What is claimed is:

1. A method executed by a storage device including a plurality of disks, the method comprising:

dividing the plurality of disks into a plurality of journal areas and a plurality of data areas, respectively;

when a write command for target disks among the plurality of disks is received, performing a first write operation that writes target data from a memory of an external host device into journal areas of the target disks, the target disks being included in a same array; and

after the first write operation is completed, performing a second write operation that writes the target data from the memory of the external host device into data areas of the target disks.

2. The method of claim 1, wherein:

performing the first write operation includes:

storing first data included in the target data into a first data block included in a first disk among the target disks, the first data block having a first physical block address; and

mapping a first logical block address indicating a journal area of the first disk with the first physical block address, and

performing the second write operation includes:

storing the first data into a second data block included in the first disk, the second data block having a second physical block address; and

mapping a second logical block address indicating a data area of the first disk with the second physical block address.

3. The method of any one of claims 1 to 2, further comprising after the second write operation is completed, releasing the target data stored in the journal areas of the target disks.

4. The method of any one of claims 1 to 3, wherein:

each of the first write operation and the second write operation is performed for the target disks at one time by units of a stripe and by units of a transaction including two or more stripes, and

each of the plurality of journal areas includes:

a super block configured to store initial transaction information associated with an initial transaction indicating a start point of a replay write operation, and size information of each of the plurality of journal areas;

a meta block configured to store identification (ID) information of a current transaction, final location block address information of the current transaction, attribute information of the current transaction, and checksum information for checking validity of the current transaction; and

a data block configured to store data of the current transaction.

5. The method of claim 4, wherein at least a part of the information that are stored in the super block and the meta block are shared by the target disks included in the same array.

6. The method of claim 4 or claim 5, wherein each of the plurality of journal areas further includes a commit block configured to ensure that write operations for the current transaction are successfully completed.

7. The method of any one of claims 4 to 6, wherein only a modified data block among data blocks in one stripe is stored in the plurality of journal areas.

8. The method of claim 1, further comprising when the storage device is rebooted after a power failure occurs on the storage device, performing a replay write operation on the data areas of the target disks based on the journal areas of the target disks.

9. The method of claim 8, wherein performing the replay write operation includes:

determining a start point of the replay write operation by reading super blocks from the journal areas of the target disks;

checking validity by reading meta blocks and data blocks associated with the start point of the replay write operation from the journal areas of the target disks; and

when the meta blocks and the data blocks are valid, writing data included in the data blocks into the data areas of the target disks.

10. The method of claim 9, wherein an operation of writing the data included in the data blocks into the data areas of the target disks is internally performed by the storage device based on a move command or a share command.

11. The method of claim 8, wherein performing the replay write operation includes:

determining a start point of the replay write operation by reading super blocks from the journal areas of the target disks;

checking validity by reading meta blocks and commit blocks associated with the start point of the replay write operation from the journal areas of the target disks; and

when the meta blocks and the commit blocks are valid, writing data included in data blocks into the data areas of the target disks, the data blocks being included in the journal areas of the target disks and corresponding to the meta blocks and the commit blocks.

12. The method of claim 1, further comprising when the storage device is rebooted after a power failure occurs on the storage device and a disk failure occurs on a first disk among the target disks, performing a data recovery operation on the first disk.

13. The method of claim 12, wherein performing the data recovery operation includes:

replacing the first disk with a spare disk;

performing a first recovery operation to restore a journal area of the spare disk corresponding to a journal area of the first disk based on journal areas of disks among target disks other than the first disk; and

performing a second recovery operation to restore a data area of the spare disk corresponding to a data area of the first disk based on data areas of the disks among the target disks other than the first disk.

14. The method of claim 13, wherein the first recovery operation and the second recovery operation are simultaneously performed.

15. The method of claim 13, wherein the second recovery operation is performed after the first recovery operation is completed.

16. The method of claim 12, wherein performing the data recovery operation includes:

replacing the first disk with a spare disk;

performing a first recovery operation to restore a journal area of the spare disk corresponding to a journal area of the first disk based on journal areas and data areas of disks among target disks other than the first disk; and

performing a second recovery operation to restore a data area of the spare disk corresponding to a data area of the first disk based on the data areas of the disks among the target disks other than the first disk.

17. A storage device comprising:

a plurality of disks configured to be divided into a plurality of journal areas and a plurality of data areas, respectively, wherein:

when a write command for target disks among the plurality of disks is received, the storage device is configured to perform a first write operation that writes target data from a memory of an external host device into journal areas of the target disks, the target disks are included in a same array, and

after the first write operation is completed, the storage device is configured to perform a second write operation that writes the target data from the memory of the external host device into data areas of the target disks.

18. A storage system comprising:

a host device; and

a storage device controlled by the host device and including a plurality of disks configured to be divided into a plurality of journal areas and a plurality of data areas, respectively, wherein:

when a write command and target data to be written are provided from the host device, the storage device is configured to perform a first write operation that writes the target data from a memory of the host device into journal areas of target disks among the plurality of disks and a second write operation that writes the target data from the memory of the host device into data areas of the target disks after the first write operation is completed, and

the target disks are included in a same array.