Sample midterm exam

Started: Apr 28 at 7:13am

Quiz Instructions

Question 1

5 pts

What will happen in a forked child process if neither the parent nor the child later call exec ?

- (●) The child process will continue to run the same program as the parent process
- ( ) The child process will crash
- ( ) The child process will share the same memory space as the parent process
- ( ) The child process will cause the parent process to wait until the child exits
- ( ) The child process will run the same lines of code as the parent process does

Question 2

5 pts

Match each library type with the time at which it becomes bound to the executable/executing image.

shared library	[Choose]
static library	[Choose]
dynamically loadable library	[Choose]

Question 3

5 pts

Match the following free-list search algorithms with their correct descriptions.

First fit	[Choose]
Next fit	[Choose]
Worst fit	[Choose]
Best fit	[Choose]

Question 4

5 pts

Match the following possible outcomes of a memory reference to the conditions under which it occurs

Protection fault	[Choose]
TLB hit	[Choose]
Page fault	[Choose]
Segmentation fault	[Choose]

Question 5

5 pts

Match the following situations with processes that need to communicate with the IPC mechanism best suited for the situation.

High performance data transfer between cooperating processes on the same machine	[Choose]

Simple communication between parent and child processes	[Choose]
Communications between processes that might not be on the same machine	[Choose]
Simple rendezvous between unrelated processes on the same machine	[Choose]

Question 6

5 pts

Choose the algorithm that has each of the following characteristics

potentially poor response time due to convoy formation	[Choose]
potential starvation	[Choose]
	[Choose]
	[Choose]

Question 7

5 pts

Match each address space segment type with the appropriate description.

Code	[Choose]
Data	[Choose]
Stack	[Choose]

[Choose]

Question 8

5 pts

Match the following terms with their definitions:

Atomic	[Choose]
Mutual exclusion	[Choose]
Transaction	[Choose]
Critical section	[Choose]

Question 9

5 pts

Which of the following would likely be included in an ABI specification? Choose all correct answers.

- [ ] data type size, layout, and alignment
- [ ] exception propagation mechanism
- [ ] load module format
- [ ] associated include files
- [ ] system call invocation mechanism
- [ ] routine names
- [ ] parameter meaning, order, and types
- [ ] return type and values

Question 10

5 pts

Given a set of pages, which will Belady's Algorithm choose?

- ◯ the last page to be referenced (in the future)
- ◯ the next page to be referenced
- ◯ the page that has been referenced most recently
- ◯ the page last referenced least recently
- ◯ the page referenced most frequently
- ◯ the page referenced least frequently

Question 11

5 pts

Which of the following are characteristics of base/bounds relocation?

- ☐ Base and bounds values are stored in hardware registers.
- ☐ The segment size cannot be changed after the program loads.

- ☐ It cannot handle a situation where a segment swapped out from one location is swapped back in to a different location.
- ☐ It can be used for code and/or data
- ☐ The compiler/loader generates all addresses as offsets, relative to the start of the segment.
- ☐ Base and bounds registers can typically be loaded with ordinary instructions.

Question 12

5 pts

Which of the following are true statements about the relationship between real-time scheduling and traditional time-sharing?

- ☐ Some hard-real time applications do not even require a scheduler.
- ☐ Knowing expected completion times makes it easier to do better scheduling.

- [ ] Starvation is an acceptable outcome
- [ ] Assuring low response time will probably require accepting a low CPU utilization.
- [ ] The most important performance metric is mean response time.
- [ ] In most cases, we can achieve adequate timeliness by simply giving a high priority to the hard real time processes.

Question 13

5 pts

Which of these is the best definition for *coalescing?*

- [ ] The recombination of adjacent free memory chunks.
- [ ] A variable partition free-list management technique to counter internal fragmentation.
- [ ] Adding memory back to the free list after it is no longer needed.
- [ ] Maintaining a free list sorted by address.
- [ ] Combining all free areas of memory by moving allocated segments to new locations.

Question 14

5 pts

Which of the following is true of the cooperative approach to process switching?

- [ ] The operating system cannot ensure that misbehaving processes give up the CPU
- [ ] Processes switch when the operating system tells them to
- [ ] Processes switch when they have exceeded a time limit they set when they start executing
- [ ] Processes negotiate with each other on when each should release the CPU and who should get it next.
- [ ] Cooperative scheduling is required to achieve fair share scheduling.

Question 15

5 pts

Which of these is the best definition for a dirty page?

- ◯ What is the best definition for a dirty page?
- ◯ a physical page frame that still contains data from a previous use
- ◯ a physical page whose contents have changed, and must be restored from disk before they can be used again
- ◯ a physical page that has experienced multiple correctable read errors and should no longer be trusted
- ◯ a physical page that has been removed from service due to an uncorrectable read error

Question 16

5 pts

Which of the following might be included included in the OS-managed process state?

- ☐ memory
- ☐ general registers
- ☐ stack
- ☐ open files
- ☐ L3 cache contents
- ☐ Processor cores
- ☐ Screen Saver timeout

Question 17

5 pts

Which of the following is the best definition for external fragmentation?

- ◯ Free memory chunks become so small as to be useless
- ◯ Memory cannot be allocated due to unused memory chunks that are not on the free list
- ◯ Memory consists of fragments of physical memory not yet assigned to any process
- ◯ Memory is unusable because the OS allocated a chunk larger than required.
- ◯ A condition leading to free list searches taking increasingly long because of the number of entries on the free list.

Question 18

5 pts

How can the OS ensure that it regains control to enforce time-sharing if a process refuses to yield?

- ◯ Schedule timer interrupts, which will force reentry into the operating system.
- ◯ Wait for the process to make a system call, which will force reentry into the operating system.
- ◯ Wait for an I/O interrupt, which will force reentry into the operating system.
- ◯ The operating system is always in control of the computer and can preempt any process at any time.
- ◯ Swap the process out to secondary storage, so that it can no longer run.

Question 19

5 pts

Which of the following are true observations about interrupt disables as a means of achieving mutual exclusion?

- ☐ It is not possible for user-mode software.
- ☐ It may adversely affect system performance.

- ☐ it is effective against multi-processor parallelism
- ☐ makes more sense with modern multi-core systems
- ☐ It cannot prevent conflicts between different device drivers

Question 20

5 pts

Major problems for paging

- ☐ Page table size
- ☐ Speed of address translation
- ☐ External fragmentation
- ☐ Protecting users' address spaces from each other

- [ ] Supporting sparse address spaces

Quiz saved at 7:22am

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