SOLUTIONS FOR THE THIRD 3360/6310 QUIZ

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First question

What are the main advantage and the main disadvantage of *journaling file systems* with *asynchronous journal updates*?

□ Main advantage:

□ Main disadvantage :

First question

What are the main advantage and the main disadvantage of *journaling file systems* with asynchronous journal updates?

□ Main advantage:

They are faster than other JFSes

□ Main disadvantage:

They do not guarantee the durability of updates

Second question

- Alice is the owner of the file Raidlevel7.tex whose protection bits are -rw-rw-r--.
- She has assigned the group ssrc to the file.
 What can she do with the file?

□ What can members of the **ssrc** group do?

□ What can other users do?

Second question

- Alice is the owner of the file Raidlevel7.tex whose protection bits are -rw-rw-r--.
- She has assigned the group ssrc to the file.
 What can she do with the file?

Read and write

□ What can members of the **ssrc** group do?

Read and write

□ What can other users do?

Read but not write

A virtual memory system has 8 Gigabytes of physical memory and 48-bit virtual addresses. Given that 12 of these 48 bits are used by the byte offset,

□ What is the *page size* of the system?

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■ 2¹² = 4,096 *bytes* = 4*KB*

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How many bits of the virtual address are used by the page number?

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■ 48 – 12 = 36 *bits*

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How many page frames are there in physical memory?

■ 8*GB*/4*KB* = 2*K* = 2¹¹= 2,048 *frames*

What is the main advantage of inverted page tables?

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□ They can fit in main memory.

What is the major advantage of the Windows page replacement policy?

What is the major advantage of the Windows page replacement policy?

□ It can accommodate real-time processes.

What is the purpose of the *dirty bit*?

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To tell the page fault handler if the page has been modified since he last time it was brought into memory.

To tell the page fault handler if the contents of that page must be saved when it will be expelled.

What is the main drawback of the LRU page replacement policy?

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□ It has a very high overhead.

□ Too costly to be useful.

What should we do to prevent *thrashing* in virtual memory systems?

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We should monitor the utilization of the paging device

Keep it below 60 percent

We should swap out processes when the physical memory becomes scarce.

Why does NTFS allocate block clusters instead of individual blocks?

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□ To improve performance by keeping file blocks closer to each other.

Fifth question

How did the BSD clock replacement policy simulate a missing page referenced bit?

What is the main drawback of this solution?

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How did the BSD clock replacement policy simulate a missing page-referenced bit?

□ It marks pages invalid when it should have turned off their page referenced bit.

What is the main drawback of this solution?

Two context switches each time a page that was marked invalid is accessed again.

The 32-bit version of Windows for ARM chips uses a two-level page table organization.

□ How are virtual addresses partitioned?

Answer: ____ bits + ___ bits + ____ bits

□ What is the page size?

Answer: _____ kilobytes

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Answer: 10 bits + 10 bits + 12 bits

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□ How are virtual addresses partitioned?

Answer: 10 bits + 10 bits + 12 bits

□ What is the page size?

Answer: 4 kilobytes

The 32-bit version of Windows for ARM chips uses a two-level page table organization.

□ What is the main advantage of selecting that page size?

Both the master index and the subindexes fit in a page frame.

Seventh question

- Consider an old 32-bit FFS file system with 12 direct block addresses and an 8KB block size.
- What is the maximum size of files that can be accessed with *at most one level of indirection*?

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- Consider an old 32-bit FFS file system with 12 direct block addresses and an 8KB block size.
- What is the maximum size of files that can be accessed with *at most one level of indirection*?

□ 12×8*KB* + (8K/4)×8*KB* = 96*KB* + 16*MB*

Straight With one level from of indirection i-node