

CLAIMS

What is claimed is:

1. A blockchain-based transaction processing method, applied to a client device, wherein the method comprises:

5 determining whether transactions initiated by a user through a user account comprise a plurality of transactions that need to be executed in parallel;

if the transactions initiated by the user through the user account comprise a plurality of transactions that need to be executed in parallel, adding the same group identifier to the plurality of transactions; and

10 publishing the plurality of transactions in a blockchain, so that a node device in the blockchain executes the plurality of transactions with the same group identifier in parallel after processing the transaction published by the client device.

2. The method according to claim 1, wherein the plurality of transactions that need to be executed in parallel comprise a plurality of transactions of the same
15 transaction type.

3. The method according to claim 1, further comprising:

if the transactions initiated by the user through the user account comprise a plurality of transaction groups with each comprising a plurality of transactions that need to be executed in parallel, determining an execution order of the plurality of
20 transaction groups; and

adding grouping identifiers that indicate the execution order of the plurality of transaction groups to the plurality of transaction groups.

4. The method according to claim 1, wherein a Nonce list corresponding to the user account is maintained in the blockchain, the Nonce list comprises a plurality of
25 Nonce records, and the Nonce record comprises a group identifier and a Nonce value; and

the adding the same group identifier to the plurality of transactions comprises:

obtaining available Nonce records that comprise the same group identifier for the plurality of transactions from the Nonce list, and respectively adding the
30 obtained available Nonce records to the plurality of transactions.

5. The method according to claim 4, wherein before the obtaining available Nonce records that comprise the same group identifier for the plurality of transactions

from the Nonce list, the method further comprises:

in response to an initialization instruction for the client device, obtaining the Nonce list maintained in the blockchain, and locally maintaining the obtained Nonce list on the client device; and

5 the obtaining available Nonce records that comprise the same group identifier for the plurality of transactions from the Nonce list comprises:

obtaining the available Nonce records that comprise the same group identifier for the plurality of transactions from the Nonce list locally maintained on the client device.

10 6. The method according to claim 5, wherein the Nonce records in the Nonce list locally maintained on the client device are marked as available by default; and the method further comprises:

marking the available Nonce records as unavailable in the Nonce list after obtaining the available Nonce records for the plurality of transactions from the Nonce list locally maintained on the client device.

15 7. The method according to claim 6, further comprising:

determining whether a notification message indicating that the transaction is processed is received from the node device; and

20 if yes, monotonically increasing a Nonce value in the available Nonce record based on predetermined amplitude, and re-marking the available Nonce record as available in the Nonce list after monotonically increasing the Nonce value.

8. The method according to claim 4, wherein the publishing the plurality of transactions in a blockchain, so that a node device in the blockchain executes the plurality of transactions with the same group identifier in parallel after processing the transaction published by the client device comprises:

25 publishing the plurality of transactions in the blockchain, so that the node device in the blockchain matches the available Nonce record in the transaction published by the client device with the Nonce record in the Nonce list, and when the available Nonce record matches any target Nonce record in the Nonce list, processes the transaction, and executes the plurality of transactions with the same group identifier in processed transactions in parallel.

30 9. The method according to claim 4, wherein the client device is a multi-threaded client device, and the quantity of Nonce records in the Nonce list indicates a capability of executing transactions of the user account in parallel.

10. The method according to claim 9, wherein the Nonce record further comprises an index identifier of the Nonce record.

11. A blockchain-based transaction processing method, applied to a node device in a blockchain, wherein the method comprises:

5 receiving transactions that are initiated by a user through a user account and sent by a client device, wherein a group identifier is added to the transaction by the client device;

determining whether the transactions sent by the client device comprise a plurality of transactions with the same group identifier, wherein the same group
10 identifier is added by the client device when determining that the plurality of transactions need to be executed in parallel; and

if yes, executing the plurality of transactions in parallel after the plurality of transactions are processed.

12. The method according to claim 11, wherein the transactions sent by the client
15 device comprise a plurality of transaction groups with each comprising a plurality of transactions with the same group identifier, and group identifiers added by the client device to the plurality of transaction groups indicate an execution order of the plurality of transaction groups; and

the method further comprises:

20 if the transactions sent by the client device comprise the plurality of transaction groups with each comprising a plurality of transactions with the same group identifier, executing the plurality of transaction groups in the execution order indicated by the group identifiers of the plurality of transaction groups.

13. The method according to claim 11, wherein a Nonce list set is maintained in
25 the blockchain, the Nonce list set comprises Nonce lists corresponding to several user accounts, the Nonce list comprises a plurality of Nonce records, the Nonce record comprises a group identifier and a Nonce value, and the group identifier added to the transaction sent by the client device is comprised in an available Nonce record obtained by the client device from a Nonce list corresponding to the user account; and

30 the method further comprises:

matching the available Nonce record added to the transaction sent by the client device with a Nonce record in the Nonce list that corresponds to the user account and is maintained in the blockchain; and

processing the transaction if the available Nonce record matches any target

Nonce record in the Nonce list.

14. The method according to claim 13, further comprising:

if the available Nonce record matches the any target Nonce record in the Nonce list, monotonically increasing a Nonce value in the target Nonce record based on
5 predetermined amplitude; and

returning a notification message indicating that the transaction is processed to the client device.

15. The method according to claim 14, wherein the Nonce record further comprises an index identifier of the Nonce record.

10 16. A blockchain-based transaction processing apparatus, applied to a client device, wherein the apparatus comprises:

a first determining module, configured to determine whether transactions initiated by a user through a user account comprise a plurality of transactions that need to be executed in parallel;

15 an addition module, configured to: if the transactions initiated by the user through the user account comprise a plurality of transactions that need to be executed in parallel, add the same group identifier to the plurality of transactions; and

a publication module, configured to publish the plurality of transactions in a blockchain, so that a node device in the blockchain executes the plurality of
20 transactions with the same group identifier in parallel after processing the transaction published by the client device.

17. The apparatus according to claim 16, wherein the plurality of transactions that need to be executed in parallel comprise a plurality of transactions of the same transaction type.

25 18. The apparatus according to claim 16, wherein the addition module is further configured to:

if the transactions initiated by the user through the user account comprise a plurality of transaction groups with each comprising a plurality of transactions that need to be executed in parallel, determine an execution order of the plurality of
30 transaction groups; and

add grouping identifiers that indicate the execution order of the plurality of transaction groups to the plurality of transaction groups.

19. The apparatus according to claim 16, wherein a Nonce list corresponding to the user account is maintained in the blockchain, the Nonce list comprises a plurality

of Nonce records, and the Nonce record comprises a group identifier and a Nonce value; and

the addition module is configured to:

5 obtain available Nonce records that comprise the same group identifier for the plurality of transactions from the Nonce list, and respectively add the obtained available Nonce records to the plurality of transactions.

20. The apparatus according to claim 19, wherein the addition module is further configured to:

10 before obtaining the available Nonce records that comprise the same group identifier for the plurality of transactions from the Nonce list, in response to an initialization instruction for the client device, obtain the Nonce list maintained in the blockchain, and locally maintain the obtained Nonce list on the client device; and

15 obtain the available Nonce records that comprise the same group identifier for the plurality of transactions from the Nonce list locally maintained on the client device.

21. The apparatus according to claim 20, wherein the Nonce records in the Nonce list locally maintained on the client device are marked as available by default; and

the addition module is further configured to:

20 mark the available Nonce records as unavailable in the Nonce list after obtaining the available Nonce records for the plurality of transactions from the Nonce list locally maintained on the client device.

22. The apparatus according to claim 21, wherein the addition module is further configured to:

25 determine whether a notification message indicating that the transaction is processed is received from the node device; and

if yes, monotonically increase a Nonce value in the available Nonce record based on predetermined amplitude, and re-mark the available Nonce record as available in the Nonce list after monotonically increasing the Nonce value.

30 23. The apparatus according to claim 19, wherein the publication module is further configured to:

publish the plurality of transactions in the blockchain, so that the node device in the blockchain matches the available Nonce record in the transaction published by the client device with the Nonce record in the Nonce list, and when the available Nonce

record matches any target Nonce record in the Nonce list, processes the transaction, and executes the plurality of transactions with the same group identifier in processed transactions in parallel.

24. The apparatus according to claim 19, wherein the client device is a multi-threaded client device, and the quantity of Nonce records in the Nonce list indicates a capability of executing transactions of the user account in parallel.

25. The apparatus according to claim 24, wherein the Nonce record further comprises an index identifier of the Nonce record.

26. A blockchain-based transaction processing apparatus, applied to a node device in a blockchain, wherein the apparatus comprises:

a receiving module, configured to receive transactions that are initiated by a user through a user account and sent by a client device, wherein a group identifier is added to the transaction by the client device;

a second determining module, configured to determine whether the transactions sent by the client device comprise a plurality of transactions with the same group identifier, wherein the same group identifier is added by the client device when determining that the plurality of transactions need to be executed in parallel; and

an execution module, configured to: if yes, execute the plurality of transactions in parallel after the plurality of transactions are processed.

27. The apparatus according to claim 26, wherein the transactions sent by the client device comprise a plurality of transaction groups with each comprising a plurality of transactions with the same group identifier, and group identifiers added by the client device to the plurality of transaction groups indicate an execution order of the plurality of transaction groups; and

the execution module is further configured to:

if the transactions sent by the client device comprise the plurality of transaction groups with each comprising a plurality of transactions with the same group identifier, execute the plurality of transaction groups in the execution order indicated by the group identifiers of the plurality of transaction groups.

28. The apparatus according to claim 26, wherein a Nonce list set is maintained in the blockchain, the Nonce list set comprises Nonce lists corresponding to several user accounts, the Nonce list comprises a plurality of Nonce records, the Nonce record comprises a group identifier and a Nonce value, and the group identifier added to the transaction sent by the client device is comprised in an available Nonce record

obtained by the client device from a Nonce list corresponding to the user account; and
the execution module is further configured to:

match the available Nonce record added to the transaction sent by the client
device with a Nonce record in the Nonce list that corresponds to the user account and
5 is maintained in the blockchain; and

process the transaction if the available Nonce record matches any target Nonce
record in the Nonce list.

29. The apparatus according to claim 28, wherein the execution module is further
configured to:

10 if the available Nonce record matches the any target Nonce record in the Nonce
list, monotonically increase a Nonce value in the target Nonce record based on
predetermined amplitude; and

return a notification message indicating that the transaction is processed to the
client device.

15 30. The apparatus according to claim 29, wherein the Nonce record further
comprises an index identifier of the Nonce record.

31. An electronic device, comprising:

a processor; and

a memory, configured to store a machine-executable instruction, wherein

20 by reading and executing the machine-executable instruction that is stored in the
memory and corresponds to blockchain-based transaction processing control logic, the
processor is promoted to perform the following operations:

determining whether transactions initiated by a user through a user account
comprise a plurality of transactions that need to be executed in parallel;

25 if the transactions initiated by the user through the user account comprise a
plurality of transactions that need to be executed in parallel, adding the same group
identifier to the plurality of transactions; and

publishing the plurality of transactions in a blockchain, so that a node device in
the blockchain executes the plurality of transactions with the same group identifier in
30 parallel after processing the transaction published by ~~the~~a client device.

32. An electronic device, comprising:

a processor; and

a memory, configured to store a machine-executable instruction, wherein

by reading and executing the machine-executable instruction that is stored in the

memory and corresponds to blockchain-based transaction processing control logic, the processor is promoted to perform the following operations:

receiving transactions that are initiated by a user through a user account and sent by a client device, wherein a group identifier is added to the transaction by the client device;

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determining whether the transactions sent by the client device comprise a plurality of transactions with the same group identifier, wherein the same group identifier is added by the client device when determining that the plurality of transactions need to be executed in parallel; and

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if yes, executing the plurality of transactions in parallel after the plurality of transactions are processed.