FIRST QUIZ ANSWERS

COSC 6360

Fall 2018

WHITE QUIZ

First question

- Given that nearly all modern kernels are written in a high-level language, why does Unix/Linux remain the most favored platform to perform OS research?

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- Given that nearly all modern kernels are written in a high-level language, why does Unix/Linux remain the most favored platform to perform OS research?
  - ***Because its source code is available (and can be modified).***

Second question

- What is the purpose of the Unix/Linux **mount** command?

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- What is the purpose of the Unix/Linux **mount** command?
  - ***To make a disk partition appear as a subdirectory of another partition***.

Third question

- Where does Unix/Linux store its ***access control lists***?

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  - ***In the i-node of each file.***

Fourth question

- Which bad things can happen if a user creates a program that is writable by other users and has its set user ID bit on?

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- Which bad things can happen if a user creates a program that is writable by other users and has its set user ID bit on?
  - ***Other users can gain access to all the files of the owner of the file.***

Fifth question

- An FFS has 32-bit addresses and 4KB blocks. Which is the largest file that be can be accessed with one level of indirection or less?

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  - ***Can access***
    - ***Directly from the i-node:***
      12×4KB = 48 KB
    - ***With one level of indirection:***
      (4KB/4B) ×4KB = 4MB

Sixth question

- What policy does FFS use to maintain the consistency of the file system?

- What is the main drawback of that policy?

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- What policy does FFS use to maintain the consistency of the file system?
  - ***Blocking writes for all metadata updates***
- What is the main drawback of that policy?
  - ***Results in many seeks***
  - ***Slow down disk access***

Seventh question

- Why is copy-on-write said to be a ***lazy policy***?

Seventh question

- Why is copy-on-write said to be a ***lazy policy***?
  - ***Because it delays the action to be taken for as long as possible in the hope it will not be needed .***

Eighth question

- In addition to their code segments, which other entities are shared by the parent and the child processes after a **fork()**?

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- ***All the opened file descriptors.***

Ninth question

- How does FreeBSD differentiate between interactive and non-interactive threads?

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- ***By looking at their normalized sleep time over running time ratios***

Tenth question

- In the FreeBSD page replacement policy, what does the hand of the clock do when it encounters a page frame that has its activity bit set?

Tenth question

- In the FreeBSD page replacement policy, what does the hand of the clock do when it encounters a page frame that has its activity bit set?
  - ***Clears the bit***
  - ***Increments the usage count by the number of references to the page***

PINK QUIZ

First question

- What is the purpose of a superblock in Unix-like file systems

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- What is the purpose of a superblock in Unix-like file systems?
  - ***It describes the organization of a disk partition ("filesystem.")***

Second question

- How do Unix-like file systems implement random access?

Second question

- How do Unix-like file systems implement random access?
  - ***It uses* lseek() *to change the location to be accessed in a given file***.

Fifth question

- An FFS has 32-bit addresses and 4KB blocks. Which is the largest file that be can be accessed with two levels of indirection or less?

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- An FFS has 32-bit addresses and 4KB blocks. Which is the largest file that be can be accessed with two levels of indirection or less?
  - ***With two levels of indirection:***
    $(4KB/4B)^2 \times 4KB = \underline{4GB}$
  - ***The maximum file size in a 32-bit system***

Sixth question

- Which journaling file systems guarantee both the consistency of the file system and the durability of updates?

- Which ones only guarantee its consistency?

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- Which journaling file systems guarantee both the consistency of the file system and the durability of updates?
  - ***Journaling file systems with synchronous updates***
- Which ones only guarantee its consistency?
  - ***Journaling file systems with asynchronous updates***

Tenth question

- In the FreeBSD page replacement policy, what does the hand of the clock do when it encounters a page frame that has its activity bit cleared?

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- In the FreeBSD page replacement policy, what does the hand of the clock do when it encounters a page frame that has its activity bit cleared?
  - ***It decrements the page usage count***
  - ***Expels it if usage count becomes zero***