

CLAIMS

1. A computer-implemented method for indexing blockchain data for storage, the method comprising:

generating a plurality of encoded blocks based on performing error correction coding (ECC) on a plurality of blocks of a blockchain;

for each encoded block of the plurality of encoded blocks:

dividing the encoded block into a plurality of datasets based on a data storage scheme associated with the plurality of blocks, wherein the data storage scheme provides assignments of the plurality of datasets to a plurality of blockchain nodes;

storing at least one of the plurality of datasets based on the assignments provided in the data storage scheme; and

providing an index that indexes each of the plurality of datasets to each of the plurality of the blockchain nodes at which a respective dataset is stored.

2. The method of claim 1, wherein the index provides a correspondence between a dataset identifier (ID) of a dataset and a node ID of a blockchain node at which the dataset is stored.

3. The method of any previous claim, wherein the index provides a plurality of block IDs corresponding to the plurality of blocks that the data storage scheme is associated with.

4. The method of any previous claim, further comprising:

hashing a remainder of the plurality of datasets other than the at least one of the plurality of datasets to generate hash values corresponding to the remainder of the plurality of datasets;

storing the hash values; and

deleting the one or more blocks.

5. The method of claim 4, further comprising:

receiving a request for blockchain data from a computing device;
determining that the blockchain data is included in the one or more blocks; and
sending, based on the index, hash values to a remainder of the blockchain nodes of the blockchain network to retrieve the remainder of the plurality of datasets.

6. The method of claim 5, further comprising:
receiving at least one dataset from each of the remainder of the blockchain nodes;
hashing the at least one dataset to generate at least one hash value corresponding to each of the remainder of the blockchain nodes; and
determining whether the at least one hash value is stored in the blockchain node.

7. The method of claim 6, further comprising:
in response to determining that the at least one hash value is not stored in the blockchain node, determining a blockchain node that the at least one dataset corresponding to the at least one hash value is received from; and
reporting the blockchain node as a faulty node.

8. The method of claim 6, further comprising:
in response to determining that the at least one hash value corresponding to each of the remainder of the blockchain nodes is stored in the blockchain node, decoding the one or more blocks based on the at least one of the plurality of datasets stored in the blockchain node and the at least one dataset received from each of the remainder of the blockchain nodes.

9. The method of any previous claim, wherein the one or more blocks are historical blocks that have been created for a predetermined amount of time.

10. The method of any previous claim, wherein the ECC is performed when utilization rate of computational resource of the blockchain node is less than or equal to a predetermined value or usage of storage space of the blockchain node is greater than or equal to a predetermined percentage.

11. The method of any previous claim, wherein the ECC is erasure coding performed by adding redundant bits to the plurality of blocks.
12. The method of any previous claim, wherein the plurality of blocks are infrequently accessed blocks that are appended to the blockchain for a predetermined amount of time.
13. A system communicating shared blockchain data, 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 of claims 1 to 12.
14. An apparatus for communicating shared blockchain data, the apparatus comprising a plurality of modules for performing the method of any of claims 1 to 12.