

Claims

1.- A method for executing a plurality of transactions in a blockchain network, wherein the blockchain network comprises a plurality of network nodes, the method comprising:

receiving, by a network node of the blockchain network, a plurality of transactions to be executed in a blockchain network;

for each of the plurality of transactions, determining ~~whether~~that the transaction is a first-type transaction or a second-type transaction;

dividing, by the network node, the plurality of transactions into one or more groups of transactions based on one or more accounts affected by executing the first-type transaction for each first-type transaction and one or more accounts affected by pre-executing the second-type transaction for each second-type transaction;~~and~~

arranging, by the network node, each of the one or more groups of transactions that affect the one or more accounts by executing the first-type transactions into a first-type transaction group and each of the one or more groups of transactions that affect the one or more accounts by executing the second-type transactions into a second-type transaction group;

arranging, by the network node, the first-type transaction group and the second-type transaction group in a parallel execution order so that the one or more accounts affected by each of the plurality of transactions in the first-type transaction group are not affected by the one or more accounts affected by each of the plurality of transactions in the second-type transaction group; and

executing the plurality of transactions by executing, in parallel, the one or more groups of transactions.

2.- The method of claim 1, further comprising:

prior to executing the plurality of transactions, for each second-type transaction, recording the one or more accounts affected by the pre-executing the second-type transaction for performing consensus of the one or more accounts affected by the pre-executing the second-type transaction.

3. -The method of claim 1, wherein the plurality of transactions are executed by the network node in a same order as the plurality of transactions are executed by any other network node of the plurality of network nodes of the blockchain network.

4.- The method of claim 1, wherein:

- each group of transactions comprises one or more transactions that affect a common transaction entity; and

- between each two different groups of transactions, any transaction in one group does not affect any common transaction entity with any transaction in another group.

5.- The method of claim 4, wherein the common transaction entity comprises a transferee, a transferor, an account of a transferee, or an account of a transferor associated with a transaction.

6. -The method of claim 1, wherein:

- a transaction for which all accounts affected by executing the transaction is deterministic before executing the transaction is a first-type transaction, and

- a transaction for which one or more accounts affected by executing the transaction is not deterministic before executing the transaction is a second-type transaction.

7.- The method of claim 1, wherein a non-smart-contract transaction is a first-type transaction and a smart contract transaction is a second-type transaction.

8. -The method of claim 1, wherein pre-executing the second-type transaction comprises pre-executing the second-type transaction, by the network node, when one or more processors of the network node is idle.

9. -A non-transitory, computer-readable storage medium storing one or more instructions executable by a computer system to perform operations for executing a plurality of transactions in a blockchain network, wherein the blockchain network comprises a plurality of network nodes, the operations comprising:

- receiving, by a network node of the blockchain network, a plurality of transactions to be executed in a blockchain network;

- for each of the plurality of transactions, determining ~~whether~~that the transaction is a first-type transaction or a second-type transaction;

dividing, by the network node, the plurality of transactions into one or more groups of transactions based on one or more accounts affected by executing the first-type transaction for each first-type transaction and one or more accounts affected by pre-executing the second-type transaction for each second-type transaction;~~and~~

arranging, by the network node, each of the one or more groups of transactions that affect the one or more accounts by executing the first-type transactions into a first-type transaction group and each of the one or more groups of transactions that affect the one or more accounts by executing the second-type transactions into a second-type transaction group;

arranging, by the network node, the first-type transaction group and the second-type transaction group in a parallel execution order so that the one or more accounts affected by each of the plurality of transactions in the first-type transaction group are not affected by the one or more accounts affected by each of the plurality of transactions in the second-type transaction group; and

executing the plurality of transactions by executing in parallel, the one or more groups of transactions.

10.- The non-transitory, computer-readable storage medium of claim 9, the operations further comprising:

prior to executing the plurality of transactions, for each second-type transaction, recording the one or more accounts affected by the pre-executing the second-type transaction for performing consensus of the one or more accounts affected by the pre-executing the second-type transaction.

11. -The non-transitory, computer-readable storage medium of claim 9, wherein the plurality of transactions are executed by the network node in a same order as the plurality of transactions are executed by any other network node of the plurality of network nodes of the blockchain network.

12. -The non-transitory, computer-readable storage medium of claim 9, wherein:

~~each~~ group of transactions comprises one or more transactions that affect a common transaction entity; and

-between each two different groups of transactions, any transaction in one group does not affect any common transaction entity with any transaction in another group.

13.-The non-transitory, computer-readable storage medium of claim 12, wherein the common transaction entity comprises a transferee, a transferor, an account of a transferee, or an account of a transferor associated with a transaction.

14.- The non-transitory, computer-readable storage medium of claim 9, wherein:

-a transaction for which all accounts affected by executing the transaction is deterministic before executing the transaction is a first-type transaction, and

-a transaction for which one or more accounts affected by executing the transaction is not deterministic before executing the transaction is a second-type transaction.

15.- The non-transitory, computer-readable storage medium of claim 9, wherein a non-smart-contract transaction is a first-type transaction and a smart contract transaction is a second-type transaction.

16.-The non-transitory, computer-readable storage medium of claim 9, wherein pre-executing the second-type transaction comprises pre-executing the second-type transaction, by the network node, when one or more processors of the network node is idle.

17.- A computer-implemented system, comprising:

one or more computers; and

one or more computer memory devices interoperably coupled with the one or more computers and having tangible, non-transitory, machine-readable media storing one or more instructions that, when executed by the one or more computers, perform one or more operations for executing a plurality of transactions in a blockchain network, wherein the blockchain network comprises a plurality of network nodes, the operations comprising:

receiving, by a network node of the blockchain network, a plurality of transactions to be executed in a blockchain network;

for each of the plurality of transactions, determining ~~whether~~that the transaction is a first-type transaction or a second-type transaction;

dividing, by the network node, the plurality of transactions into one or more groups of transactions based on one or more accounts affected by executing the first-

type transaction for each first-type transaction and one or more accounts affected by pre-executing the second-type transaction for each second-type transaction; ~~and~~

arranging, by the network node, each of the one or more groups of transactions that affect the one or more accounts by ~~executing the plurality of transactions~~ first-type transactions into a first-type transaction group and each of the one or more groups of transactions that affect the one or more accounts by executing the second-type transactions into a second-type transaction group;

arranging, by the network node, the first-type transaction group and the second-type transaction group in a parallel execution order so that the one or more accounts affected by each of the plurality of transactions in the first-type transaction group are not affected by the one or more accounts affected by each of the plurality of transactions in the second-type transaction group; and

executing the plurality of transactions by executing, in parallel, the one or more groups of transactions.

18. -The computer-implemented system of claim 17, the operations further comprising:

prior to executing the plurality of transactions, for each second-type transaction, recording the one or more accounts affected by the pre-executing the second-type transaction for performing consensus of the one or more accounts affected by the pre-executing the second-type transaction.

19. -The computer-implemented system of claim 17, wherein the plurality of transactions are executed by the network node in a same order as the plurality of transactions are executed by any other network node of the plurality of network nodes of the blockchain network.

20. -The computer-implemented system of claim 17, wherein:

-each group of transactions comprises one or more transactions that affect a common transaction entity; and

-between each two different groups of transactions, any transaction in one group does not affect any common transaction entity with any transaction in another group.