Programming Assignment 1

Land Management system

You buy a piece of land. Someone else claims to own the land. But the one who sold you the land showed you the paperwork. The land registry office earlier said that the owner was rightful. Now they say that they made a mistake – it was owned by the other person. You already paid for the land – to the first person. The First person goes missing, how does anyone prove who changed the land record?

In order to prevent such errors from happening, you need to build a land management system with the following features

1. To register new users to the system with previously owned property
2. The user should be able to buy and sell the property.
3. To improve the security of the blockchain, incorporate a consensus algorithm that has been assigned to the group.
4. Implementation of Merkle root to calculate the hash of all the transactions in a block.
5. To be able to view the transaction history that is related to a property.

The different consensus algorithms that you will be implementing are

- Proof Of Stake (PoS)
- Proof of Elapsed Time (PoET)
- Delegated Proof-of-Stake (DPoS)
- Proof of Work (PoW)

The consensus algorithm which you will be implementing will be randomly assigned.

Basic Structure of a transaction that is expected:

Buyer ID/name, Seller ID/name, Property ID/name, Amount(optional), Timestamp of the transaction.

Basic Structure of a Block in the blockchain:

Timestamp, Merkle root, Hash of the previous block, etc

Note: Above mentioned is the basic structure that is expected from you but you are free to improvise

Implement the blockchain using **Python/Go/Java** as per your convenience. Choose a language you are familiar with and you are free to use existing inbuilt libraries of the chosen language.

For example in Python, calculating the Hash of blocks can be done by using the "hashlib" library.

Marking Scheme:

Feature 1	2 marks
Feature 2	3 marks
Feature 3	3 marks
Feature 4	2 marks
Feature 5	2 marks

Group Size: 3-4 people.

General Instructions:

- Basic structures are only meant to get you started and your personal innovation and extra features are welcome
- Make sure you only implement the algorithm which is assigned to you as part of this assignment else you will not be awarded any marks for the feature.
- The code should be readable and properly commented.
- Since there might be a lot of files, make sure you clearly mention the part where you implemented the algorithm, failing which you will not be rewarded for the same.
- Make sure to include group information in the readme.
- A detailed explanation of functions written in the code in the readme file.

Submission Guidelines:

- Make a zip/rar file of the project and submit it to the google form that will be shared with you later
- Only 1 member from the team should be making the Assignment Submission.
- Make sure to include a Readme file with the submission.
- Name of the zip file will be **A1_Group_No_xyz.zip (**Ex: A1_Group_No_1.zip)
- Submission Timeline: Anytime between **9 Oct to 11:59 pm - 13 Oct 2022 11:59 pm**.
- If you have any further queries, you can mail them to:

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