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(54) Title: PERSONAL COMPUTER SYSTEM

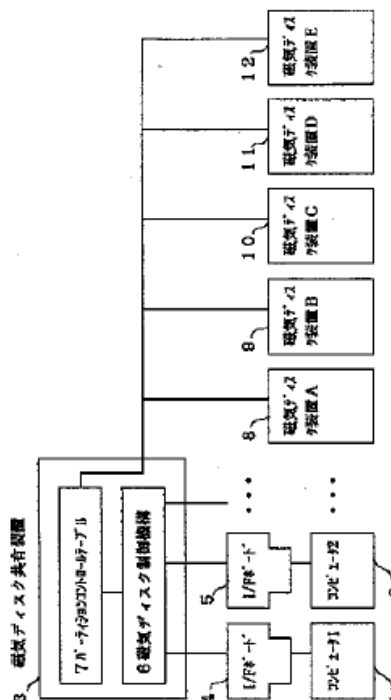
(57) Abstract

Objective

To offer a personal computer system that allows sharing of multiple magnetic disk devices by multiple personal computers.

Structure

It has a magnetic disk sharing device 3 equipped with a magnetic disk controlling mechanism 6 that controls multiple magnetic disk devices 8-12 by considering them as 1 virtual magnetic disk device with all of their memory regions as a memory region, and a partition control table 7 that manages and specifies the access right of the respective personal computers 1, 2, ... for each partition in the memory region of the virtual magnetic disk device, and each computer accesses the virtual magnetic disk device according to its respective access right.



[Figure is translated at the end of the document.]

### Claim

1. A personal computer system, which is a personal computer system that includes multiple personal computers and multiple magnetic disk devices, characterized in that it has a magnetic disk sharing device equipped with a magnetic disk device controlling means that controls the aforementioned multiple magnetic disk devices by considering them as 1 virtual magnetic disk device with all of the memory regions of said multiple magnetic disk devices as its memory region, and a security management means that manages the access right of the respective aforementioned multiple personal computers in the memory region in said virtual magnetic disk device,  
and the aforementioned multiple personal computers access the aforementioned virtual magnetic disk device according to the aforementioned respective access right.

### Detailed explanation of the invention

[0001]

#### Industrial application field

This invention pertains to a personal computer system that includes multiple personal computers and multiple magnetic disk devices.

[0002]

#### Prior art

A magnetic disk controlling device in a conventional personal computer system can place in correspondence only 1 physical magnetic disk device with 1 logical magnetic disk device, and this is also true with regard to magnetic disk management of the host software (operation system).

[0003]

Magnetic disk devices also cannot be shared by multiple personal computers.

[0004]

#### Problems to be solved by the invention

The conventional magnetic disk controlling device described above has a specification where only 1 physical magnetic disk device can be placed in correspondence with 1 logical magnetic disk device, and there is a disadvantage that an amount of data that exceeds the capacity of 1 magnetic disk cannot be handled. There also is a disadvantage that a magnetic disk device cannot be shared by multiple personal computers.

[0005]

The objective of this invention is to offer a microcomputer system that has a magnetic disk controlling device that allows sharing of multiple magnetic disk devices by multiple microcomputers by handling data of a size that exceeds the capacity of one magnetic disk device by accessing all the memory regions of multiple magnetic disk devices as if the multiple memory regions were the memory region in 1 magnetic disk device from individual personal computers and managing the access right of individual personal computers.

[0006]

Means to solve the problems

The personal computer system in this invention has a magnetic disk sharing device equipped with a magnetic disk device controlling means that controls multiple magnetic disk devices by considering them as 1 virtual magnetic disk device with all of the memory regions of these multiple magnetic disk devices as its memory region, and a security management means that manages the access right of the respective multiple personal computers in the memory region in that virtual magnetic disk device, and multiple personal computers access the virtual magnetic disk device according to the respective access right.

[0007]

Operation

This allows individual personal computers to access all of the memory regions of multiple magnetic disk devices as if the memory regions were a memory region of 1 magnetic disk device, and the respective access right of the multiple personal computers for that memory region in 1 virtual magnetic disk device is specified and managed for each microcomputer.

[0008]

Application examples

Next, an application example of this invention will be explained while referring to figures.

[0009]

Figure 1 is a block diagram that shows the structure of an application example of a personal computer system that includes the magnetic disk sharing device in this invention.

[0010]

In Figure 1, personal computers main bodies 1, 2, ... are connected to a magnetic disk sharing device 3 through interface boards 4, 5, ... . The magnetic disk sharing device 3 is also connected to magnetic disk devices 8-12. The magnetic disk sharing device 3 comprises a magnetic disk controlling mechanism 6 and a partition control table 7.

[0011]

An access request from the personal computers 1, 2, ... to the magnetic disk devices 8-12 is notified to the magnetic disk controlling mechanism 6 through the magnetic disk interface boards 4, 5, ... , and it is converted to an access request to a virtual magnetic disk device that extends over the magnetic disk devices 8-12 in the magnetic disk controlling mechanism 6. Through the process above, the magnetic disk devices 8-12 can be handled from the personal computer main body as 1 virtual magnetic disk device with all of the memory regions of the magnetic disk devices 8-12 as its own [memory] region.

[0012]

The security management divides the memory region of the virtual magnetic disk device described above, sets up the access right for each personal computer in each divided part (will be referred to as partition), and prevents illegal access. This is implemented by preparing a partition control table 7. The access right to a partition includes R (read), W (write), C (create), D (delete), and X (execute).

[0013]

Figure 2 shows an example of a partition control table. A personal computer 1 can read, write, create, and execute with a partition 1, can read and write with a partition 2, and can read with a partition 3. A personal computer 2 can read, write, create, and execute with partition 1, and can read with partition 3. A personal computer 3 can read, write, create, and execute with partition 1, and can read with partition 2. The aforementioned security management means can prevent illegal access for utilization from a personal computer that is not authorized.

[0014]

Effect of the invention

As explained above, the personal computer system with the magnetic disk sharing device in this invention has the effect of handling data in a size that exceeds the memory capacity of 1 magnetic disk device by accessing all memory regions of multiple magnetic disk devices as if the multiple memory regions were the memory region of 1 magnetic disk device from individual

personal computers and managing the access right of each personal computer and sharing multiple magnetic disk devices by multiple microcomputers for managing data in an aggregate instead of storing them in individual personal computers.

#### Brief description of the figures

Figure 1 is an application example of a personal computer system in this invention.

Figure 2 is an example of a partition control table.

#### Explanation of symbols

- 1 Personal computer main body 1
- 2 Personal computer main body 2
- 3 Magnetic disk sharing device
- 4-5 Interface boards
- 6 Magnetic disk controlling mechanism
- 7 Partition control table
- 8-12 Magnetic disk devices

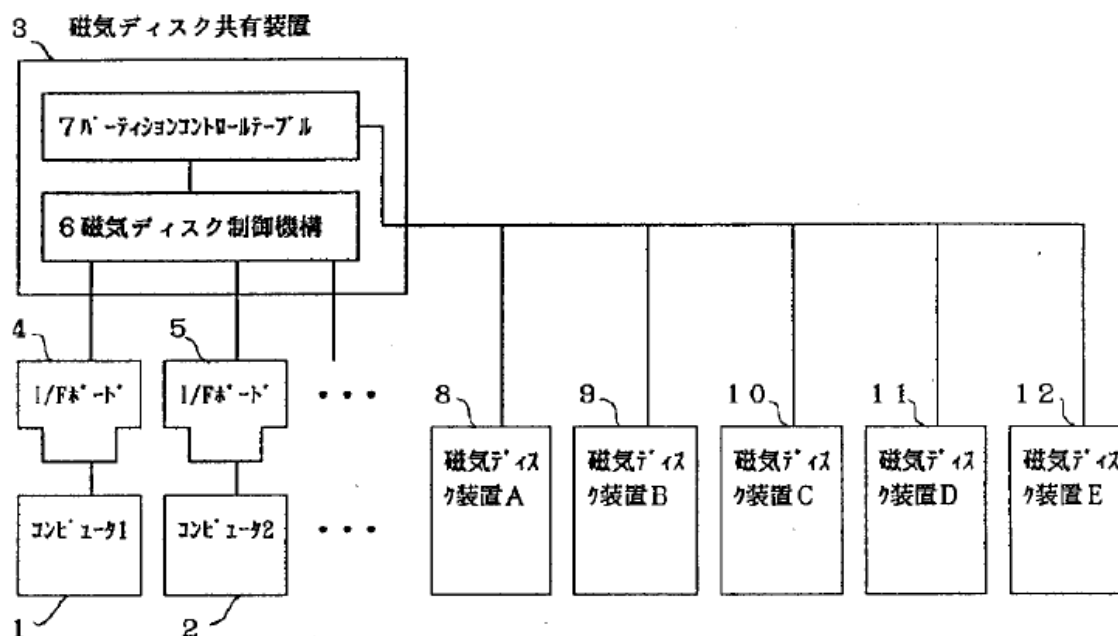


Figure 1

- Key:
- 1 Computer 1
  - 2 Computer 2
  - 3 Magnetic disk sharing device

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