

CLAIMS

1.A computer-implemented method performed by a computing system, the method comprising:

receiving a plurality of transaction requests, each of the plurality of transaction requests comprising content information of a corresponding transaction and authentication information of the corresponding transaction;

determining, for each of the plurality of transaction requests, whether respective authentication information of the corresponding transaction is valid; and

in response to determining that the authentication information is valid,

storing each of the plurality of transaction requests in a request stream;

obtaining storage information of a transaction request of the plurality of transaction requests in the request stream, and

storing the storage information of the transaction request in an index of an index stream and authentication information of a transaction corresponding to the transaction request in a storage element of a storage stream, the storage element corresponding to the index, the index stream being associated with the storage stream.

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

returning an index identifier of the index corresponding to the transaction request to a client device.

3.The computer-implemented method of claim 2, wherein the storage information of the transaction request comprises:

a location of the transaction request in the request stream.

4.The computer-implemented method of claim 3, further comprising:

receiving a search request of the transaction request from the client device, the search request comprising the index identifier of the index corresponding to the transaction request; and

searching the transaction request in the request stream based on the index corresponding to the index identifier.

5.The computer-implemented method of claim 3 or 4, further comprising:
retrieving content information of the transaction stored in the request stream according to the index in the index stream.

6.The computer-implemented method of any one of claims 3 to 5, wherein the storage information of the transaction request comprises an identifier of the request stream among a plurality of request streams, and

wherein the location of the transaction request in the request stream comprises:

an offset of the transaction request in the request stream, and

a size of the transaction request.

7.The computer-implemented method of any preceding claim, wherein the index stream comprises a plurality of indexes, each of the plurality of indexes comprising storage information of a corresponding one of the plurality of transaction requests in the request stream,

wherein the storage stream comprises a plurality of storage elements, each of the plurality of storage elements comprising authentication information of the corresponding one of the plurality of transaction requests in the request stream, and

wherein an order of the plurality of storage elements in the storage stream is same as an order of the plurality of indexes in the index stream.

8.The computer-implemented method of claim 7, wherein the order of the plurality of storage elements in the storage stream is different from an order of the corresponding ones of the plurality of transaction requests in the request stream.

9.The computer-implemented method of any preceding claim, wherein the storage element corresponding to the index comprises the storage element having a one-to-one mapping to the index and the storage element and the index corresponding to the same transaction request.

10. The computer-implemented method of claim 1, further comprising:

selecting the index stream from a plurality of index streams and the storage stream from a plurality of storage streams,

wherein each index stream of the plurality of index stream is associated with a different corresponding storage stream of the plurality of storage streams.

11. The computer-implemented method of claim 10, wherein an index identifier of the index comprises:

an identifier of the index stream among the plurality of index streams and

an identifier of the index in the index stream.

12. The computer-implemented method of any preceding claim, further comprising:

generating a block in a blockchain, the block comprising a series of sequential storage elements in the storage stream, the series of sequential storage elements corresponding to a second plurality of transaction requests, the series of sequential storage elements corresponding to a series of sequential indexes in the index stream.

13. The computer-implemented method of claim 12, wherein the block does not include content information of transactions corresponding to the second plurality of transaction requests.

14. The computer-implemented method of any preceding claim, wherein determining, for each of the plurality of transaction requests, whether the respective authentication information of the corresponding transaction is valid comprises:

calculating a public key based on the respective authentication information, wherein the public key corresponds to a private key used for generation of a client signature of the corresponding transaction.

15. The computer-implemented method of claim 14, wherein the client signature of the transaction includes:

a signature signed on all or part of the corresponding transaction, or

a signature signed on a hash of all or part of the transaction.

16.A system for managing trust points in a ledger system, comprising:

one or more processors; and

one or more computer-readable memories coupled to the one or more processors and having instructions stored thereon that are executable by the one or more processors to perform the method of any one of claims 1 to 15.

17.An apparatus for managing trust points in a ledger system, the apparatus comprising a plurality of modules for performing the method of any one of claims 1 to 15.