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Marks 8.00/10.00

Grade 80.00 out of 100.00

Question 1

Complete

Mark 1.00 out of 1.00

In a write-through cache, when does the data get written to main memory?

- ☐ a. Only when cache is full.
- ☒ b. Immediately after it is written to cache.
- ☐ c. After a fixed delay.
- ☐ d. When background flush starts.

Question 2

Complete

Mark 1.00 out of 1.00

In Linux, what does the command `sudo hdparm -W 1 /dev/sda` do?

- ☒ a. Enables the write cache of the disk.
- ☐ b. Flushes dirty cache pages to disk.
- ☐ c. Displays the cache size.
- ☐ d. Disables the write cache of the disk.

Question 3

Complete

Mark 1.00 out of 1.00

The background flush threshold (`vm.dirty_background_ratio`) defines:

- ☐ a. The maximum percentage of memory that can be dirty.
- ☐ b. The speed of the writeback daemon.
- ☐ c. When the system blocks writes.
- ☒ d. The percentage of dirty pages that triggers background flushing.

Question 4

Complete

Mark 1.00 out of 1.00

The write-back cache improves performance mainly by:

- ☐ a. Storing writes only in the CPU cache.
- ☐ b. Writing data immediately to disk.
- ☐ c. Disabling caching temporarily.
- ☒ d. Delaying writes to memory until necessary.

Question 5

Complete

Mark 0.00 out of 1.00

What happens if vm.dirty_ratio is reached in Linux?

- ☐ a. The kernel starts background flush silently.
- ☐ b. Swap space is expanded.
- ☐ c. Processes performing writes are blocked until enough dirty pages are written.
- ☒ d. All processes are terminated.

Question 6

Complete

Mark 1.00 out of 1.00

What is the primary advantage of object storage over block storage?

- ☐ a. Hardware-based caching.
- ☐ b. Faster write performance.
- ☐ c. Better transaction management.
- ☒ d. Scalability and metadata-rich organization.

Question 7

Complete

Mark 1.00 out of 1.00

Which of the following correctly represents the data flow in Linux caching layers?

- ☐ a. RAM → CPU → Disk Cache
- ☐ b. CPU → Disk Cache → RAM → Disk Media
- ☐ c. Disk → RAM → CPU Cache
- ☒ d. CPU → RAM → Disk Cache → Disk Media

Question 8

Complete

Mark 1.00 out of 1.00

Which of the following statements best describes block storage?

- ☒ a. Data is stored in fixed-size chunks managed by the OS.
- ☐ b. It is used mainly for cloud object storage.
- ☐ c. Data is accessed only through RESTful APIs.
- ☐ d. Data is stored as complete files with metadata and unique IDs.

Question 9

Complete

Mark 0.00 out of 1.00

Which process in Linux is responsible for periodically writing dirty pages from RAM to disk?

- ☐ a. pdflush / flush-x:y daemons
- ☐ b. cron
- ☒ c. fsck
- ☐ d. swapd

Question 10

Complete

Mark 1.00 out of 1.00

Which statement best differentiates disk cache from memory cache?

- ☐ a. Disk cache is non-volatile.
- ☒ b. Disk cache is hardware-level; memory cache (page cache) is OS-level.
- ☐ c. Both are controlled by the file system.
- ☐ d. Disk cache is managed by the CPU; memory cache by the disk firmware.