HW Chapter 9-11

10.9 Consider a flawed file system where a file can be deleted and its former disk space reclaimed while other links (aliases) to that file still exist.

1. What problem(s) may occur if a new file is created utilizing the same storage area the deleted file used?

***A problem that may occur is that if a user wants to access the old file that is using the storage of the deleted file, then the user will access the new file even if they make a call to access the old file.***

1. How can these problems be avoided?

***You can avoid these problems by having a counter of the pointers that are referencing to that place on disk, if that number hits zero, meaning that nothing is referencing it, then the file can be deleted.***

11.12 Consider a system where free space is kept in a free-space list.

1. Suppose that the pointer to the free-space list is lost. Can the system reconstruct the free-space list? Explain your answer.

***I believe that this is possible, however the system must search ALL of the directory structure and those that are unallocated could be relinked to a free-space list.***

11.15 Consider a file system on a disk that has both logical and physical block sizes of 512 bytes. Assume that files are always less than 512 blocks in size, and that directory information about each file is already in memory. For each of the three allocation strategies (contiguous, linked, and indexed), answer these questions:

1. If we are currently at logical block 10 (i.e. the current block accessed is block 10) and we now want to access logical block 4, how many physical blocks must be read from the disk (including the read of logical block 4)?

**Contiguous: Just 1 block must be read**

**Linked: 4 blocks must be read**

**Indexed: 2 blocks must be read**

9.11 Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 2150; the previous request was at cylinder 1805. The queue of pending cylinder requests, in order of arrival, is:

2069, 1212, 2296, 2800, 544, 1618, 356, 1523, 4965, 3681

Starting from the current head position (2150), give the order of service required to satisfy all pending requests, for each of the following disk-scheduling algorithms (the first algorithm has been given, as an example).

a. FCFS 2150 – 2069 - 1212 - 2296 - 2800 - 544 - 1618 - 356 - 1523 - 4965 - 3681

b. SSTF 2150 – 2069 – 2296 – 2800 - 3681 – 4965 – 1618 – 1523 – 1212 – 544 – 356

c. SCAN 2150 – 2296 – 2800 – 3681- 4965- 5000 – 2069 – 1618 – 1523 – 1212 – 544 – 356 - 0

d. LOOK 2150 – 2296 – 2800 – 3681- 4965– 2069 – 1618 – 1523 – 1212 – 544 – 356

e. C-SCAN 2150 – 2296 – 2800 -3681 – 4695 – (0) – 356 – 544 – 1212- 1523- 1618 - 2069

f. C-LOOK 2150 – 2296 – 2800 -3681 – 4695 – 356 – 544 – 1212- 1523- 1618 - 2069

9.13 Suppose that a disk rotates at 7200 RPM.

1. What is the average rotational latency of this disk drive?

***The average rotational latency is***

Practical: Locate the definition of the inode structure. Hint: recall that definitions typically appear in files.

• What are the first five fields of the inode structure?

The First five flags of the inode structure are an i\_mode, i\_opflags, i\_uid, i\_gid, and i\_flags.

