

What is claimed is:

1. A hard disk drive comprising:

5 a discrete track medium (DTM) magnetic disk which has a plurality of tracks, each track being divided into a plurality of sectors;

a write/read head which writes sector data onto one side of said DTM magnetic disk, and which reads sector data from the one side of said DTM magnetic disk;

10 a sector data buffer memory unit;

a recording/reproducing unit which provides sector data from said sector data buffer memory unit, to said write/read head, and which provides sector data from said write/read head, to said sector data buffer memory unit; and

15 a seek control unit which controls said write/read head in terms of position, in accordance with a sector number of a sector where a piece of sector data is to be written or read and with a sector number of a sector where said write/read head is located, wherein

20 the piece of sector data to be written or read is pre-associated with the sector number of the sector where the piece of sector data is to be written or read,

said seek control unit corrects first-order run-out relative to a revolution axis of said DTM magnetic disk and
25 permits second-and-higher order run-out relative to the revolution axis of said DTM magnetic disk, and moves said write/read head gradually in a radial direction of said DTM magnetic disk at a shift pitch smaller than the track pitch for each revolution in accordance with sector numbers of sectors
30 where pieces of sector data are to be written or read, within a range of tracks containing the sector numbers of the sectors where the pieces of sector data are to be written or read, and

said recording/reproducing unit writes or reads, in accordance with a present sector number of a sector where said
35 write/read head is located, a corresponding piece of sector data onto or from said DTM magnetic disk, independently of the order of the sector numbers.

2. The hard disk drive according to claim 1, wherein
independently of the order of the pieces of sector data to
be written, when said write/read head moves to a sector at a
present position on said DTM magnetic disk corresponding to any
5 one of the pieces of sector data to be written, said
recording/reproducing unit provides to said write/read head the
one piece of sector data from said sector data buffer memory
unit, to thereby write the one piece of sector data into the
10 corresponding sector on said DTM magnetic disk, and wherein

independently of the order of the pieces of sector data to
be read, when said write/read head moves to any one of the
sectors at a present position to be read on said DTM magnetic
disk, said recording/reproducing unit provides one piece of
15 sector data from the one sector read by said write/read head,
to said sector data buffer memory unit, and thereby reads the
one piece of sector data from said DTM magnetic disk.

3. The hard disk drive according to claim 1, wherein the
20 movement of said write/read head on said DTM magnetic disk
controlled by said seek control unit is a stepping movement
which forms closed-loop trajectories or a continuous movement
which forms a spiral trajectory.

25 4. The hard disk drive according to claim 2, wherein the
movement of said write/read head on said DTM magnetic disk
controlled by said seek control unit is a stepping movement
which forms closed-loop trajectories or a continuous movement
which forms a spiral trajectory.

30 5. The hard disk drive according to claim 1, wherein the
movement in a radial direction of said DTM magnetic disk of
said write/read head controlled by said seek control unit
represents a radial distance of $(T_p - W_t)/2$ per one revolution
35 of said DTM magnetic disk, for a radial distance T_p between
centers of adjacent ones of the tracks and a radial width W_t of
a magnetic recording film of each track.

6. The hard disk drive according to claim 2, wherein the movement in a radial direction of said DTM magnetic disk of said write/read head controlled by said seek control unit
5 represents a radial distance of $(T_p - W_t)/2$ per one revolution of said DTM magnetic disk, for a radial distance T_p between centers of adjacent ones of the tracks and a radial width W_t of a magnetic recording film of each track.

10 7. The hard disk drive according to claim 4, wherein the movement in a radial direction of said DTM magnetic disk of said write/read head controlled by said seek control unit represents a radial distance of $(T_p - W_t)/2$ per one revolution
15 of said DTM magnetic disk, for a radial distance T_p between centers of adjacent ones of the tracks and a radial width W_t of a magnetic recording film of each track.

8. The hard disk drive according to claim 1, wherein after said write/read head has moved gradually in a radial
20 direction of said DTM magnetic disk in the range of tracks, if there is a remaining one of the pieces of sector data to be written or read that is not yet written onto or read from said DTM magnetic disk, said seek control unit moves said write/read
25 head gradually in a radial direction of said DTM magnetic disk in a range of tracks which contains a corresponding sector at a sector number thereof where the remaining piece of data is to be written or read.

9. The hard disk drive according to claim 2, wherein
30 after said write/read head has moved gradually in a radial direction of said DTM magnetic disk in the range of tracks, if there is a remaining one of the pieces of sector data to be written or read that is not yet written onto or read from said
DTM magnetic disk, said seek control unit moves said write/read
35 head gradually in a radial direction of said DTM magnetic disk in a range of tracks which contains a corresponding sector at a sector number thereof where the remaining piece of data is to

be written or read.

10. The hard disk drive according to claim 3, wherein
after said write/read head has moved gradually in a radial
5 direction of said DTM magnetic disk in the range of tracks, if
there is a remaining one of the pieces of sector data to be
written or read that is not yet written onto or read from said
DTM magnetic disk, said seek control unit moves said write/read
head gradually in a radial direction of said DTM magnetic disk
10 in a range of tracks which contains a corresponding sector at a
sector number thereof where the remaining piece of data is to
be written or read.

11. The hard disk drive according to claim 5, wherein
15 after said write/read head has moved gradually in a radial
direction of said DTM magnetic disk in the range of tracks, if
there is a remaining one of the pieces of sector data to be
written or read that is not yet written onto or read from said
DTM magnetic disk, said seek control unit moves said write/read
20 head gradually in a radial direction of said DTM magnetic disk
in a range of tracks which contains a corresponding sector at a
sector number thereof where the remaining piece of data is to
be written or read.

25 12. The hard disk drive according to claim 1, wherein a
piece of record data which has been written into a
corresponding sector on said DTM magnetic disk contains a
sector number of the corresponding sector.

30 13. The hard disk drive according to claim 2, wherein a
piece of record data which has been written into a
corresponding sector on said DTM magnetic disk contains a
sector number of the corresponding sector.

35 14. The hard disk drive according to claim 3, wherein a
piece of record data which has been written into a
corresponding sector on said DTM magnetic disk contains a

sector number of the corresponding sector.

15. The hard disk drive according to claim 5, wherein a piece of record data which has been written into a corresponding sector on said DTM magnetic disk contains a sector number of the corresponding sector.

16. A hard disk drive comprising:

at least one DTM magnetic disk, each of which has a plurality of tracks on each of two sides of that DTM magnetic disk, each track being divided into a plurality of sectors;

a first write/read head which writes sector data onto a first one of sides of said at least one DTM magnetic disk, and which reads sector data from the first side of said at least one DTM magnetic disk;

a second write/read head ganged with said first write/read head, which second write/read head writes sector data onto a second one of the sides of said at least one DTM magnetic disk, and which second write/read head reads sector data from the second side of said at least one DTM magnetic disk;

first and second sector data buffer memory units;

a first recording/reproducing unit which provides, to said first write/read head, sector data from one of said first and second sector data buffer memory units, and which provides, to said one of said first and second sector data buffer memory units, sector data from said first write/read head;

a second recording/reproducing unit which provides, to said second write/read head, sector data from the other of said first and second sector data buffer memory units, and which provides, to the other of said first and second sector data buffer memory units, sector data from said second write/read head; and

a seek control unit which controls one of said first and second write/read heads in terms of position, in accordance with a sector number of a sector where a piece of sector data is to be written or read and with a sector number where the one of said first and second write/read heads is located, wherein

a first sequence of pieces of sector data to be written or read is pre-associated with sector numbers of sectors where the first sequence of data is to be written or read, and

5 a second sequence of pieces of sector data to be written or read is pre-associated with sector numbers of sectors where the second sequence of data is to be written or read, wherein

10 said seek control unit corrects first-order run-out relative to a revolution axis of the first side of said at least one DTM magnetic disk and permits second-and-higher order run-out relative to the revolution axis of the first side of said at least one DTM magnetic disk, and moves said first write/read head gradually in a radial direction of said DTM magnetic disk at a shift pitch smaller than the track pitch for one revolution in accordance with sector numbers of a first
15 series of sectors where the first series of sectors are to be written or read, within a range of tracks containing the sector numbers of the first series of sectors where the first sequence of pieces of sector data is written or read, and

20 said recording/reproducing unit writes or reads, in accordance with a present sector number of a sector on the first side of said at least one DTM magnetic disk where said first write/read head is located, a corresponding piece of sector data onto or from the first side independently of the order of the sector numbers, and simultaneously writes or reads, in
25 accordance with a present sector number of a sector on the second side of said at least one DTM magnetic disk where said second write/read head is located, a corresponding piece of sector data onto or from the second side, independently of the order of the sector numbers.

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17. An information processing device comprising a hard disk drive, which comprises:

a DTM magnetic disk which has a plurality of tracks, each track being divided into a plurality of sectors;

35 a write/read head which writes sector data onto one side of said DTM magnetic disk, and which reads sector data from the one side of said DTM magnetic disk;

a sector data buffer memory unit;

a recording/reproducing unit which provides sector data from said sector data buffer memory unit, to said write/read head, and which provides sector data from said write/read head,

5 to said sector data buffer memory unit; and

a seek control unit which controls said write/read head in terms of position, in accordance with a sector number of a sector where a piece of sector data is to be written or read and with a sector number of a sector where said write/read head

10 is located, wherein

the piece of sector data to be written or read is pre-associated with the sector number of the sector where the piece of sector data is to be written or read,

said seek control unit corrects first-order run-out
15 relative to a revolution axis of said DTM magnetic disk and permits second-and-higher order run-out relative to the revolution axis of said DTM magnetic disk, and moves said write/read head gradually in a radial direction of said DTM magnetic disk at a shift pitch smaller than the track pitch for
20 each revolution in accordance with sector numbers of sectors where pieces of sector data are to be written or read, within a range of tracks containing the sector numbers of the sectors where the pieces of sector data are to be written or read, and

said recording/reproducing unit writes or reads, in
25 accordance with a present sector number of a sector where said write/read head is located, a corresponding piece of sector data onto or from said DTM magnetic disk, independently of the order of the sector numbers.