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A Survey on Web 3.0 Portal with Social Media and Photo Storage Applications

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ABSTRACT: This research paper presents a novel approach to creating a Web 3.0 portal with Social Media, Digital Assets Market Place, and Cryptocurrency Exchange applications using blockchain technology. The proposed system provides a decentralized, secure, and transparent platform for users to interact with each other and engage in peer-to-peer transactions. Blockchain will lead to emergence of a completely new decentralized class of applications. It makes the applications more transparent, distributed and flexible. In this paper, we present the design, implementation, and evaluation of the proposed system, highlighting its benefits, challenges, and future directions.

KEYWORDS: Blockchain, Decentralized, Metamask, NFT, Smart Contract

I. INTRODUCTION

The new web technology known as Web 3.0 places a strong emphasis on decentralisation, security, and openness. A key element of Web 3.0, blockchain technology enables the development of decentralised apps with distinctive qualities like immutability, transparency, and security. In this work, we concentrate on the design, implementation, and assessment of a Web 3.0 portal featuring blockchain-based social media and photo storage applications.

Decentralised autonomy, integrity, immutability, verification, fault-tolerance, anonymity, auditability, and transparency are desirable characteristics of blockchain technology. Distributed ledgers are used to store data. Participants in the blockchain network can read, write, and verify transactions that are recorded in the decentralised ledger thanks to its integrity and availability. A system in Web 3.0 is secured and supported by cryptographic primitives and protocols example hash functions, digital assets and digital signatures. Such primitives guarantee the integrity - protected transactions are recorded into the blockchain. To achieve decentralization we can use blockchain technology and can build application on top of it. Blockchain is decentralized, peer to peer distributed network. It does not have central node , instead of that it has multiple nodes connected to each others and thus no one central server can control it. Using smart contract we can write different logic on blocks Smart contracts are simply programs stored on a blockchain that run when predetermined conditions are met.

To overcome the issues we can build application on top ofthe blockchain and then we can make it public so there willbe less data privacy issue. The functionality of the social sitewill remains the same for the end users but the process andinternal structure will change. The data will get store onblockchain and the different media files will be stored onIPFS(The Interplanetary File System (IPFS)) is a distributedfile storage protocol that allows computers all over the globeto store and serve files as part of a giant peer-to-peer network..Our program uses blockchain technology to enable decentralized and trustworthy interactions between users. This indicates that users can conduct transactions and securely communicate with one another without the need for a centralized middleman. The application employs MetaMask for secure transactions, enabling users to safely store their private keys and sign transactions. Additionally, to secure the integrity and validity of the data, cryptographic hashing with SHA256 is utilized to produce one-of-a-kind digital signatures for transactions and blocks. Blockchain technology enables transactions that are openly auditable and transparent. Users can now follow the whereabouts of their property and confirm the legitimacy of transactions. Users can easily access their data thanks to the usage of IPFS for decentralized data storage and distribution.

II. SYSTEM DESIGN

To enable user interaction with the application, a user interface would need to be created. This might be a mobile app or a web-based interface. Connecting to a blockchain network, like the Ethereum network, is required for the

application. This would enable the application to store data in a secure and decentralized manner, managing the trade of assets through smart contracts. To automate the exchange of assets and enforce the terms of contracts between participants, smart contracts would be employed. When specific criteria are met, these contracts would be automatically executed and saved on the blockchain network. To achieve redundancy and fault-tolerance, the application would need to store data in a distributed manner. A distributed file system like IPFS could be used for this. The application would need to use cryptography to ensure data privacy and security. This could involve the use of encryption algorithms to protect data, digital signatures to authenticate transactions, and hash functions to ensure data integrity.

III. DATA FLOW DIAGRAM

A data flow diagram (DFD) is a graphic depiction of the flow of data through a system or process. It takes an organized approach to showing how data moves through a system with the aim of pinpointing the data's sources, destinations, and various processing steps. A data-flow diagram (DFD) is essentially a graphic representation of how data moves within a process or system, generally an information system. The process itself, as well as the inputs and outputs of each entity, are illuminated by this information.

1.   Data Flow Diagram (level 0)

The diagram presented in figure 3.1 exhibits the general data flow at an abstract level for this particular project.
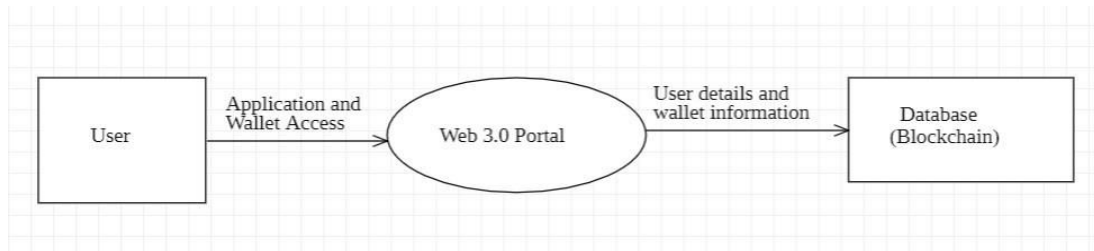

Fig - 3.1: Level 0 Data Flow Diagram

A context diagram, also referred to as a system overview, provides an abstract representation of the system by depicting it as a single process and its relationship with external entities. It features a singular bubble that represents the entire system, with incoming and outgoing arrows to indicate input and output data.

2.   Data Flow Diagram (level 1)

Figure 3.2 illustrates an example where customers log into the system and can create post on Social Network and can store photos on photobloc.

Level-1 DFD, which decomposes the context diagram into multiple processes or bubbles, represents the first level of decomposition.
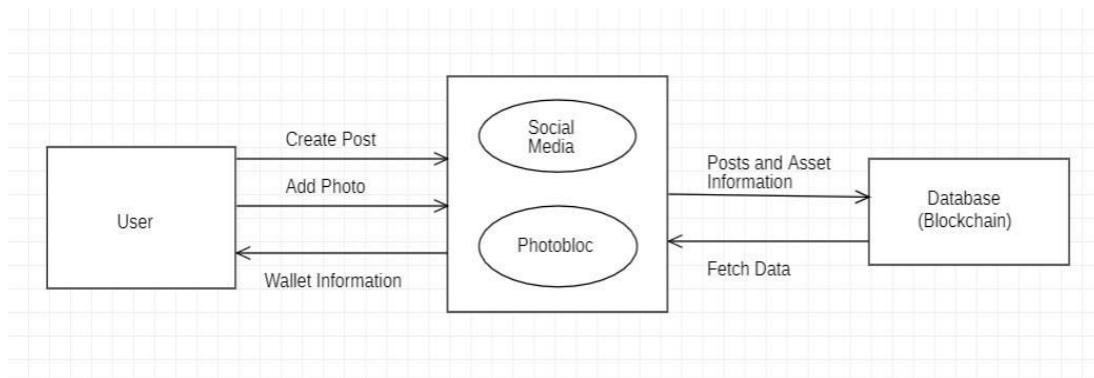

Fig - 3.2: Level 1 Data Flow Diagram

3.   Data Flow Diagram (level 2)

Level-2 DFD goes further in detail about the system's functioning by recording specific information. It provides a more detailed picture of the system than the Level-1 DFD.
Figure 3.3 depicts the detailed processes extended from the Level-2 DFD.
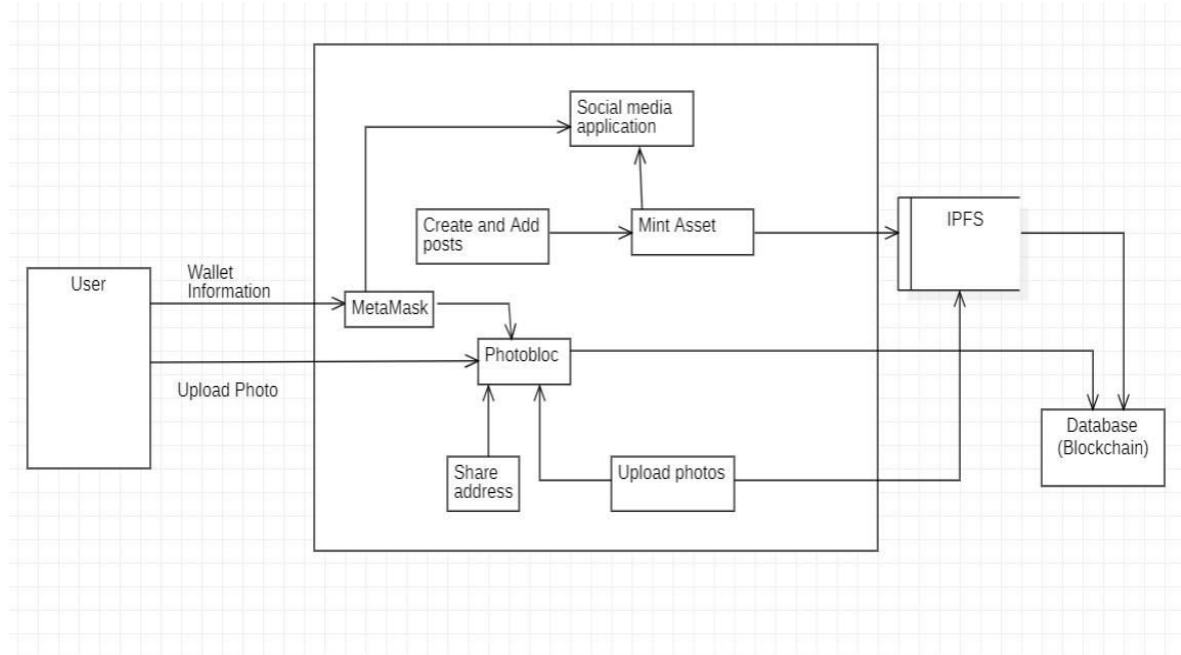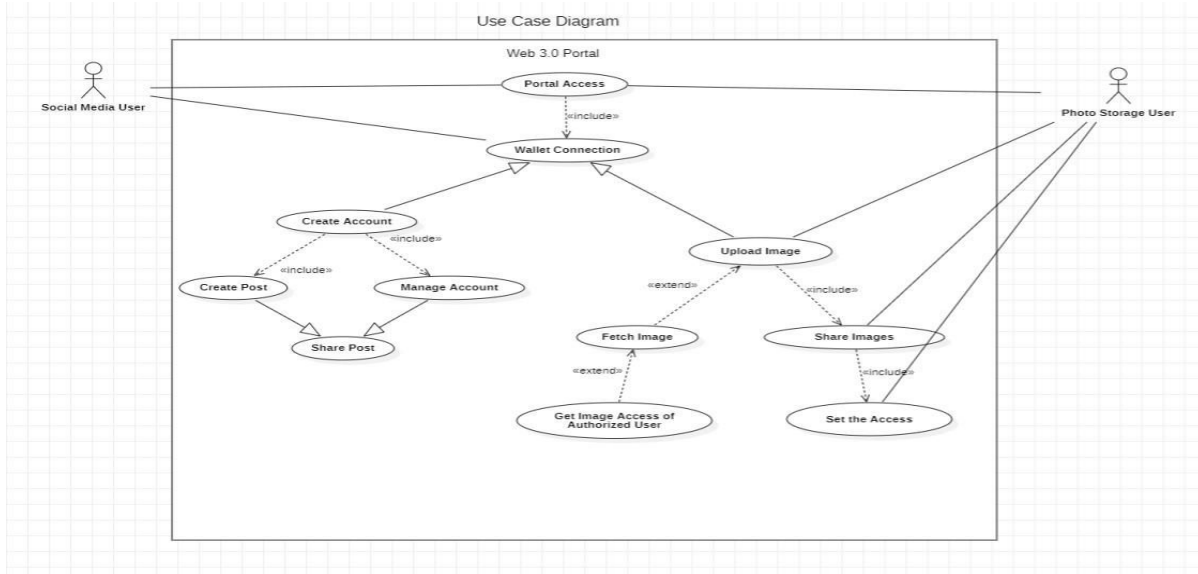

Fig - 3.3: Level 2 Data Flow Diagram)

IV. **UML DIAGRAMS**

UML diagrams are helpful when planning and creating complicated software systems. For example, in the case of decentralized applications, these diagrams make it easier to see the many system components and how they relate to one another.

4.1 Use case diagram

Figure 4.1 use case diagrams can help to identify the different tasks that each actor performs and how they interact with the system.
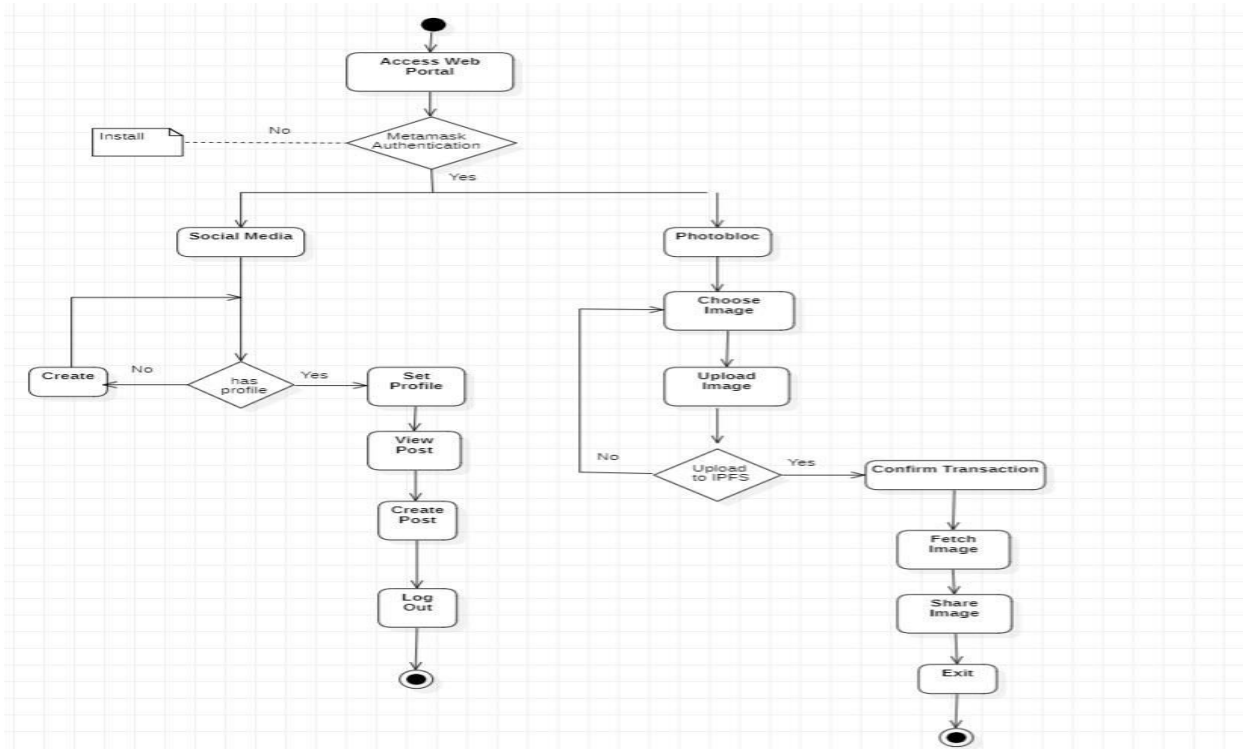

4.2 Activity Diagram

Activity diagram model the different activities or processes in the system. For example the activity diagram show the various processes after logging in into the portal, at first the user gets the access to the main portal then to other apps.

4.3 Class diagram
Modelling the various classes or objects that make up the system is done using class diagrams.
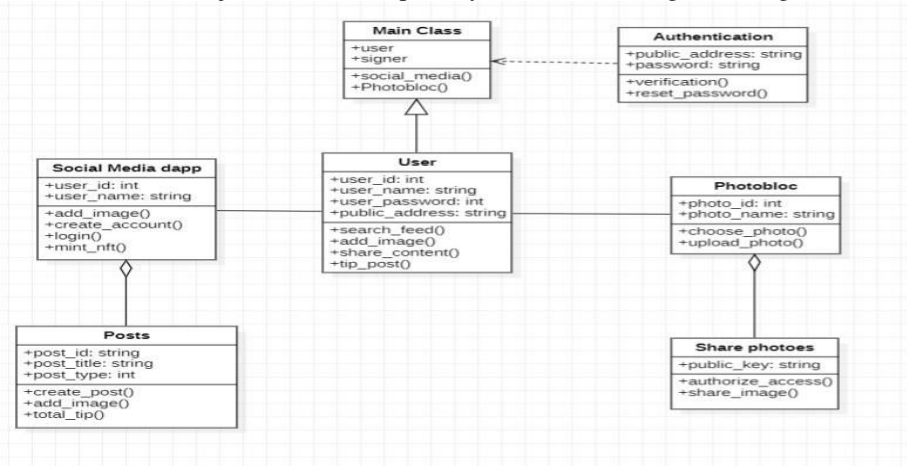
4.3Class Diagram

V. CONCLUSION

In this research, we provided a revolutionary method for building a Web 3.0 portal that integrates blockchain-based social media and Decentralized photo storage application. The suggested system offers users a decentralized, safe, and open platform to communicate with one another and conduct peer-to-peer transactions. a blockchain-based decentralized solution for social data sharing and storage that separates user data from social applications to give users back control over their data. Decentralization, security, and transparency make it a promising technology for the future, despite issues with user uptake and regulatory compliance.

REFERENCES

[1] Mahesh Kini M Karthik Pai Department of networkscienceShanghai JiaoTong University. "Make Web 3.0 Connected" In 2022

[2] Ting Cai Ph.D. degree at the School of Data and Computer Science, SunYat-sen University, Guangzhou, China. "Social Chain: Decoupling Social Data and Applications to Return Your Data Ownership" In 2021

[3] Sajjad Khan, Muhammad Bilal Amin College of Sciences and Engineering,University of Tasmania, Hobart, TAS 7005, Australia "A Blockchain basedAutonomousDecentralized Online Social Network" In 2021K. Elissa, "Title of paper if known," unpublished.

[4] Ningyuan Chen, David Siu Faculty of Science and Engineering Departmentof Electrical and Electronic Engineering Universityof Nottingham Ningbo China Ningbo, China "A Blockchain based Autonomous Decentralized Online Social Network " In 2021

[5] Farhana Akter Sunny, Department of Computer Science and Engineering,Green University of Bangladesh, Dhaka 1207, Bangladesh "A SystematicReview of Blockchain Applications" In 2022

[6] Shuai Zeng, Yong Yuan,Institute of Automation, Chinese Academy of Sciences, Beijing, China "A decentralized social networking architecture enhanced by blockchain" In 2019

[7] Ruhi Tas Computer Engineering Ankara University Ankara, Turkey "Building A Decentralized Application on the Ethereum Blockchain" In 2019

[8] Leo Besancon, Catarina Ferreira Da Silva, Parisa Ghodous, Liris, Univ Lyon, Université Claude Bernard Lyon 1, 69100 Villeurbanne, France "A Blockchain Ontology for DApps Development" In 2022

[9] Muhammad Irfan Khalid, Ibtisam Ehsan and Ayman Khallel Al-Ani 1Department of Information and Electrical Engineering and Applied Mathematics, University of Salerno, 84084 Fisciano, Italy "A Comprehensive Survey on Blockchain-Based Decentralized Storage Networks" In 2022

[10] Gabin Heo, Dana Yang Division of Artificial Intelligence and Software, Ewha Womans University, Seoul, Korea "Efficient and Secure Blockchain System for Digital Content Trading" In 2021 SITS, B. E. (Computer) 2015 Course, Project Stage I, 2022-23 36

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