

Unit 3 - Week 2

Course outline

How does an NPTEL online course work?

Week 1

Week 2

● PC Architecture

● x86 Instruction Set, GCC Calling Conventions

○ Quiz : Assignment 2

● Week 2 Feedback Form

Week 3

Week 4

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Week 6

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Assignment Solution

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Assignment 2

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2020-02-12, 23:59 IST.

1) One function of an operating system is to handle interrupts. Interrupts are 1 point

- a delay in processing due to operating system overload
- signals from hardware or software requesting attention from the operating system
- messages received from other computers
- None of the above

No, the answer is incorrect. Score: 0

Accepted Answers: *signals from hardware or software requesting attention from the operating system*

2) When an interrupt arrives, the operating system 1 point

- ignores the interrupt
- always changes the state of interrupted process after processing the interrupt
- always resumes execution of the interrupted process after processing the interrupt
- may change the state of the interrupted process to blocked and schedule another process

No, the answer is incorrect. Score: 0

Accepted Answers: *may change the state of the interrupted process to blocked and schedule another process*

3) System calls are invoked using 1 point

- software interrupt
- Polling
- indirect jump
- a privileged instruction

No, the answer is incorrect. Score: 0

Accepted Answers: *software interrupt*

4) Which of the following are true about ZOMBIE process: 1 point

- OS does not clear the information of a ZOMBIE process unless wait() function is called.
- The init process is the new parent of a ZOMBIE process
- When a child process exits before parent process then the child process is called ZOMBIE process
- When a parent process exits before child process then the child process is called ZOMBIE process

No, the answer is incorrect. Score: 0

Accepted Answers: *OS does not clear the information of a ZOMBIE process unless wait() function is called. The init process is the new parent of a ZOMBIE process When a parent process exits before child process then the child process is called ZOMBIE process*

5) Signal handling : A signal handler is specified as a function, e.g., void sigint_handler(int signum); When a signal is "delivered" to a process, this function gets executed, as an "asynchronous function call". Which of the following are true: 1 point

- all the registers need to be saved before transferring control to the signal handler function
- only program counter register need to be saved before transferring control to the signal handler function
- After the signal handler has finished executing, all the saved registers need to be restored before resuming execution at the interrupted user instruction.
- If any register's value is to be stored before transferring control to the signal handler function, one convenient location to store them is through pushing them to the process stack.

No, the answer is incorrect. Score: 0

Accepted Answers: *all the registers need to be saved before transferring control to the signal handler function After the signal handler has finished executing, all the saved registers need to be restored before resuming execution at the interrupted user instruction. If any register's value is to be stored before transferring control to the signal handler function, one convenient location to store them is through pushing them to the process stack.*

6) Firefox uses a thread per tab, but Chrome uses a process per tab. Which of the following are true: 1 point

- Context switch is much faster in firefox over chrome
- Firefox will have shared address space for its tabs. For chrome, address space is different.
- Firefox will require a specific interprocess communication interface whereas Chrome does not require it
- If 1 tab in Firefox does some malicious activity (e.g., due to a security exploit), all threads(tabs) are affected.

No, the answer is incorrect. Score: 0

Accepted Answers: *Context switch is much faster in firefox over chrome Firefox will have shared address space for its tabs. For chrome, address space is different. If 1 tab in Firefox does some malicious activity (e.g., due to a security exploit), all threads(tabs) are affected.*

7) Which of the following are 8-bit data registers according to the 8086 architecture? 1 point

- AX
- EBX
- AH
- CL
- SP

No, the answer is incorrect. Score: 0

Accepted Answers: *AH CL*

8) Which of the following are functions of MMU? 1 point

- Fetch the data from the memory whose address is given to MMU as input.
- Use segment registers to create a mapping from program's address space to physical address space
- It prevents the user programs from accessing the data belonging to other processes or OS
- All of the above

No, the answer is incorrect. Score: 0

Accepted Answers: *Use segment registers to create a mapping from program's address space to physical address space It prevents the user programs from accessing the data belonging to other processes or OS*

9) After every execution of PUSH instruction, the stack pointer: 1 point

- Decreases by 1
- Decreases by 2
- Increases by 1
- Increases by 2

No, the answer is incorrect. Score: 0

Accepted Answers: *Decreases by 2*

10) Which of the following instruction changes the program counter? 1 point

- Mov %pc, %ax
- Mov %ax, %pc
- Loop
- JMP

No, the answer is incorrect. Score: 0

Accepted Answers: *Mov %ax, %pc Loop JMP*

11) What is the meaning of MOVL 4(%ebx), edx? 1 point

- Indirect addressing and $edx = *(int32*)(ebx + 4)$
- Immediate addressing and $edx = *(int32*)(ebx + 4)$
- Indirect addressing and $edx = *(int32*)(ebx * 4)$
- Immediate addressing and $edx = *(int32*)(ebx * 4)$

No, the answer is incorrect. Score: 0

Accepted Answers: *Indirect addressing and $edx = *(int32*)(ebx + 4)$*