hw8: Exceptional Control Flow Results for VARDAAN KAPOOR (He/him)

Score for this attempt: **7** out of 8
Submitted May 1 at 6:28pm
This attempt took 5 minutes.

Question 1

1 / 1 pts

Select the most appropriate option:

Interrupts are [Select] exceptions and [Select] .

Traps are [Select] exceptions and always return to the next instruction .

Faults are [Select] exceptions and [Select] .

Aborts are [Select] exceptions and [Select] .

Answer 1:

Correct!

asynchronous

Answer 2:

Correct!

always return to the next instruction

Answer 3:

Correct! synchronous

Answer 4:

Correct! always return to the next instruction

Answer 5:

Correct! synchronous

Answer 6:

Correct! might return to the current instruction

Answer 7:

Correct! synchronous

Answer 8:

Correct! do not return to the user process

Question 2

1 / 1 pts

Consider the following hypothetical scenario for a system with a single core cpu:

1. Process 24 starts executing after process 17 is suspended to wait for a read from secondary storage to complete.
2. Process 33 starts executing after process 24 is put to sleep by the system call sleep(10).
3. The secondary storage device indicates it is done with the read and triggers the appropriate [Select] .
4. The [Select] is invoked, which decides to continue executing [Select] .
5. A timer exception occurs and triggers the appropriate interrupt handler .

6. The [Select] is invoked, which decides to resume execution of process 24.
7. The context of [Select] is saved.
8. The context of [Select] is restored and control is passed to it.

Select the best option to complete the statements in the scenario above.

Answer 1:

Correct! interrupt handler

Answer 2:

Correct! scheduler

Answer 3:

Correct! process 33

Answer 4:

Correct! interrupt handler

Answer 5:

Correct! scheduler

Answer 6:

Correct! process 33

Answer 7:

Correct! process 24

Question 3

1 / 1 pts

Which of the below allow a user process to request the kernel to do some work on its behalf?

- Faults
- Traps

Correct!

- Aborts
- Signals
- Interrupts

Question 4

1 / 1 pts

Suppose Process A is currently running, and it doesn't have any programmer specified signal handlers. Which option corresponds to the correct ordering of steps if A divides by zero?

1. Process A exits.
2. Process A resumes execution from next instruction.
3. Process A resumes execution from current instruction.
4. Exception handler sends SIGSEGV signal to process A.
5. Exception handler sends SIGFPE signal to process A.
6. Exception handler detects divide-by-zero error.

- 5, 6, 2
- 3, 6, 5
- 5, 6, 1
- 6, 5, 1

Correct!

- 6, 5, 2

Question 5

1 / 1 pts

Suppose a user enters `kill -9 1008` at the command prompt. This is communicated to the user process with pid 1008 via:

- SIGSTOP
- Correct! SIGKILL
- SIGALRM
- SIGINT
- SIGTSTP

Question 6

0 / 1 pts

```
movl $27, %eax
movl $10, %ebx
int $0x80
```

In Linux, the assembly code above could correspond to:

- alarm(27)
- ou Answered exit(0)
- exit(10)
- kill(27, 10)
- orrect Answer alarm(10)

Question 7

1 / 1 pts

```
#include ...

void sig_handler(){
    static int i = 1;
    printf("Beep\n");
    alarm(i);
    ++i;
}

int main(){
    struct sigaction sa;
    sa.sa_flags = 0;
    sa.sa_handler = sig_handler;
    if(sigaction(SIGALRM, &sa, NULL) != 0){
        printf("Failed to bind handler.\n");
        exit(1);
    }
    printf("Going into an infinite loop.\n");
    alarm(1);
    while(1);
    return 0;
}
```

Suppose the above program is run for 7.5 seconds after it prints "Going into an infinite loop". The program is run multiple times where the "system load" from other processes sharing the cpu will vary from none to many other processes. Which best characterizes how many times "Beep" is printed?

Correct!

- (●) "Beep" is printed <= 4 times (less than or equal to).
- ( ) "Beep" is printed >= 4 times (greater than or equal to).
- ( ) "Beep" is printed < 4 times (strictly less than).
- ( ) "Beep" is printed > 4 times (strictly greater than).
- ( ) "Beep" is printed always 4 times (exactly equal to).

Question 8

1 / 1 pts

Identify the kind of exception that occurs in each of the following scenarios:

Correct!	**A user process tries to divide a number by zero.**	Fault
Correct!	**A user process closes a file.**	Trap
Correct!	**A user types Ctrl-C on keyboard.**	Interrupt
Correct!	**The system's peripheral bus malfunctions.**	Abort

Other Incorrect Match Options:

- Error

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