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Commencé le Monday 28 October 2024, 09:00

État Terminé

Terminé le Monday 28 October 2024, 09:12

Temps mis 11 min 53 s

Note 18,67 sur 20,00 (93,33%)

Question 1

Correct

Note de 1,00 sur 1,00

When do I check the ABI? (Application Binary Interface)

- a. For calling conventions ✓
- b. To check how to use a specific system call
- c. To check how to use a function

La réponse correcte est : For calling conventions

Question 2

Correct

Note de 1,00 sur 1,00

Your process can ask the kernel for more memory than physically available.

Veillez choisir une réponse.

- Vrai ✓
- Faux

La réponse correcte est « Vrai ».

Question 3

Partiellement correct

Note de 0,67 sur 1,00

Which of the following events results in a software interrupt?

- a. An I/O event
- b. A division by zero ✓
- c. An access to a nonexistent memory page ✓
- d. Data that is moved from memory to L1 cache
- e. An illegal instruction

Les réponses correctes sont : A division by zero, An access to a nonexistent memory page, An illegal instruction

Question 4

Correct

Note de 1,00 sur 1,00

How does your CPU notify the kernel about faults and events?

- a. None of those
- b. Exceptions ✓
- c. Interrupts ✓
- d. Signals

Les réponses correctes sont : Interrupts, Exceptions

Question 5

Correct

Note de 1,00 sur 1,00

Select the correct affirmations.

- a. None of the other answers are correct ✓
- b. Sections headers are useful to create a process from a program
- c. You can always execute an ELF
- d. There are several ELF headers to describe each section

La réponse correcte est : None of the other answers are correct

Question **6**

Correct

Note de 1,00 sur 1,00

When I press a key on the keyboard, it triggers

- a. A hardware interrupt ✓
- b. A signal
- c. A software interrupt

La réponse correcte est : A hardware interrupt

Question **7**

Correct

Note de 1,00 sur 1,00

Select the correct affirmations.

- a. User root has the same privileges as the kernel
- b. Kernel can not be infected thanks to user / kernel separation
- c. Ring 2 has more privileges than Ring 3 ✓
- d. As they are older and heavier, monolithic kernels tend to be slower than microkernels

La réponse correcte est : Ring 2 has more privileges than Ring 3

Question **8**

Correct

Note de 1,00 sur 1,00

Select the correct affirmations.

- a. System calls differ depending on the kernel ✓
- b. System calls can not fail as they are run with kernel privileges
- c. System calls are endpoints of the kernel API ✓
- d. Kernel processes use system calls to interact with user processes

Les réponses correctes sont : System calls are endpoints of the kernel API, System calls differ depending on the kernel

Question **9**

Correct

Note de 1,00 sur 1,00

What type of interrupt or signal protects the system against processes that end up in an infinite loop?

- a. SIGTERM
- b. Timer interrupt ✓
- c. SIGKILL
- d. Software interrupt

La réponse correcte est : Timer interrupt

Question **10**

Correct

Note de 1,00 sur 1,00

If a program's name is "hello_world.exe", it will

- a. We cannot know ✓
- b. Run on Linux
- c. Run on both
- d. Run on Windows

La réponse correcte est : We cannot know

Question **11**

Correct

Note de 1,00 sur 1,00

What services does the kernel provide?

- a. Memory management ✓
- b. Memory allocation ✓
- c. System calls ✓
- d. Executing all process' instructions
- e. malloc
- f. Device drivers ✓

Les réponses correctes sont : Device drivers, Memory management, Memory allocation, System calls

Question 12

Correct

Note de 1,00 sur 1,00

The TLB...

- a. ...is a paging structure
- b. ...is completely flushed by writing to CR3 ✓
- c. ...is never flushed
- d. ...is completely flushed on write memory access
- e. ...is filled by your kernel
- f. ...is a CPU cache ✓

Les réponses correctes sont : ...is a CPU cache, ...is completely flushed by writing to CR3

Question 13

Correct

Note de 1,00 sur 1,00

What of the following is true about virtual addresses?

- a. They are a physical address with an offset added
- b. Are used to go through paging structures by the MMU ✓
- c. It is cheap to translate a virtual address to a physical address
- d. It is expensive to translate a virtual address to a physical address ✓
- e. Is always valid

Les réponses correctes sont : Are used to go through paging structures by the MMU, It is expensive to translate a virtual address to a physical address

Question 14

Correct

Note de 1,00 sur 1,00

What happens if a hardware interrupt is emitted while a user process is active?

- a. The user process is interrupted and the interrupt is handled in kernel space. ✓
- b. The interrupt will be handled after the next timer interrupt.
- c. All other interrupts are masked to prevent another interrupt from interrupting this interrupt handler.
- d. The user process is asked by a signal to yield in favor of the kernel.

La réponse correcte est : The user process is interrupted and the interrupt is handled in kernel space.

Question **15**

Correct

Note de 1,00 sur 1,00

The Program Header in an ELF file points to...

- a. Possibly both -- ELF Section and Segment
- b. An ELF Segment ✓
- c. An ELF Section
- d. None of the other answers is correct.

La réponse correcte est : An ELF Segment

Question **16**

Incorrect

Note de 0,00 sur 1,00

Which one of those does describe the structure of a monolithic kernel?

- a. Kernel services run in user space but with different privileges than user processes to access hardware directly from user land. ✗
- b. None of those, all kernel have the same structure but the way blocks interact is different.
- c. Kernel services and drivers are all part of the kernel, and run in kernel mode. User and kernel spaces share the same memory area, but with different access rights.
- d. User and kernel services run in different memory spaces. Only essential services such as memory management, multitasking and IPC (InterProcess Communication) are provided by the kernel and other services like networking run as servers in user space programs.

La réponse correcte est : Kernel services and drivers are all part of the kernel, and run in kernel mode. User and kernel spaces share the same memory area, but with different access rights.

Question **17**

Correct

Note de 1,00 sur 1,00

What of the following is true about paging?

- a. Page sizes are fixed and are equal to frame sizes. ✓
- b. Paging may lead to internal fragmentation. ✓
- c. Paging may lead to external fragmentation.
- d. The memory needed to store the paging structures increases for smaller page sizes. ✓
- e. The memory needed to store the paging structures decreases for smaller page sizes.

Les réponses correctes sont : Paging may lead to internal fragmentation., Page sizes are fixed and are equal to frame sizes., The memory needed to store the paging structures increases for smaller page sizes.

Question **18**

Correct

Note de 1,00 sur 1,00

The kernel is a process that is always running. Another process can run...

- a. in parallel to the kernel even on the same CPU/core
- b. only if the computer has at least two CPUs or cores
- c. concurrently to the kernel even on the same CPU/core because the CPU constantly switches between kernel and user mode ✓

La réponse correcte est : concurrently to the kernel even on the same CPU/core because the CPU constantly switches between kernel and user mode

Question **19**

Correct

Note de 1,00 sur 1,00

ELF is

- a. Part of the ABI ✓
- b. A format process
- c. None of the other answers is correct
- d. Specific to an OS ✓
- e. A shared file

Les réponses correctes sont : Part of the ABI, Specific to an OS

Question **20**

Correct

Note de 1,00 sur 1,00

An error inside the kernel will cause a system failure

- a. Yes, always
- b. It depends on the error ✓
- c. It depends on the kernel type ✓
- d. No, it only crashes the related process

Les réponses correctes sont : It depends on the error, It depends on the kernel type

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