DA51 Lab 7

Ethereum Decentralized Application (Dapp): Building a Scientific Prepublication Platform using Blockchain.

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Target set of this session:

- implement a scientific prepublication platform that utilizes blockchain to ensure the integrity and non-repudiation of uploaded documents.

The goal of this lab session is to implement a scientific prepublication platform. The main feature of the application is to provide an author with undeniable proof (non-repudiable), irrevocable, and easily verifiable (integrity) of the uploading of a document. To timestamp this proof of existence, a blockchain will be used as a distributed ledger to permanently save the information and allow verification of this proof by any entity wishing to do so.

Lab Tasks:

1) Discuss the importance of non-repudiation and integrity in scientific publications.
2) Understand the role of blockchain in ensuring the above features.

Setting up the Environment:

3) Install necessary tools and frameworks for blockchain development (see Lab 6).

Building the Decentralized Application (DApp):

4) Design and deploy Smart Contracts that will handle the uploading and verification of documents.
5) Test the Smart Contracts in the local blockchain environment.

Testing the Platform:

6) Upload a sample scientific document through the front-end.
7) Verify its existence and integrity using the features provided by the Smart Contracts.
8) Test the retrieval of the document from the decentralized file system.

Discussion and Conclusion:

9) Discuss the advantages and potential challenges of using blockchain in scientific prepublication.
10) Explore potential improvements and extensions to the platform.
11) Describe the Truffle's directory structure and content?