Final Quiz Operating Systems II

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Questions

Increasing the number of processes always increases the CPU utilization.   0 points

○ True

○ False

What kind of process scheduling policy is used in default implementation   1 point
of xv6?

○ FIFO

○ LRU

○ Priority scheduling

○ Round-robin

The problem of write amplification (one write creates multiple read/write   1 point
accesses internally) occurs in

○ NVMe

○ SSD

○ USB Flash drive

○ All of these

Which of the following is correct for a loadable section of an ELF file?   1 point

○ memsz >= filesz

○ memsz <= filesz

○ memsz = filesz

○ There is no defined relation between memsz and filesz

Which of these steps is NOT necessary to implement demand paging in   1 point
xv6? Choose the best option if multiple entries seem correct

○ Updating trap handler for page fault support

○ System call to display page tables to the user

○ Modifying exec function to not allocate frames for all the pages

○ All these steps are necessary

What does P2V function/macro in xv6 do and why is it needed?   2 points

Your answer

The general objective of an operating system is to increase the CPU   3 points
utilization. Under what requirements can the OS attempt to reduce the
CPU utilization?

Your answer

What are the main problems with Elevator (Scan) algorithm used in disk   2 points
scheduling and how does C-SCAN solve it?

Your answer

Copy-on-write makes use of the following control bit of page table entry   1 point

○ Valid

○ Write

○ Accessed

○ User Mode

Which of the following is NOT a benefit provided by RAID structure for   1 point
disks

○ No disk seek/rotational latency

○ Higher performance

○ Higher reliability

○ All benefits are applicable to RAID

What is one of the problems with using least-frequently-used (LFU) page   2 points
replacement policy?

Your answer

A slab allocator eases which of the problem of a buddy allocator?   1 point

○ External fragmentation

○ Internal fragmentation

○ Time wasted in dividing/coalescing to create or merge buddies

○ None of the above

What should be the value of the rwx-rwx-rwx bits for a file in Linux such   1 point
that the file is readable by the owner and group members, but not by
others. Choose the suitable one from the given choices.

○ 101-101-101

○ 000-101-101

○ 101-101-000

○ 111-111-111

○ 101-000-101

Which of the following allows us to have the same page table across   1 point
different processes.

○ 2-level page table

○ Hashed page table

○ Inverted page table

○ 1-level page table

Limited endurance is a common problem with hard disks which is solved by   1 point
the SSDs and NVMe.

○ True

○ False

Concurrently creating two files in the same directory does not require any   1 point
lock as the two files would be assigned separate inodes.

○ True

○ False

What would determine the limit on the maximum number of files that   2 points
could be present within a directory?

Your answer

The I/O specific instructions (e.g., IN and OUT) can be executed in user   1 point
mode as well as kernel mode.

○ True

○ False

Hard disks suffer longer delays for which kind of data accesses?   1 point

○ Random

○ Sequential

Which of these is NOT a benefit provided by virtualization   1 point

○ Live migration

○ Faster execution

○ Isolation

○ Taking snapshots

Shadow page table used in virtualization translates a guest virtual address   1 point
to

○ Guest physical address

○ Host (VMM) virtual address

○ Host (VMM) physical address

○ None of the above

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