CSI2110A2 Assignment #2 Report

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Description of Classes

BlockChain Class

The blockchain class has one class variables, one is the Array List of block elements, every blockchain object must have an array of blocks, this is because my constructor initializes the Blockchain class with an Array. The main method first checks if block chain is valid by using the validateBlockchain method. Then it allows the user to enter new transactions if they want It, if not the program just returns a new text file with my miner ID. The program then validates the transaction and makes sure the sender has enough money. If the user does not have enough money it asks them to re-enter a new transaction with a lower am. If the transaction is validated, a Transaction object is created and is used to create a Block object. This block is then added to the blockchain and the user is asked if they would like to make more transaction. If yes then the process repeats and if not then a file is created where the name of the old file is take and '_iali088' is added to the end of the name and this file will contain the new blockchain.

Block Class

The parameters for the constructor include index, Transaction transaction, String nonce, String hash, java.sql.Timestamp timestamp, String previousHash. It initializes all these variables. There is also a constructor for the first block in the blockchain which makes the previous hash = 0000. In the class block there is also a method called find hash which uses a brute force way to find a valid hash. This is done by using many random nonces and getting their hashes until it produces a nonce with a hash that starts with 00000.

Transaction Class
This class initializes the sender, reciever, and amount in it's constructor. its object is used in the block and blockchain class.

Number of hash trials per transactions

Block Index	HashTrials
3	1353234
4	4542323
5	2134322
6	6546323
7	3432543
8	7652542
9	2344534
10	1021363
11	764748
12	1453182
Average	1593408.8