Operating Systems

Opdracht 7

Hyman's algorithm

1.

Hyman's algorithm does not facilitate mutual exclusion because, when process P1 executes lines 1, 2 and 3, it will next execute 5. But when process P0 first executes 1, 2 and 6, i twill enter its critical section. After that process P1 can also enter it's critical section by executing lines 5 and 6.

2.

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10.1

If the pointers to a file still exist, when overwriting the file, the filepointer will point to the new file while still thinking it is pointing to the old file. This way a deleted file could be shown as still existing while actually being replaced by a new, other file. These problems can be avoided by, when reading from a file, first checking if this file has not been deleted.

10.2

The operating system should maintain only one open file table fort he whole operating system. This way, if a file is deleted by a user, the operating system could check if that file is not being used by other processes. When giving each user their own open file table, this would be impossible.

10.6

When the process executes an I/O request for the next sequence of bits, the operating system could already load in the next sequences of data to faster pieces of memory so that when the process again executes an I/O request, that data is already loaded into memory.

11.8

(12 * 8KB) = 96KB
(2048 * 8KB) = 16.384KB
(2048 * 2048 * 8KB) = 33.554.432KB
(2048 * 2048 * 2048 * 8KB) = 68.719.476.736KB

In total, this makes: 64 terabytes.

11.9

- Relocation of files on a hard drive causes a lot more I/O operations, because the file first needs to be moved into memory and then back to the storage device.

- Relocation registers would only work on sequential files, and not all files on the hard drive are sequential.
- Many files would not need contiguous disk space, sequential files for example can be written to the hard drive on non contiguous blocks.