs, monitor the performance of their collections, and gain insights into market trends.

- **NFT Marketplaces and Platforms:** NFT marketplaces and platforms may utilize the dashboard to analyze overall market trends, monitor sales activity on their platform, and identify areas for growth or improvement.

- **Researchers and Analysts:** Researchers and analysts studying the NFT market may use the dashboard to gather data, perform in-depth analysis, and generate insights for research purposes.

- **Curators and Collectors:** NFT curators and collectors may leverage the dashboard to discover new artists, track the performance of specific collections, and identify valuable or unique NFTs.

- **Financial Professionals:** Financial professionals, including investment managers or financial advisors, may utilize the dashboard to gather data and insights on the NFT market. They may seek information on market trends, risk analysis, and potential correlations with other asset classes to guide their investment strategies or advise clients.

These user characteristics highlight the diverse audience that an NFT sales analytics dashboard can cater to. Understanding the specific needs and goals of these users is crucial in designing a dashboard that delivers relevant insights and provides a valuable experience for each user group.

2.1.1.9   Constraints

When it comes to designing an NFT sales analytics dashboard, there can be several constraints to consider. Here are some common constraints that we have encounter:

- **Data Availability:** The availability and accessibility of data can be a constraint. NFT platforms may have different APIs or data structures, making it challenging to collect and aggregate data from multiple sources.

- **Data Privacy:** Depending on the platform and user preferences, some data may be private or restricted. Ensuring compliance with privacy regulations while providing meaningful insights can be a constraint.

- **Scalability:** As the NFT market grows, the amount of data generated will increase significantly. Designing a dashboard that can handle large volumes of data and perform analytics efficiently can be a constraint.

- **Real-Time Updates:** NFT sales occur continuously, and users expect real-time or near-real-time updates on the dashboard. Building a system that can handle real-time data ingestion and provide up-to-date analytics can be a technical challenge.

- **Data Accuracy and Integrity:** NFT transactions involve complex interactions, such as transfers, sales, and royalties. Ensuring the accuracy and integrity of the data used for analytics can be a constraint, especially when dealing with blockchain-based transactions.

- **User Interface and Experience:** Designing an intuitive and user-friendly interface for the dashboard is essential. Balancing the complexity of the data with ease of use and providing meaningful visualizations can be a constraint.

- **Customization and Flexibility:** Different users may have varying requirements and preferences for data visualization and analytics. Building a dashboard that allows customization and flexibility can be a constraint, requiring thoughtful design and development.

- **Technical Infrastructure:** Setting up the necessary technical infrastructure to collect, process, store, and analyze NFT sales data can be a constraint. Considerations include data storage, computing resources, and ensuring high availability and reliability.

- **Security:** NFT sales involve valuable digital assets, and ensuring the security of the data and the dashboard itself is crucial. Implementing appropriate security measures to protect against unauthorized access, data breaches, or manipulation is a constraint.

2.1.1.10 Assumption and Dependencies

Assumpions:

- **Data Availability:** The project assumes that relevant data on NFT sales, transactions, and related metrics can be accessed from various NFT platforms or through their APIs.

- **Data Accuracy:** The assumption is that the data obtained from NFT platforms is accurate and reliable, without significant discrepancies or manipulation.

- **User Adoption:** The assumption is that there will be a sufficient user base interested in using the NFT sales analytics dashboard to gain insights into their NFT portfolios, transactions, and market trends.

- **Technological Stability:** The assumption is that the underlying technologies, including blockchain networks and NFT platforms, will remain stable and compatible throughout the development and operation of the dashboard.

- **Compliance with Regulations:** The assumption is that the dashboard will comply with relevant legal and regulatory requirements, such as data privacy and financial regulations.

Dependencies:

- **Programming Language:** Choose a programming language based on your preference and the tools available. Popular options include Python, JavaScript, or a combination of both.

- **Web Framework:** Select a web framework to build the frontend of your dashboard. Common choices include React.js, Angular, or Vue.js for JavaScript-based frameworks, or Flask or Django for Python-based frameworks.

- **Data Visualization Library:** You'll need a library to create interactive charts and graphs for visualizing the NFT sales data. Popular options include D3.js, Chart.js, or Plotly.

- **Database:** Choose a database system to store and retrieve the NFT sales data. Depending on your needs, you could use SQL-based databases like MySQL or PostgreSQL, or NoSQL databases like MongoDB.

- **API Integration:** If you're fetching NFT sales data from external sources, you may need to integrate with relevant APIs. For example, you might use the OpenSea API to fetch NFT sales data from the OpenSea marketplace.

- **Data Processing and Analysis:** You may need libraries or tools to process and analyze the raw NFT sales data. This could involve data cleaning, aggregation, statistical analysis, or machine learning techniques. Common libraries for data processing and analysis in Python include Pandas and NumPy.

- **Authentication and Security:** If your dashboard requires user authentication or involves sensitive data, you'll need to implement appropriate security measures. This might involve using libraries like JWT (JSON Web Tokens) for authentication or HTTPS for secure communication.

- **Deployment:** Decide on the platform or hosting service where you'll deploy your dashboard. This could be a cloud provider like AWS, Azure, or Google Cloud, or a dedicated hosting service like Heroku or Netlify.

Chapter 3

System Design Specification

3.1   System Architecture

The system architecture of an NFT sales analytics dashboard project can vary depending on specific requirements and technologies used. Here is a high-level overview of a typical system architecture for such a project:

- **NFT Platform APIs:** The dashboard integrates with various NFT platforms' APIs to collect data on NFT sales, transactions, ownership, and other relevant metrics. This includes retrieving data from blockchain networks and NFT marketplaces.

- **Data Processing:** The collected data is processed to extract relevant information and perform transformations, such as aggregating sales data, calculating royalties, and deriving additional metrics.

- **Database:** A database is used to store the processed data for efficient retrieval and analysis. Depending on the scale of the project, a relational database or a NoSQL database may be suitable.

- **Analytics Engine:** This component performs complex calculations, statistical analysis, and generates insights based on the collected and processed data. It may use algorithms and models to identify patterns, trends, and anomalies.

- **Visualization:** The analytics engine generates visualizations and charts to present the analyzed data in a user-friendly and intuitive manner. This can include interactive dashboards, graphs, and reports.

- **Web Application:** The dashboard is typically implemented as a web application accessible through a browser. It provides a user interface for users to

interact with the analytics engine, visualize data, and access various features and functionalities.

- **User Authentication and Authorization:** User management functionality is implemented to handle user registration, authentication, and authorization. This ensures that only authorized users can access the dashboard and their respective data.

- **Event Streaming:** To provide real-time or near-real-time updates on NFT sales and transactions, an event streaming component can be employed. This component listens to events from NFT platforms or blockchain networks and updates the analytics engine and data storage accordingly. Scalability and Performance:

- **Distributed Architecture:** The system can be designed with a distributed architecture to handle scalability and performance requirements. This may involve load balancing, horizontal scaling, and utilizing technologies like containerization or serverless computing.

- **Encryption and Secure Communication:** Data encryption techniques can be employed to secure sensitive data, both in transit and at rest. Secure communication protocols, such as HTTPS, can be used for data transmission.

- **Access Control:** Role-based access control (RBAC) mechanisms can be implemented to manage user access rights and ensure data privacy.

- **Vulnerability Management:** Regular security assessments, patch management, and monitoring for potential vulnerabilities should be incorporated into the system's architecture.

It's important to note that the above architecture is a generalized overview, and the specific implementation details may vary based on the project's requirements, technologies used, and scalability needs.

3.2   Module Decomposition Description

Module decomposition refers to breaking down a system into smaller, self-contained modules or components that encapsulate specific functionalities. Here is an example of module decomposition for an NFT sales analytics dashboard:

- **User Authentication and Authorization Module:** This module handles user registration, login, and authentication processes. It verifies user credentials and manages user roles and permissions to access different features and data within the dashboard.

- **Data Collection Module:**

  This module interacts with the APIs of various NFT platforms to collect data on NFT sales, transactions, ownership, and related metrics. It handles data retrieval, validation, and transformation before passing the collected data to other modules for further processing.

- **Data Processing Module:**

  This module processes the collected NFT sales data and performs necessary transformations, aggregations, and calculations. It generates additional metrics, such as average sale price, sales volume, royalties, and other relevant statistics required for analytics.

- **Data Storage Module:**

  This module manages the storage of processed data in a database or data repository. It provides functions for data insertion, retrieval, and querying to support efficient data access for analysis and visualization.

- **Analytics Engine Module:**

  This module performs advanced data analysis, statistical calculations, and generates insights from the collected and processed NFT sales data. It utilizes algorithms and models to identify trends, patterns, and anomalies in the data.

- **Visualization Module:**

  This module is responsible for presenting the analyzed data in a visual format, such as charts, graphs, and interactive dashboards. It provides a user-friendly interface to explore and visualize the NFT sales data, enabling users to gain insights and make informed decisions.

- **Real-Time Updates Module:**

  This module handles real-time or near-real-time updates of NFT sales and transaction data. It listens to events from NFT platforms or blockchain networks, updates the data storage and triggers necessary actions to keep the dashboard up-to-date.

- **User Management Module:**

  This module handles user profile management, allowing users to update their information, manage preferences, and customize the dashboard settings.

- **Security Module:**

  This module addresses security concerns, including data encryption, secure communication, and access control. It ensures that user data and system resources are protected from unauthorized access or malicious activities.

- **Integration Module:**

  This module manages the integration with external services or APIs, such as analytics platforms, notification systems, or external data sources.

Module decomposition helps in organizing the system into manageable and reusable components, facilitating modularity, maintenance, and future enhancements. The exact decomposition may vary based on the specific requirements and architecture choices of the NFT sales analytics dashboard.

3.3 High Level Design Diagrams

3.3.1 Use Case Diagram
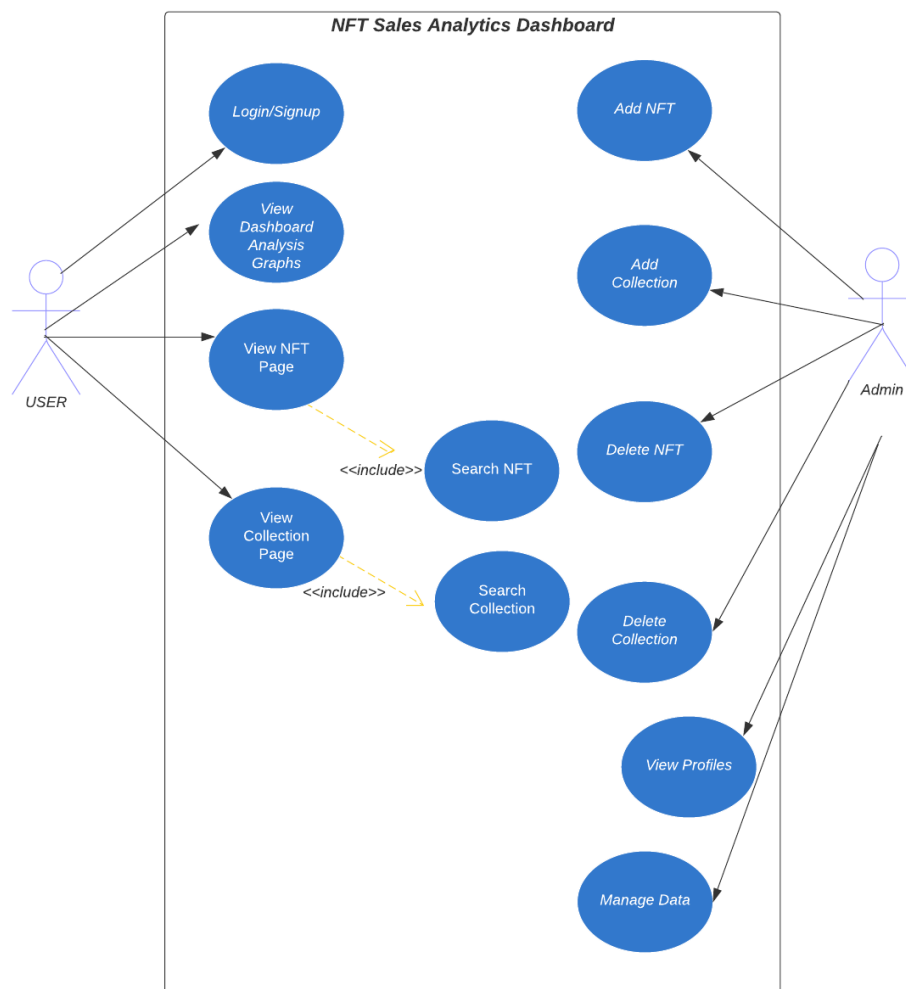
Figure 3.1: Use Case Diagram - NFT sales analytics dashboard

3.3.2 ER Diagram
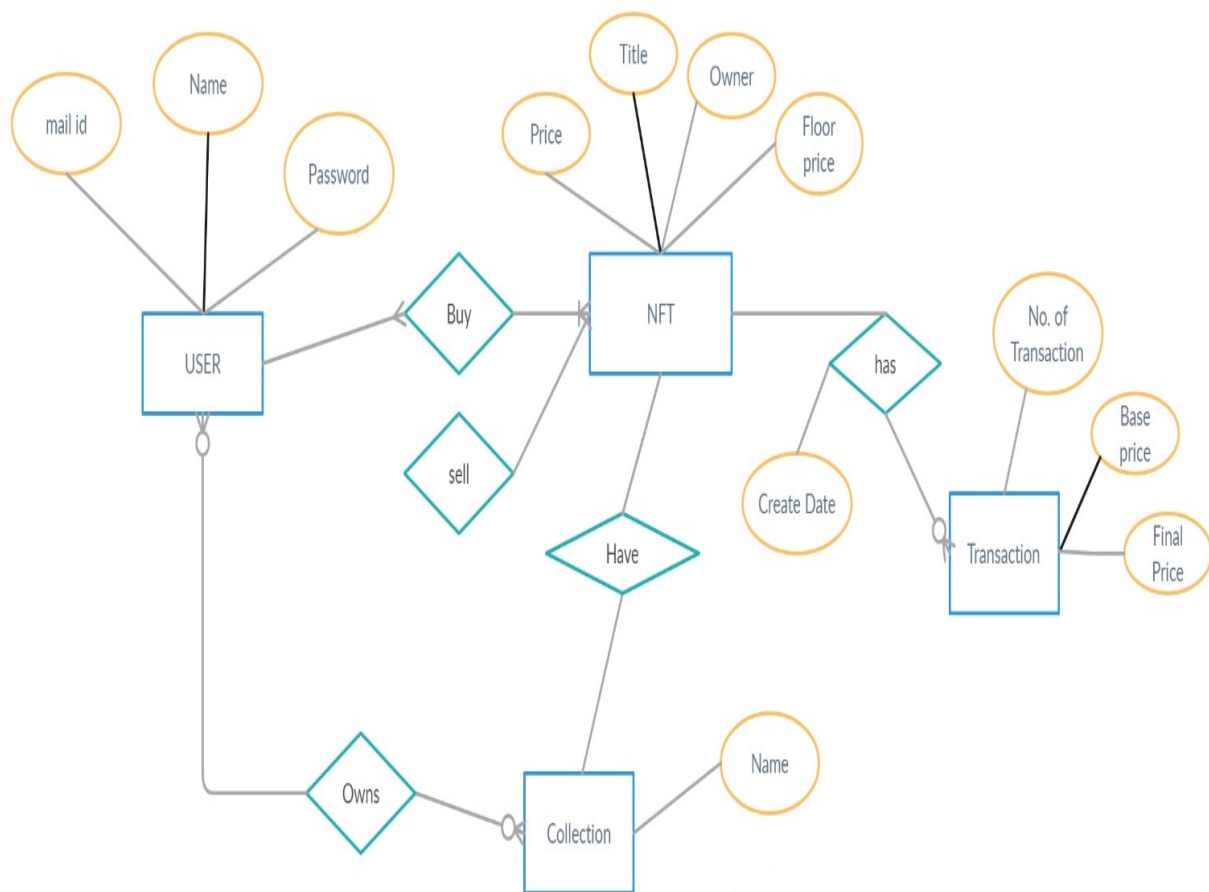
Figure 3.2: ER Diagram - NFT sales analytics dashboard
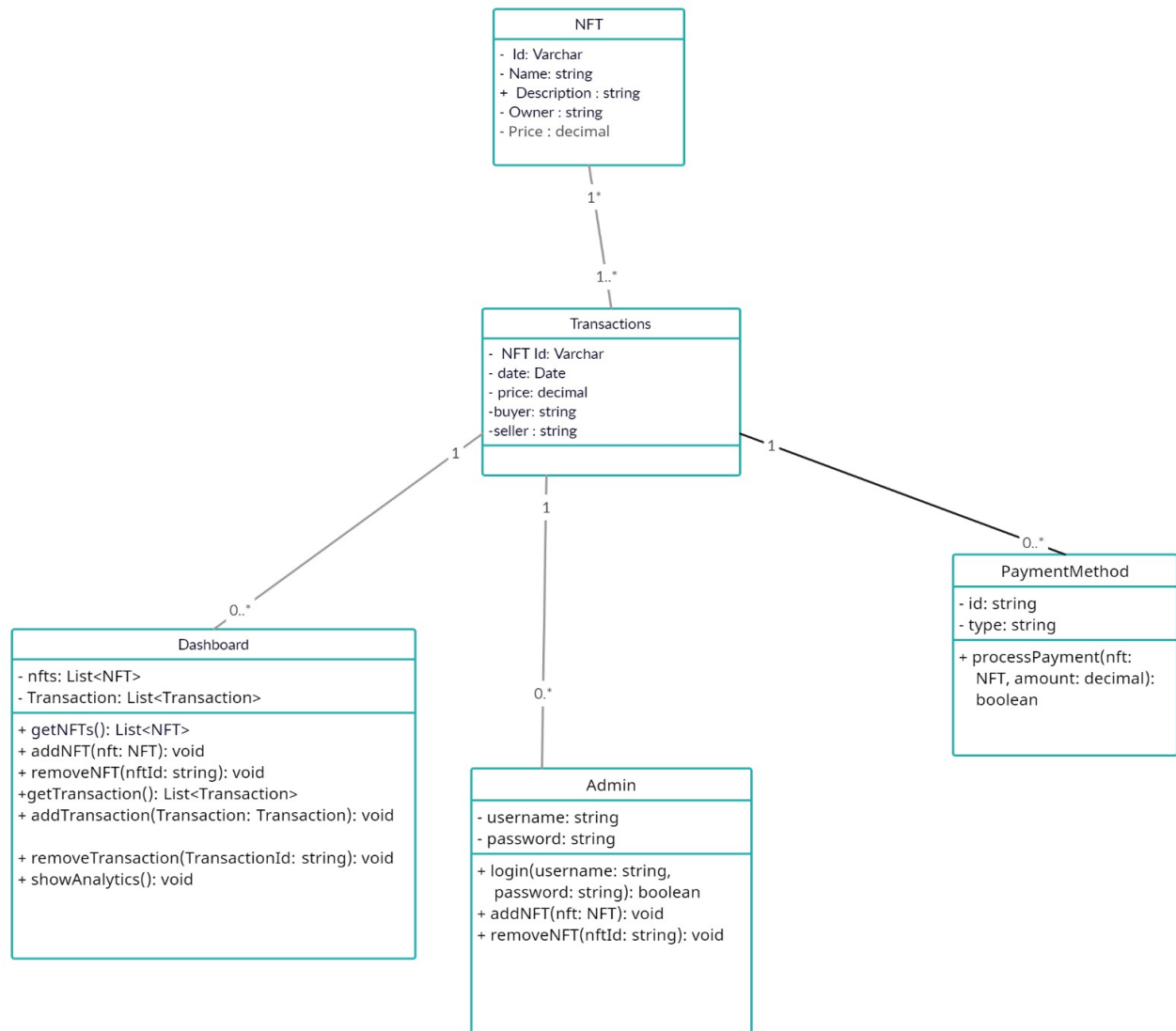
3.3.3 Activity Diagram
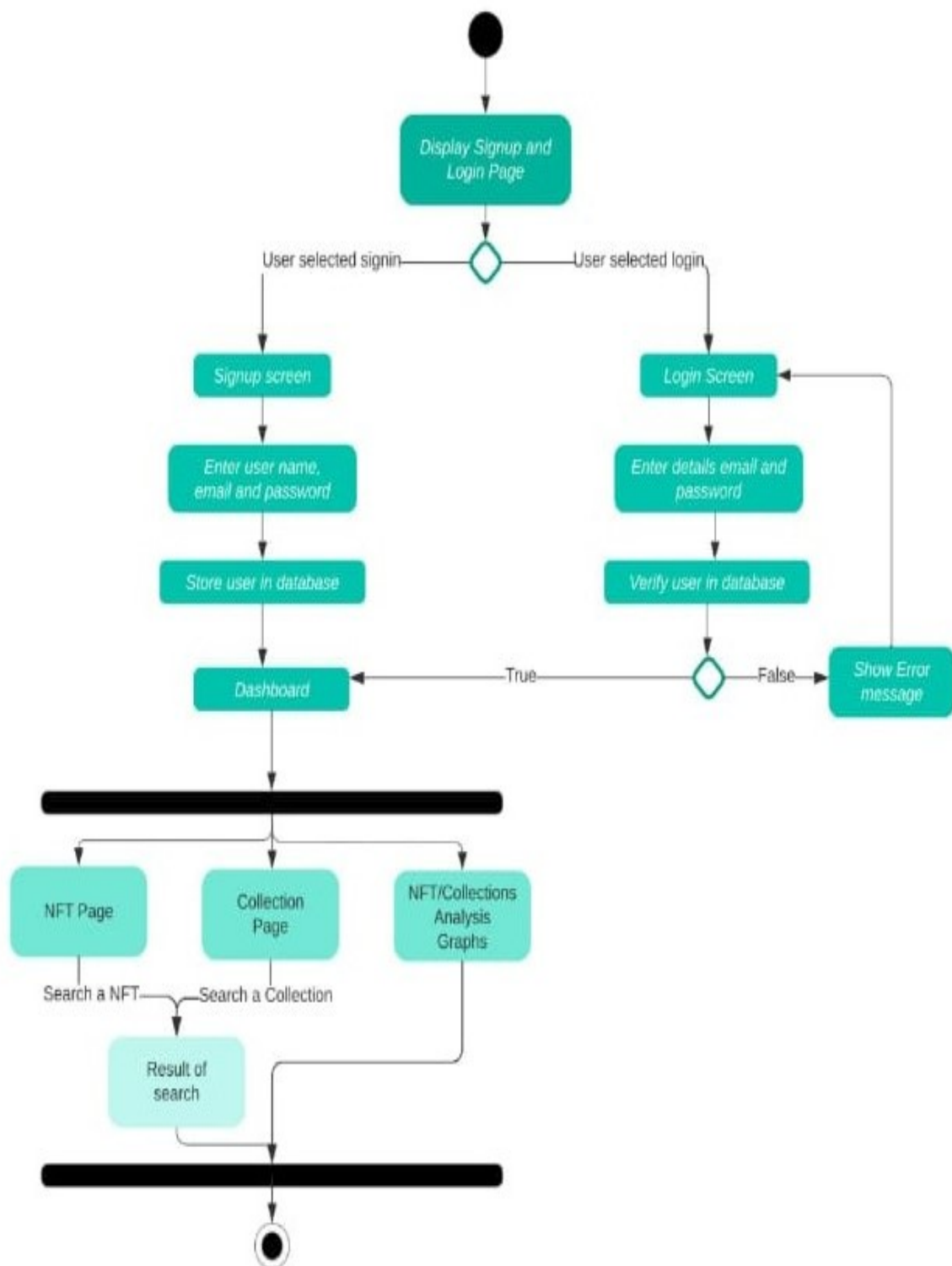
Figure 3.3: Activity Diagram - NFT sales analytics dashboard

3.3.4 Sequence Diagram
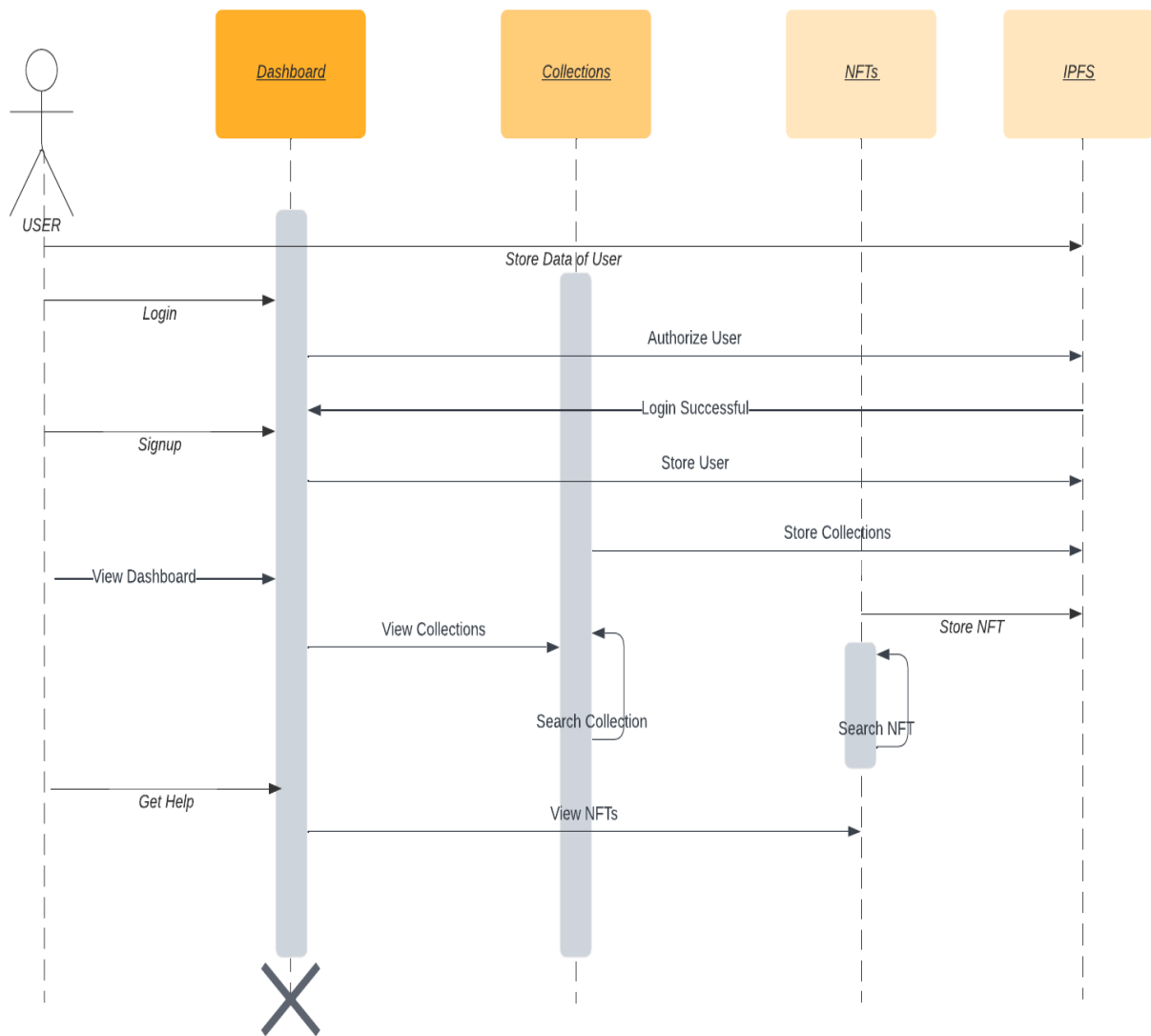
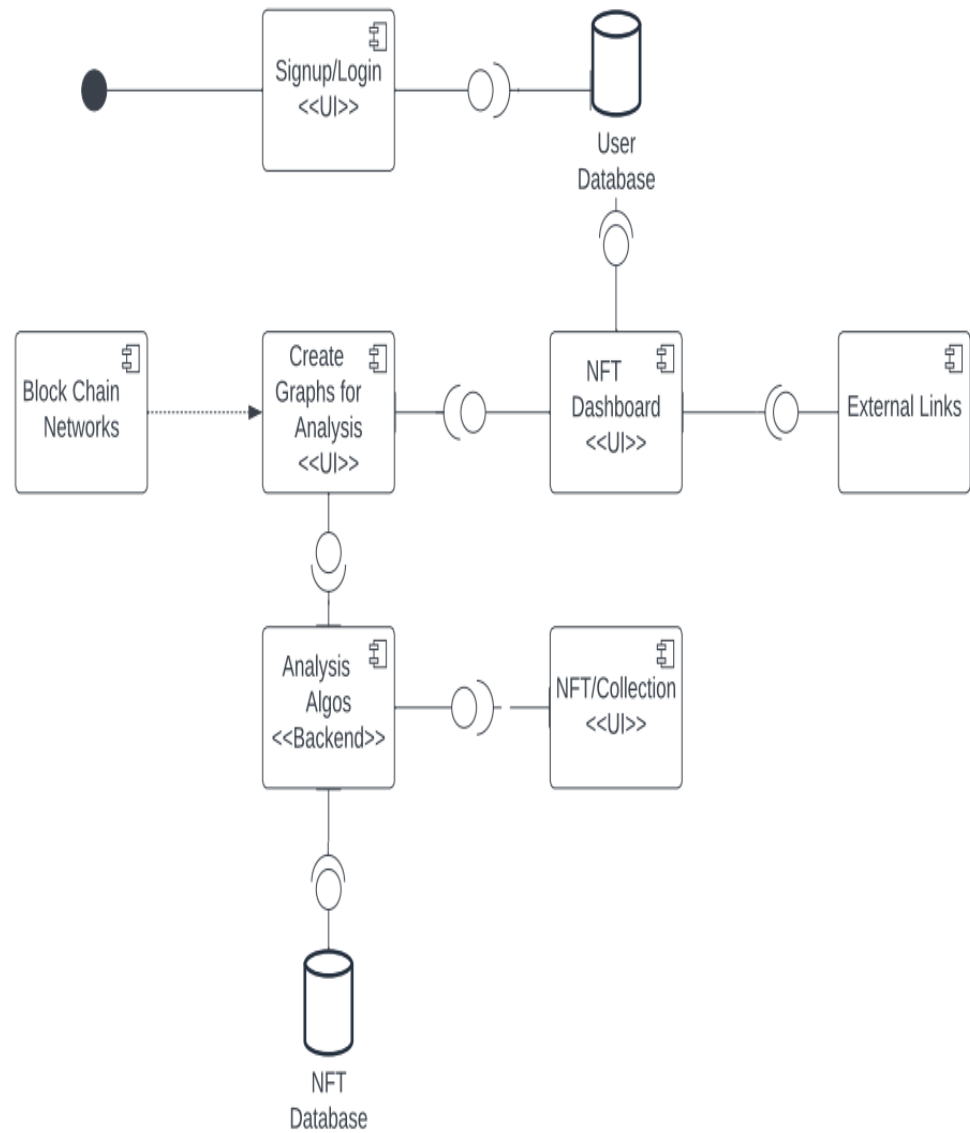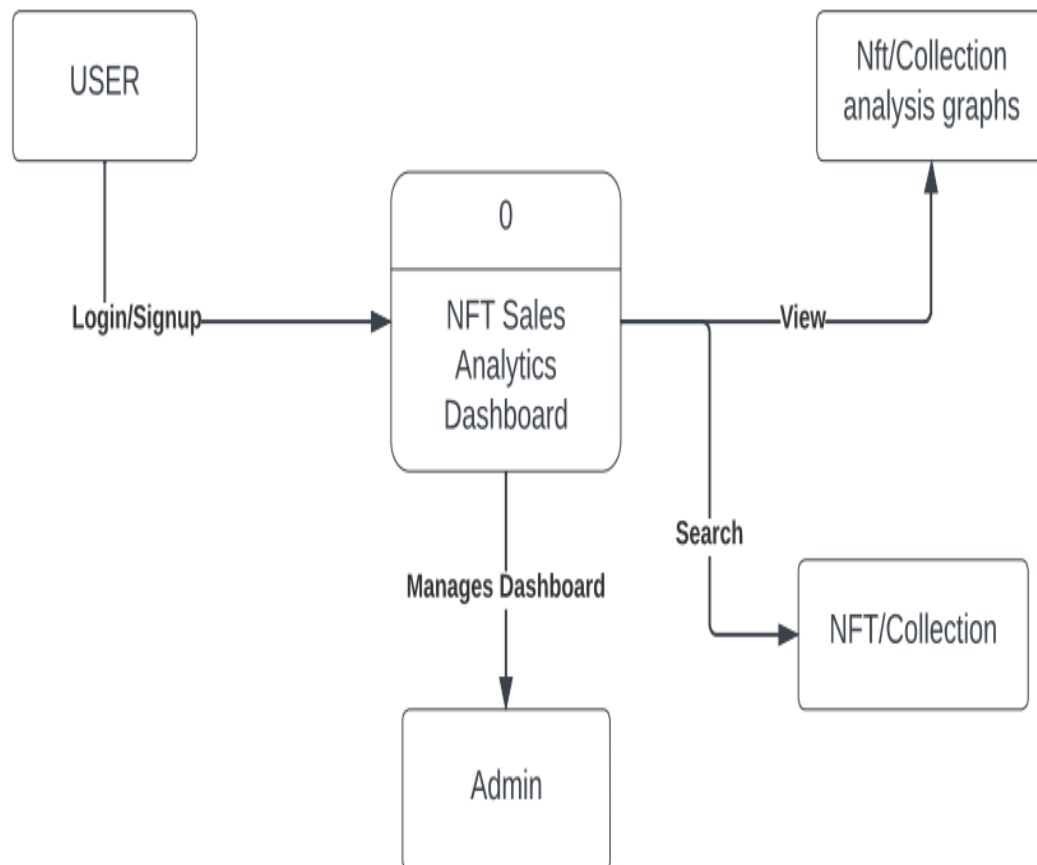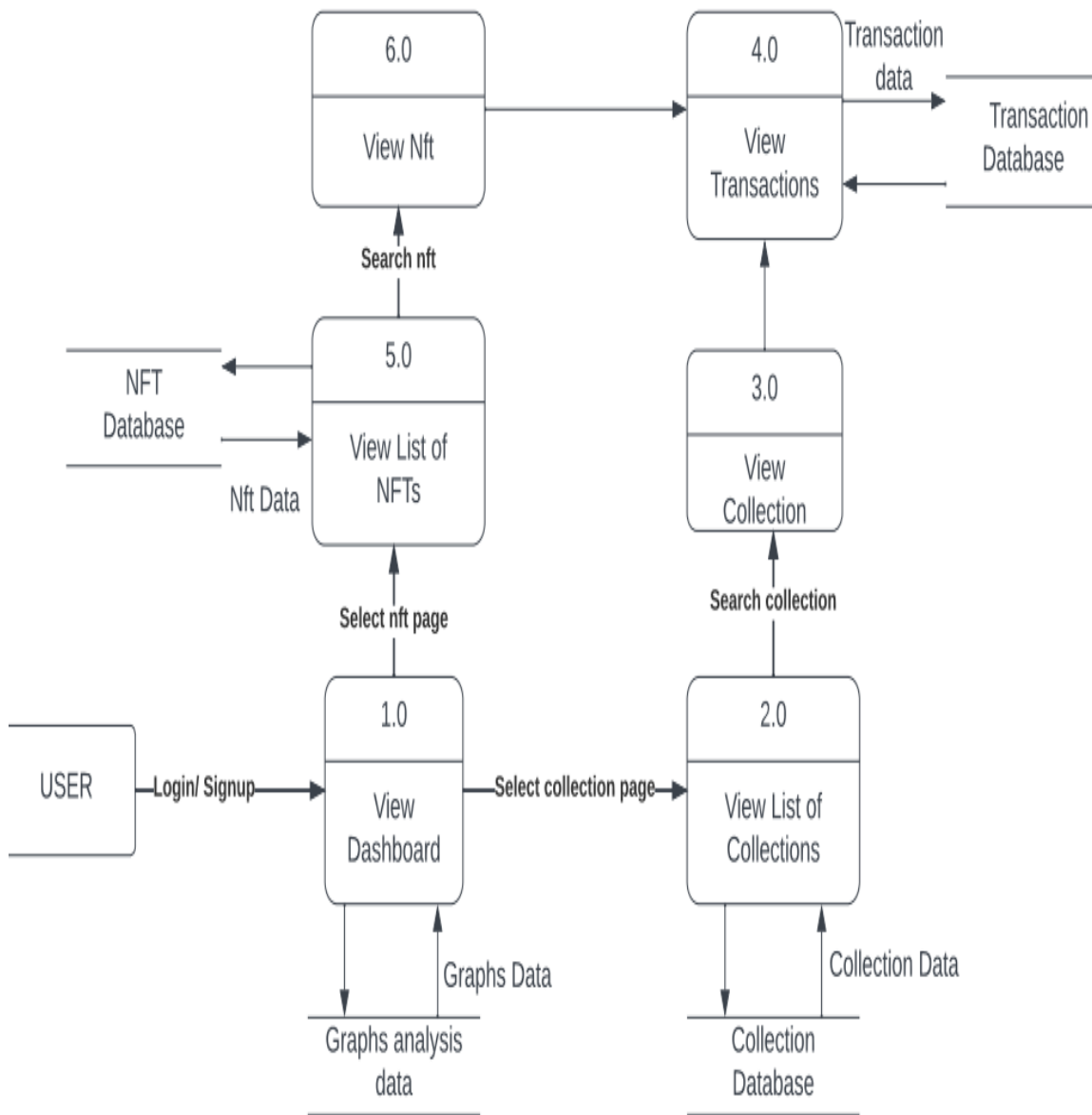**Figure 3.4:** Sequence Diagram - NFT sales analytics dashboard

3.3.5 Class Diagram

Figure 3.5: Class Diagram - NFT sales analytics dashboard

3.3.6 Component Diagram

Figure 3.6: Component Diagram - NFT sales analytics dashboard

3.3.7 Data Flow Diagram - Level 0

Figure 3.7: Data Flow Diagram(level-0) - NFT sales analytics dashboard

3.3.8 Data Flow Diagram - Level 1

Figure 3.8: Data Flow Diagram(level-1) - NFT sales analytics dashboard

Chapter 4

Methodology and Team

4.1 Introduction to Waterfall Framework

The Waterfall Model was first Process Model to be introduced. It is also referred to as a linear-sequential life cycle model. It is very simple to understand and use. In a waterfall model, each phase must be completed before the next phase can begin and there is no overlapping in the phases. The waterfall Model illustrates the software development process in a linear sequential flow; hence it is also referred to as a linear-sequential life cycle model. This means that any phase in the development process begins only if the previous phase is complete. In waterfall model phases do not overlap. In "The Waterfall" approach, the whole process of software development is divided into separate phases. In Waterfall model, typically, the outcome of one phase acts as an input for the next phase sequentially. Following is a diagrammatic representation of different phases of waterfall model.
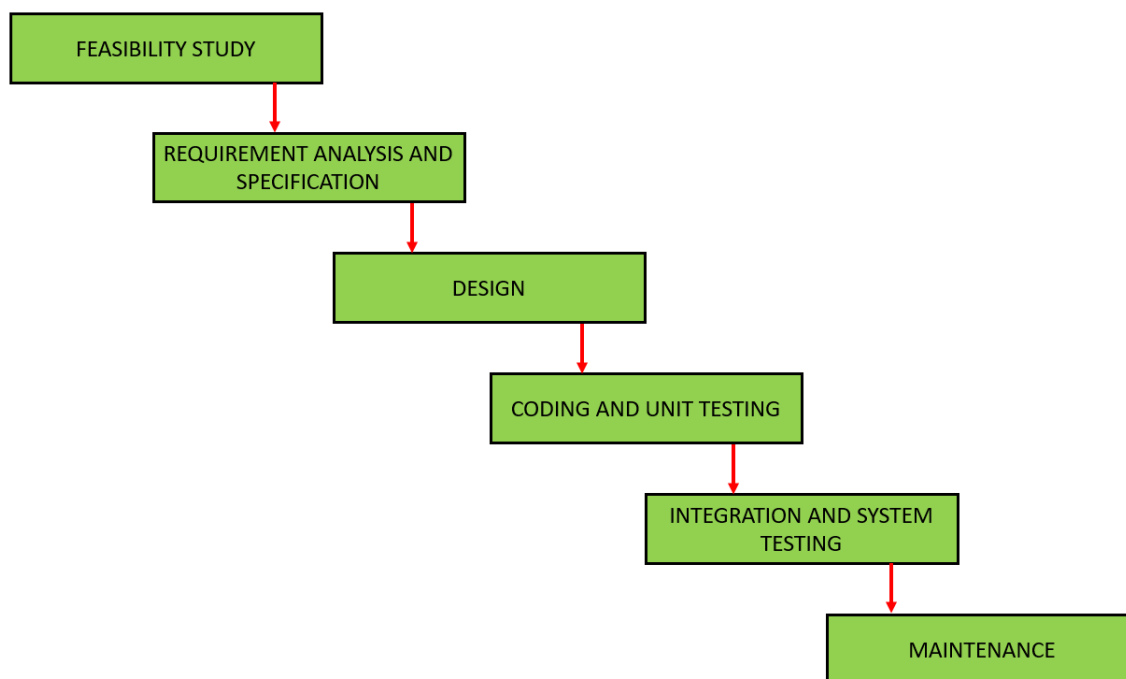
Figure 4.1: Waterfall model

The sequential phases in Waterfall model are-

1. **Requirement Gathering and analysis:** All possible requirements of the system to be developed are captured in this phase and documented in a requirement specification doc.

2. **System Design:** The requirement specifications from first phase are studied in this phase and system design is prepared. System Design helps in specifying hardware and system requirements and also helps in defining overall system architecture.

3. **Implementation:** With inputs from system design, the system is first developed in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality which is referred to as Unit Testing.

4. **Integration and Testing:** All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.

5. **Deployment of system:** All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.

6. **Maintenance:** All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.

All these phases are cascaded to each other in which progress is seen as flowing steadily downwards (like a waterfall) through the phases. The next phase is started only after the defined set of goals are achieved for previous phase and it is signed off, so the name "Waterfall Model". In this model phases do not overlap

Waterfall Model Pros & Cons

Advantage The advantage of waterfall development is that it allows for departmentalization and control. A schedule can be set with deadlines for each stage of development and a product can proceed through the development process model phases one by one. Development moves from concept, through design, implementation, testing, installation, troubleshooting, and ends up at operation and maintenance. Each phase of development proceeds in strict order.

Disadvantage The disadvantage of waterfall development is that it does not allow for much reflection or revision. Once an application is in the testing stage, it is very difficult to go back and change something that was not well-documented or thought upon in the concept stage.

4.2 Team Members, Roles & Responsibilities

Jagrati Sharma - Frontend , Documentation and Analysis

Jitendra Prajapat - Database Management

Karan Sabnani - Backend , API and Integration

Komal Soni - Frontend , Documentation and Analysis

Chapter 5

Centering System Testing

The designed system has been testing through following test parameters.

5.1 Functionality Testing

In testing the functionality of the web sites the following features were tested:

1. Links

    (a) Internal Links: All internal links of the website were checked by clicking each link individually and providing the appropriate input to reach the other links within.

    (b) External Links: Till now no external links are provided on our website but for future enhancement we will provide the links to the candidate's actual profile available online and link up with the elections updates online etc.

    (c) Broken Links : Broken links are those links which so not divert the page to specific page or any page at all. By testing the links on our website, there was no link found on clicking which we did not find any page.

2. Forms

    (a) Error message for wrong input : Error messages have been displayed as and when we enter the wrong details (eg. Dates), and when we do not enter any details in the mandatory fields. For example: when we enter wrong password we get error message for acknowledging us that we have entered it wrong and when we do not enter the username and/or password we get the messages displaying the respective errors.

    (b) Optional and Mandatory fields : All the mandatory fields have been marked with a red asterisk (*) and apart from that there is a display of error messages when we do not enter the mandatory fields. For example: As the first

name is a compulsory field in all our forms so when we do not enter that in our form and submit the form we get an error message asking for us to enter details in that particular field.

3. Database Testing is done on the database connectivity.

5.2 Performance Testing

Performance testing is a non-functional software testing method used to check the speed, scalability, reliability, responsiveness, and performance of an app/website. Various performance testing methods include a spike, volume, endurance, stress, load, etc. These performance testing types help determine the app performance under fluctuating networks, varying user loads, varying bandwidths, etc. During performance testing, certain key performance indicators (KPIs), also known as performance testing metrics, are used to measure the effectiveness of this testing method. These KPIs define the effectiveness of the performance tests for businesses. So, for our NFT sales analytics dashboard also we have done certain tests to check its performance:

1. Defining testing goals We go for load testing if you are interested in checking the website performance under normal circumstances or for expected traffic. , we test the website for your average and pick traffic load. The number of concurrent users is agreed upon before testing. As you approach sales events, we employ stress test- ing and challenge your website with the traffic considerably exceeding the expected load. In this case, we will scale the number of concurrent users up until the server can't handle the load and crashes returning error messages.

2. Confirming user scenarios We exploit comprehensive user scenarios for three user roles: a new user, an old user and a person trying to login without creating a new account. The scenarios cover: Logging in or signing up for an account. Reviewing NFTS and Collections. Searching for a particular NFT or Collection with its name. Viewing whole analysis of NFTs on the dashboard.

3. Setting up the performance testing environment We research your application in- frastructure to have full visibility into your production environment and replicate it in test. For the most accurate test outputs, we make sure no other activity is started in the testing environment during test execution.

4. Reporting As the final stage of a performance testing life cycle, we report you back on key performance KPIs: Number of requests sent. Number of concurrent users for stress testing. Hits per second (minimal, average and maximum). Response time (average and peak). Throughput. Error rate. Now, with the full visibility into your website performance, we provide you with a clear call to action – optimization solutions that will help you achieve stable website functioning and survive high- selling periods smoothly.

Metric	Value	Descriptions
Average Page Load Time	< 4 sec	
Max Page Load Time	< 60 sec	
Minimum Throughput	per scenario	
Max Number of Registered Users	30k	
Max Concurrent Connection	2000	
Max Records in the DB	300k	e.g. 10000 invoices, 3mln customers, etc...
Max DB Size	11GB	

Figure 5.1: Performance Requirements

Scenario (Thread Group)	Expected Normal Throughput in peaks [scenarios/min] (100%, Load Test)	Number of concurrent threads (100%)	Throughout in JMeter plan [scenarios/min] for Load Test (100%)	Number of concurrent threads (200%)	Throughout in JMeter plan [scenarios/min] for Stress Test (200%)
Anonymous Views a front page	120	10	140	20	180
Anonymous Browse Course catalogue and an outline	60	10	50	20	65
Training Coordinator Edits a node	2	1	4	2	8

Figure 5.2: Performance Testing

Chapter 6

Test Execution Summary

Execution Test Summary Report is an overall view of Testing Process from start to end. Test Plan comes at the starting of project while Test Summary Report comes at the end of the testing process. This report is given to the client for his understanding purpose. The Test Summary Report contents are :

1. Test Case ID generated

2. Total number of resources consumed

3. Passed Test Cases

4. Failed Test Cases

5. Status of Test Cases

Table 6.1: Table to test graphs of analysis

S.No	Test Case Id	Test Case Description	Test Case Status	No. of Resources Consumed
1	6	87837	787	2
2	7	78	5415	4
3	545	778	7507	3
4	545	18744	7560	2
5	88	788	6344	5

Chapter 7

Project Screen Shots
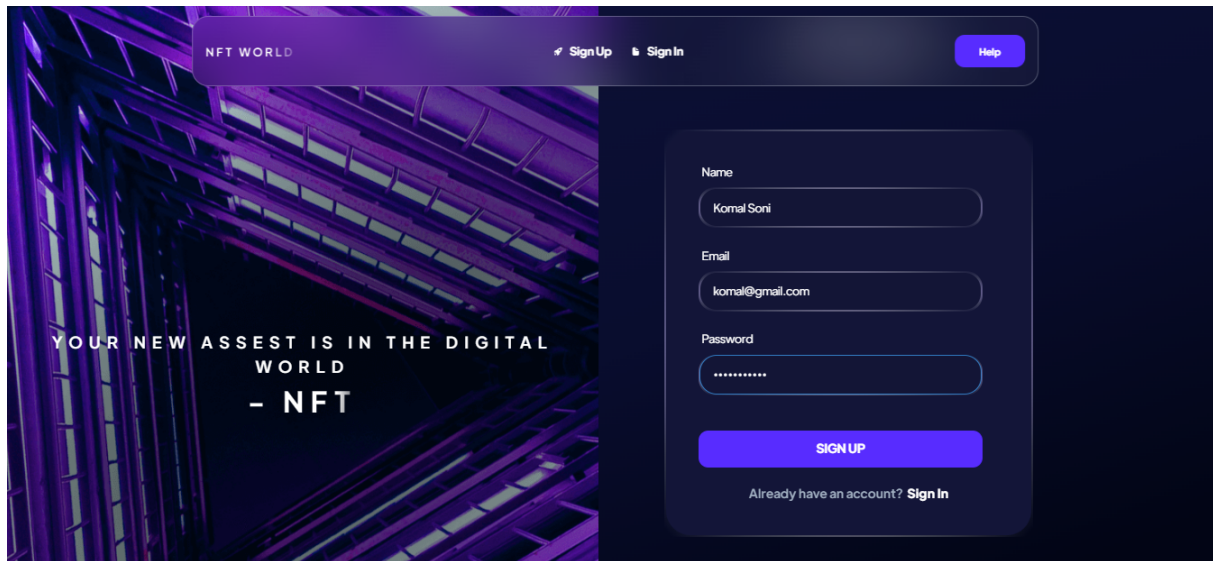
Figure 7.1: Sign Up Page
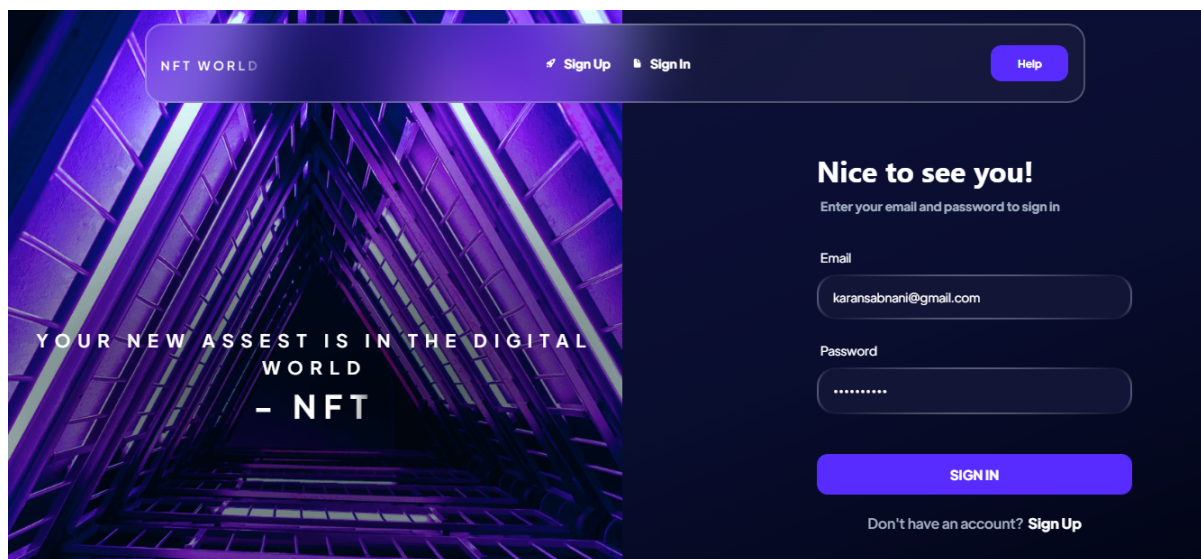
Figure 7.2: Sign In Page
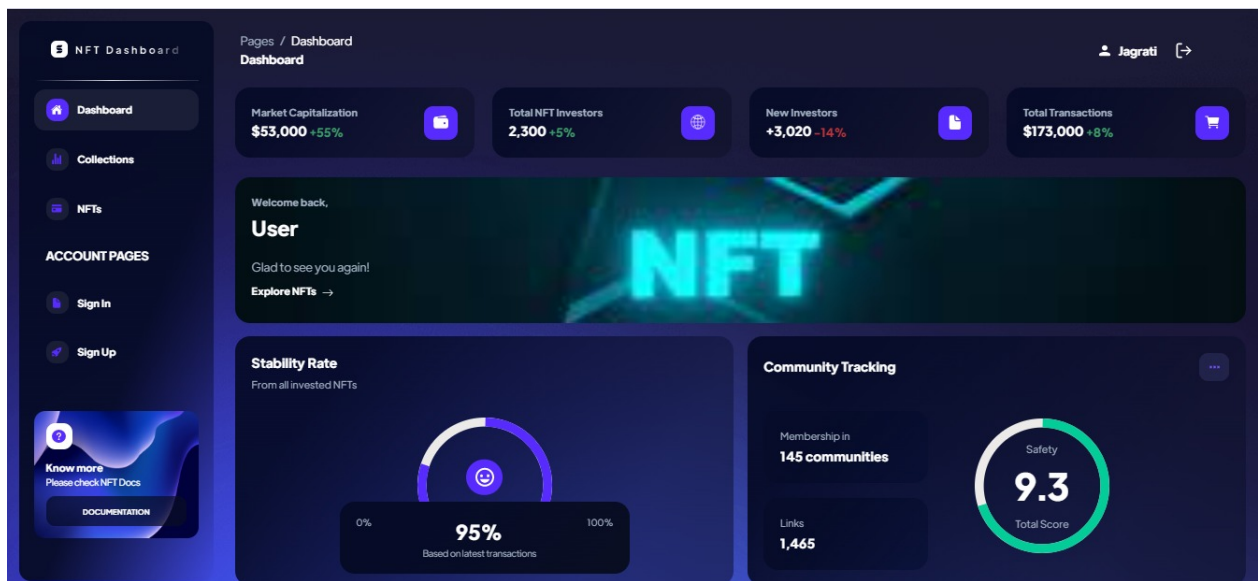
Figure 7.3: Dashboard-1

Figure 7.4: Dashboard-2

Figure 7.5: Dashboard-3

Figure 7.6: Nft page

Figure 7.7: Collection page
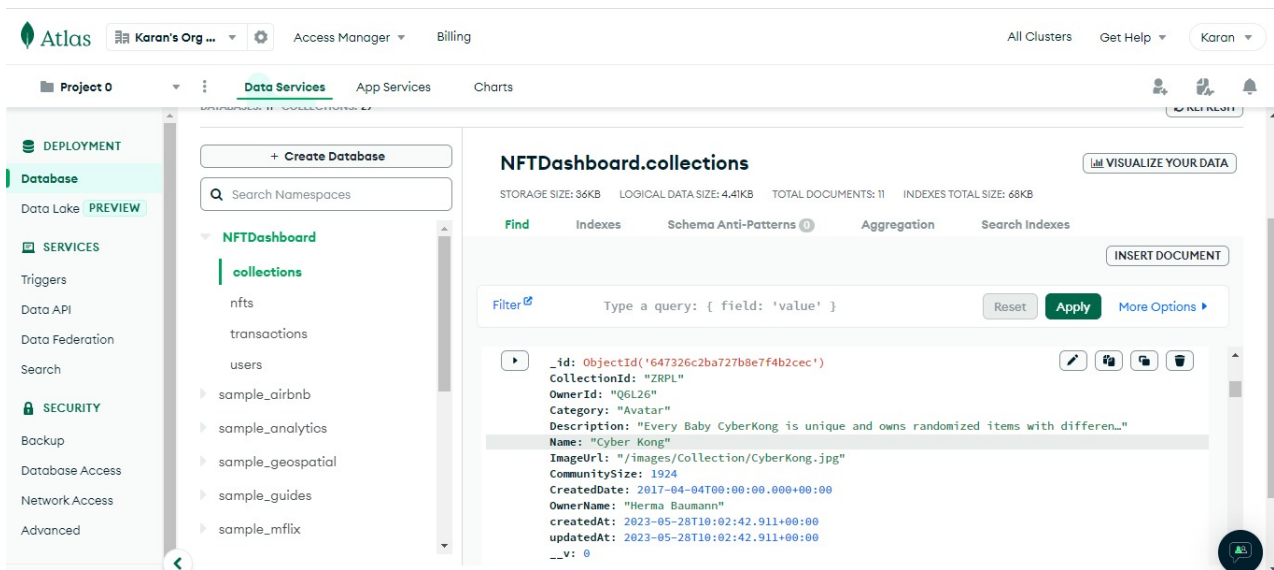

Figure 7.8: Database fig(a)

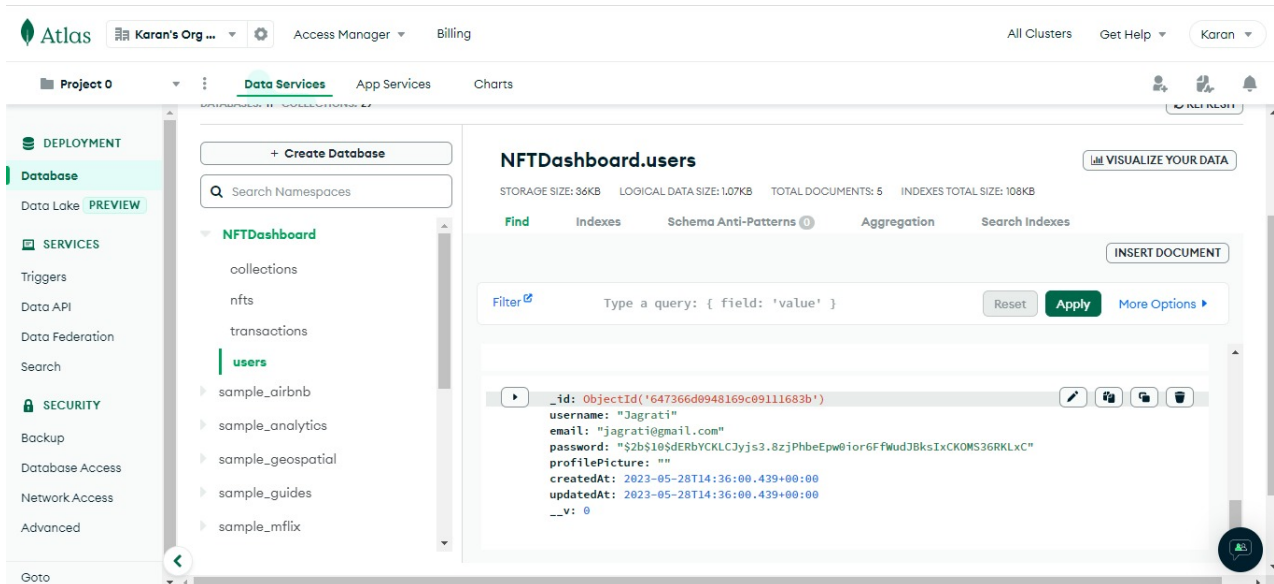**Figure 7.9:** Database fig(b)

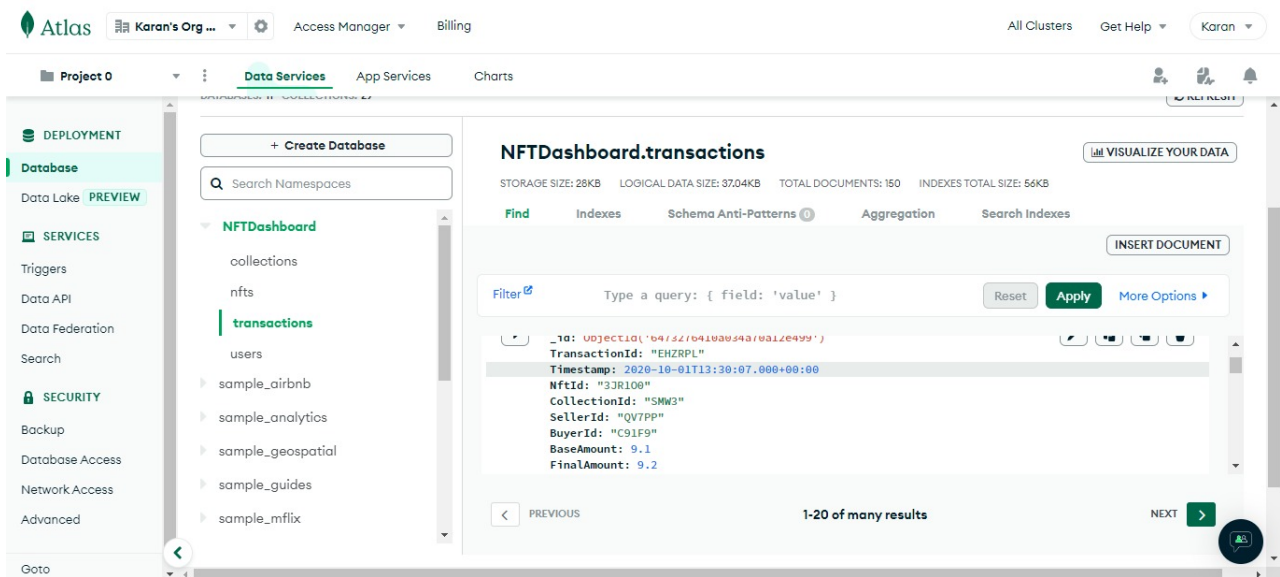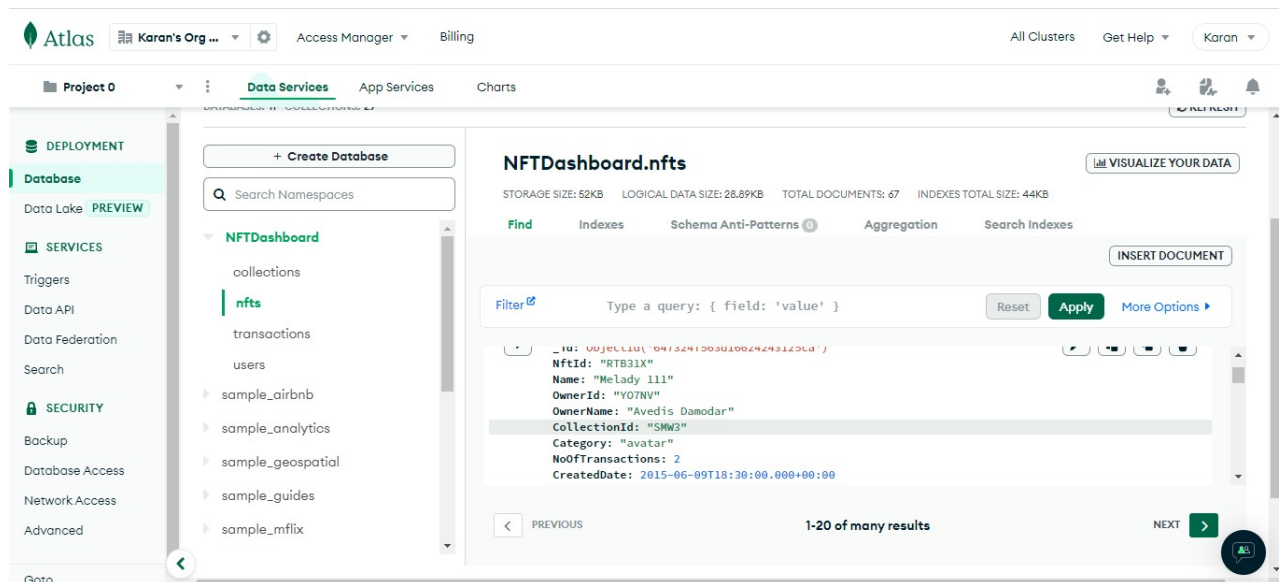**Figure 7.10:** Database fig(c)

Figure 7.11: Database fig(d)

Figure 7.12: Database fig(e)

Chapter 8

Project Summary and Conclusions

8.1 Conclusion

The NFT Sales Analytics Dashboard project aimed to provide a comprehensive and user-friendly platform for analyzing and visualizing data related to the sales of non-fungible tokens (NFTs). NFTs have gained significant popularity in recent years, and this project aimed to help users gain insights into the market trends, sales volume, and overall performance of NFTs.

The dashboard was designed to collect data from various NFT marketplaces, including transaction history, sales prices, and metadata of individual NFTs. It then processed and analyzed this data to generate informative visualizations, such as charts, graphs, and tables. Users could interact with the dashboard to customize the data view, apply filters, and compare different NFTs or market trends.

The NFT Sales Analytics Dashboard project successfully achieved its objectives of providing a powerful tool for analyzing and visualizing data related to NFT sales. The dashboard allowed users to gain insights into the rapidly evolving NFT market, identify trends, and make informed decisions.

By integrating with multiple NFT marketplaces and collecting transaction data, the dashboard provided a comprehensive view of the NFT sales landscape. The data processing capabilities ensured the accuracy and consistency of the collected information, enabling users to rely on the generated insights.

The visualizations presented through charts, graphs, and tables offered a clear representation of the market trends, sales volume, and price distribution. Users could cus-

tomize the dashboard to suit their specific needs, apply filters, and compare different NFTs or metrics, providing them with a flexible and tailored analytical experience.

Overall, the NFT Sales Analytics Dashboard project contributed to enhancing the understanding of the NFT market, empowering users to make data-driven decisions, and promoting transparency within the NFT ecosystem. It served as a valuable resource for investors, collectors, and researchers seeking to navigate and comprehend the dynamic world of NFTs.

8.2 Project Summary

The Market Overview NFT data analytics dashboard provides a rundown of the NFT collections and the fluctuations in their floor price. This allows investors to track trends within the NFT sphere and gauge the general sentiment.

By filtering by the change in floor price, investors can find NFT collections rising in prominence and mint or purchase them. Library where users can see the Trending NFTs, Recently Added NFTs, with various functionalities like searching, sorting, filters on Genres, Categories etc. for quickly accessing the NFTs. The project focuses on analyzing the data of NFT's and making a live dashboard with the most recent sales of NFT's. The Dashboard contains different visualizations showing the data related to NFT collections, prices, transactions and Market cap.

Chapter 9

Future Scope

The future scope of an NFT (Non-Fungible Token) sales analytics dashboard is quite promising. As the NFT market continues to evolve and gain popularity, there will be an increasing need for comprehensive data analysis and insights to support decision-making processes. Here are some potential areas of growth and opportunities for an NFT sales analytics dashboard:

- Market Trends and Performance

- Asset Valuation and Pricing

- Portfolio Management

- Artist Insights

- Comparative Analysis

- Market Predictions and Forecasting

- Regulatory Compliance

Overall, an NFT sales analytics dashboard has significant potential for growth, catering to the increasing demand for data-driven insights and decision support within the NFT market. By providing valuable market information, portfolio management tools, artist insights, and predictive analytics, such a dashboard can empower users to navigate the evolving landscape of NFTs with greater confidence.

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