

READ ME FOR PROGRAMMING ASSIGNMENT 1 - BITS F452 BLOCKCHAIN TECHNOLOGY

DETAILS

Blockchain has been implemented to help Dexter run his coffee business efficiently with immutable ledger. The functionalities are shown below (follow through EXECUTING PROGRAM)

GROUP Number - 51

GROUP MEMBERS

MANAN AGRAWAL – 2019A3PS0400H

JUHIL DESAI - 2019A7PS0153H

TOSHIT CHEELI - 2019A3PS0462H

BLOCKCHAIN

Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network.. Virtually anything of value can be tracked and traded on a blockchain network, reducing risk and cutting costs for all involved.

EXECUTING PROGRAM

1) Run 'Blockchain' to use application

*The following menu shows up

```
Press 1 to add a user details
Press 2 to add a transaction
Press 3 to display existing logs
Press 0 to exit
```

Enter 1 to add user details * the name and amount will be added to the pool.*

Enter 2 to make a transaction * transaction between two uses can be done.*

Enter 3 to show previous transactions * Shows all the validated transactions done till then.*

Enter 0 to exit *departs the program*

2) Start by choosing 1 and entering the name and amount to be feed in the pool.

```
Need atleast 2 users for transaction
Press 1 to add a user details
Press 2 to add a transaction
Press 3 to display existing logs
Press 0 to exit
1
Enter username
juhil
Enter balance
1200
```

At least two users have to be present to continue to next step, a warning is given.

```
Press 1 to add a user details
Press 2 to add a transaction
Press 3 to display existing logs
Press 0 to exit
2
Need atleast 2 users for transaction
```

3) Transaction process

After the users are added to the pool, transactions can be initiated by entering 2.

```
Available users
Press 1 for juhil
Press 2 for tosi
Press 3 for manan
Enter number corresponding to sender
1
Enter number corresponding to receiver
3
Enter Amount
1500
```

* When a transaction is initiated unique ID of the users will be shown and transaction can be continued referring the unique ID and mentioning the amount to be transferred*

After executing this step it validates the transaction by checking the amount of the sender from the pool with the amount to be transferred, if the transferring amount is more than this balance the transaction is terminated, and an error message shows up saying 'Invalid Transaction'

```
Press 1 to add a user details
Press 2 to add a transaction
Press 3 to display existing logs
Press 0 to exit
2
Available users
Press 1 for juhil
Press 2 for tosi
Press 3 for manan
Enter number corresponding to sender
1
Enter number corresponding to receiver
3
Enter Amount
1500
Invalid transcation, Verification failed
```

If the transaction is verified, 'Verification successful' is shown.

```
Press 1 to add a user details
Press 2 to add a transaction
Press 3 to display existing logs
Press 0 to exit
2
Available users
Press 1 for juhil
Press 2 for tosi
Press 3 for manan
Enter number corresponding to sender
2
Enter number corresponding to receiver
1
Enter Amount
200
Valid transaction, Verification successful
```

The process can be continues for furthermore transactions

IMPORTANT NOTES

- 1) The transaction is not initiated unless there are two users in the pool. **a warning is given**
- 2) Users can be added at any point. **there is no fixed amount of users**
- 3) Amount is verified before adding it to the block and generating hash.

FUNCTIONALITIES

1) Dexter has information regarding all the available blocks. (Requirement)

Entering 3 will give these details of all blocks, with hashes, previous hash, amount and time stamps. All transactions done till then are shown.

```
Press 1 to add a user details
Press 2 to add a transaction
Press 3 to display existing logs
Press 0 to exit
3
Block [Hash=c00fca338914f4c1d620ab9c12bd56c3e1649a1c8872e3af03f8662ba16b88aa, Previous Hash=0, Sender=juhil, Receiver=manan, Amount=500, Time Stamp=2021-09-25T19:07:26.22]
Block [Hash=7b36f32c70d9a2b6d399cac3882abf94bed4c58ec90215405c75cfdc1a6c5a0a, Previous Hash=c00fca338914f4c1d620ab9c12bd56c3e1649a1c8872e3af03f8662ba16b88aa, Sender=tosi, Receiver=juhil, Amount=500, Time Stamp=2021-09-25T19:07:26.22]
Block [Hash=bb98ef56fd8f533ddfd6740044573a2cabb6bc5bd64e5744d8c58e0a8480cdf7, Previous Hash=7b36f32c70d9a2b6d399cac3882abf94bed4c58ec90215405c75cfdc1a6c5a0a, Sender=tosi, Receiver=juhil, Amount=500, Time Stamp=2021-09-25T19:07:26.22]
```

2) None of Dexter's friends should be able to edit the added transactions. (Requirement)

All the previous transactions in the blockchain are unchangeable.

3) Timestamp of each transaction is readily available. (Requirement)

Timestamps is attached to each block and by entering 3 , the timestamp (date, time

```
Press 1 to add a user details
Press 2 to add a transaction
Press 3 to display existing logs
Press 0 to exit
3
Block [Hash=c00fca338914f4c1d620ab9c12bd56c3e1649a1c8872e3af03f8662ba16b88aa, Previous Hash=0, Sender=juhil, Receiver=manan, Amount=500, Time Stamp=2021-09-25T19:07:26.22]
```

4) Dexter should have all the information regarding the completed transactions. (Requirement)

Entering 3 opens up the all completed transactions with its block hash , previous hash, sender, receiver, amount and timestamp.

```
Press 1 to add a user details
Press 2 to add a transaction
Press 3 to display existing logs
Press 0 to exit
```

```
3
Block [Hash=c00fca338914f4c1d620ab9c12bd56c3e1649a1c8872e3af03f8662ba16b88aa, Previous Hash=0, Sender=juhil, Receiver=manan, Amount=500, Time Stamp=2021-09-25T19:07:26.22]
Block [Hash=7b36f32c70d9a2b6d399cac3882abf94bed4c58ec90215405c75cfd1a6c5a0a, Previous Hash=c00fca338914f4c1d620ab9c12bd56c3e1649a1c8872e3af03f8662ba16b88aa, Sender=tosi, Receiver=juhil, Amount=500, Time Stamp=2021-09-25T19:07:26.22]
Block [Hash=bb98ef56fd8f533ddfd6740044573a2cabb6bc5bd64e5744d8c58e0a8480cdf7, Previous Hash=7b36f32c70d9a2b6d399cac3882abf94bed4c58ec90215405c75cfd1a6c5a0a, Sender=tosi, Receiver=manan, Amount=500, Time Stamp=2021-09-25T19:07:26.22]
```

All the shown blocks are verified and validated with the users balance at the time of transaction.