CLAIMS

1. A computer-implemented method for processing blockchain-based transactions, comprising:

receiving a target transaction initiated by a member node device in a blockchain, wherein the target transaction comprises a reference time parameter, wherein the reference time parameter is a reference block height value generated when the target transaction is created within a transaction validity period, wherein the transaction validity period corresponds to a numerical interval between a differential value and a block height value of a candidate block in the blockchain, wherein the differential value is a difference between the block height value of the candidate block in the blockchain and a block height threshold, and wherein the reference time parameter is used to determine whether the target transaction is a valid transaction within the transaction validity period;

comparing the reference block height value with each of the block height value of the candidate block in the blockchain and the differential value to determine whether the reference block height value is greater than the differential value and less than the block height value of the candidate block in the blockchain;

in response to determining that the reference block height value is greater than the differential value and less than the block height value of the candidate block in the blockchain, determining, based on the reference time parameter, whether that the target transaction is a valid transaction within the transaction validity period; and

in response to determining that the target transaction is the valid transaction within the transaction validity period, recording the target transaction to a generated candidate block.

2. The computer-implemented method of claim 1, wherein the target transaction comprises a unique identifier of the target transaction, wherein recording the target transaction to the candidate block in response to determining that the target transaction is the valid transaction within the transaction validity period comprises:

in response to determining that the target transaction is the valid transaction within the transaction validity period, querying whether a transaction idempotent record corresponding to the unique identifier of the target transaction is stored in a predetermined transaction idempotent table, wherein the predetermined transaction idempotent table is used to store a

transaction idempotent record corresponding to the valid transaction within the transaction validity period; and

in response to determining that the transaction idempotent record corresponding to the unique identifier of the target transaction is not stored in the predetermined transaction idempotent table, recording the target transaction to the candidate block.

3. The computer-implemented method of claim 1, wherein the reference time parameter comprises a physical clock or a logical clock.

4. A non-transitory, computer-readable medium storing one or more instructions executable by a computer system to perform operations comprising:

receiving a target transaction initiated by a member node device in a blockchain, wherein the target transaction comprises a reference time parameter, wherein the reference time parameter is a reference block height value generated when the target transaction is created within a transaction validity period, wherein the transaction validity period corresponds to a numerical interval between a differential value and a block height value of a candidate block in the blockchain, wherein the differential value is a difference between the block height value of the candidate block in the blockchain and a block height threshold, and wherein the reference time parameter is used to determine whether the target transaction is a valid transaction within a transaction validity period;

comparing the reference block height value with each of the block height value of the candidate block in the blockchain and the differential value to determine whether the reference block height value is greater than the differential value and less than the block height value of the candidate block in the blockchain;

in response to determining that the reference block height value is greater than the differential value and less than the block height value of the candidate block in the blockchain, determining, based on the reference time parameter, whether that the target transaction is a valid transaction within the transaction validity period; and

in response to determining that the target transaction is the valid transaction within the transaction validity period, recording the target transaction to the candidate block.

5. The non-transitory, computer-readable medium of claim 4, wherein the target transaction comprises a unique identifier of the target transaction, wherein recording the target transaction

to the candidate block in response to determining that the target transaction is the valid transaction within the transaction validity period comprises:

in response to determining that the target transaction is the valid transaction within the transaction validity period, querying whether a transaction idempotent record corresponding to the unique identifier of the target transaction is stored in a predetermined transaction idempotent table, wherein the predetermined transaction idempotent table is used to store a transaction idempotent record corresponding to the valid transaction within the transaction validity period; and

in response to determining that the transaction idempotent record corresponding to the unique identifier of the target transaction is not stored in the predetermined transaction idempotent table, recording the target transaction to the candidate block.

6. The non-transitory, computer-readable medium of claim 4, wherein the reference time parameter comprises a physical clock or a logical clock.

7. 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 comprising:

receiving a target transaction initiated by a member node device in a blockchain, wherein the target transaction comprises a reference time parameter, wherein the reference time parameter is a reference block height value generated when the target transaction is created within a transaction validity period, wherein the transaction validity period corresponds to a numerical interval between a differential value and a block height value of a candidate block in the blockchain, wherein the differential value is a difference between the block height value of the candidate block in the blockchain and a block height threshold, and wherein the reference time parameter is used to determine whether the target transaction is a valid transaction within a transaction validity period;

comparing the reference block height value with each of the block height value of the candidate block in the blockchain and the differential value to determine whether the reference block height value is greater than the differential value and less than the block height

value of the candidate block in the blockchain;

in response to determining that the reference block height value is greater than the differential value and less than the block height value of the candidate block in the blockchain, determining, based on the reference time parameter, whether that the target transaction is a valid transaction within the transaction validity period; and

in response to determining that the target transaction is the valid transaction within the transaction validity period, recording the target transaction to the candidate block.

8. The computer-implemented system of claim 7, wherein the target transaction further comprises a unique identifier of the target transaction, wherein recording the target transaction to the candidate block in response to determining that the target transaction is the valid transaction within the transaction validity period comprises:

in response to determining that the target transaction is the valid transaction within the transaction validity period, querying whether a transaction idempotent record corresponding to the unique identifier of the target transaction is stored in a predetermined transaction idempotent table, wherein the predetermined transaction idempotent table is used to store a transaction idempotent record corresponding to the valid transaction within the transaction validity period; and

in response to determining that the transaction idempotent record corresponding to the unique identifier of the target transaction is not stored in the predetermined transaction idempotent table, recording the target transaction to the candidate block.

9. The computer-implemented system of claim 7, wherein the reference time parameter comprises a physical clock or a logical clock.