

CLAIMS

1. A method for determining a database state, the method comprising:
determining a state transition operation performed on a data operation object of a target database; and
determining, based on the state transition operation and a pre-state value that is of the target database and that exists before the state transition operation is performed, a state value that is of the target database and that exists after the state transition operation is performed, wherein the state value is used to represent a state of the target database.
2. The method according to claim 1, wherein the data operation object comprises:
an instance whose class is loaded in a memory of the target database and has related member variables and member functions.
3. The method according to claim 2, wherein determining the state value that is of the target database and that exists after the state transition operation is performed comprises:
determining, based on the data operation object and the state value that is of the target database and that exists before the state transition operation is performed, the state value that is of the target database and that exists after the state transition operation is performed.
4. The method according to claim 3, wherein the target database is a blockchain database.
5. The method according to claim 4, wherein determining the state value that is of the target database and that exists after the state transition operation is performed comprises:
determining a hash value of the data operation object; and
determining, based on the hash value of the data operation object and the state value that is of the target database and that exists before the state transition operation is performed, the state value that is of the target database and that exists after the state transition operation is performed.

6. The method according to claim 5, wherein determining the hash value of the data operation object comprises:

serializing the data operation object to obtain serialized data; and

determining a hash value of the serialized data, and using the hash value of the serialized data as the hash value of the data operation object.

7. The method according to claim 6, wherein serializing the data operation object to obtain the serialized data comprises:

determining if a sequence of performing the state transition operation by all data operation objects is fixed; and

if the sequence of performing the state transition operation by all data operation objects is fixed, splicing, based on the sequence of performing the state transition operation, the serialized data corresponding to all the data operation objects, to obtain spliced serialized data.

8. The method according to claim 6, wherein serializing the data operation object to obtain the serialized data comprises:

determining if a sequence of performing the state transition operation by all data operation objects is fixed; and

if the sequence of performing the state transition operation by all data operation objects is not fixed, splicing, based on a first predetermined sequence, the serialized data corresponding to all the data operation objects, to obtain spliced serialized data.

9. The method according to claim 7, wherein obtaining the spliced serialized data comprises:

placing a predetermined separator between at least two pieces of the serialized data; and

splicing all pieces of the serialized data obtained after the predetermined separator is placed, to obtain the spliced serialized data.

10. The method according to claim 5, wherein determining the state value that is of the target database and that exists after the state transition operation is performed comprises:

splicing, based on a second predetermined sequence, the hash value of the data operation

object and the state value that is of the target database and that exists before the state transition operation is performed, to obtain spliced data; and

determining a hash value of the spliced data, and using the hash value of the spliced data as the state value that is of the target database and that exists after the state transition operation is performed.

11. The method according to any one of claims 1 to 7, wherein the target database is a database corresponding to any node in a blockchain.

12. The method according to claim 1, wherein the state value is used to uniquely represent a characteristic of data stored in the target database.

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

determining whether the pre-state value of the target database to be checked is same as the state value ; and

in response to determining that the pre-state value is the same as the state value of the target database, determining that the pre-state and the state of the target database are consistent.

14. A device for determining a database state, the device comprising a plurality of modules configured to perform the method of any one of claims 1 to 13.