CLAIMS

What is claimed is:

[Claim 1] A data reading method, comprising:

receiving a data reading transaction request;

acquiring a snapshot timestamp based on the data reading transaction request;

sending, in a case that the snapshot timestamp is less than a maximum commit timestamp for a write transaction of first databases, the data reading transaction request carrying the snapshot timestamp to the first databases for data reading; and

in a case that the snapshot timestamp is greater than the maximum commit timestamp for the write transaction of the first databases:

acquiring a log sequence number (LSN) of a second database;

sending the data reading transaction request carrying the LSN of the second database to a first database of the first databases and acquiring an LSN of the first database; and

reading data in the first database based on the data reading transaction request and the LSN of the first database in a case that the LSN of the first database matches the LSN of the second database.

[Claim 2] The data reading method according to claim 1, wherein that the snapshot timestamp is less than a maximum commit timestamp for a write transaction of first databases comprises:

the snapshot timestamp being less than a maximum commit timestamp for a write transaction of a second database to the first databases, wherein each of the first databases is a backup database of the second database.

[Claim 3] The data reading method according to claim 1, wherein after the acquiring a snapshot timestamp based on the data reading transaction request, the method further comprises:

reacquiring, in the case that the snapshot timestamp is greater than the maximum commit timestamp for the write transaction of the first databases, a maximum commit timestamp for the write transaction of the first databases after waiting for a preset duration.

[Claim 4] The data reading method according to claim 3, wherein

said acquiring a log sequence number (LSN) of a second database in a case that the snapshot timestamp is less than the maximum commit timestamp for the write transaction of the first databases;

said sending the data reading transaction request carrying the LSN of the second database to a first database of the first databases, and acquiring an LSN of the first database; and

said reading data in the first database based on the data reading transaction request and the LSN of the first database in a case that it is determined that the LSN of the first database matches the LSN of the second database, are performed after the reacquiring a maximum commit timestamp for the write transaction of the first databases after waiting for a preset duration.

[Claim 5] The data reading method according to claim 1 or 4, wherein the acquiring an LSN of a second database comprises:

acquiring an LSN of the last complete database backup of the second database; and

the acquiring an LSN of the first database correspondingly comprises:

acquiring an LSN of the last complete database backup of the first database.

[Claim 6] The data reading method according to claim 1 or 4, wherein after the receiving a data reading transaction request, the method further comprises:

determining at least one corresponding second database based on the data reading transaction request.

[Claim 7] The data reading method according to claim 6, wherein the acquiring an LSN of a second database comprises:

acquiring an LSN of each second database; and

the sending the data reading transaction request carrying the LSN of the second database to the first database correspondingly comprises:

sending the data reading transaction request carrying the LSN of the second database to the first database corresponding to each second database.

[Claim 8] The data reading method according to any one of claims 1 to 7, wherein the data reading method is applicable to a distributed database.

[Claim 9] A data reading apparatus, comprising:

a request receiving module, configured to receive a data reading transaction request;

a timestamp acquisition module, configured to acquire a snapshot timestamp based on the data reading transaction request;

a data reading module, configured to:

send, in a case that the snapshot timestamp is less than a maximum commit timestamp for a write transaction of first databases, the data reading transaction request carrying the snapshot timestamp to the first databases for data reading; and

in a case that the snapshot timestamp is greater than the maximum commit timestamp for the write transaction of the first databases:

acquire a log sequence number (LSN) of a second database;

send the data reading transaction request carrying the LSN of the second database to a first database of the first databases and acquire an LSN of the first database; and

read data in the first database based on the data reading transaction request and the LSN of the first database in a case that the LSN of the first database matches the LSN of the second database.

[Claim 10] A computing device, comprising:

a memory and a processor, wherein

the memory is configured to store computer-executable instructions, the processor is configured to execute the computer-executable instructions, and the processor, when executing the computer-executable instructions, implements the steps of the data reading method according to any one of claims 1 to 8.

[Claim 11] A computer-readable storage medium, storing computer instructions, the instructions, when executed by a processor, implementing the steps of the data reading method according to any one of claims 1 to 8.