CSSE 332 -- Operating Systems

Interrupts and Traps

Name: _____

Question 1. (5 points) Why are timer interrupts important from an operating system's perspective?

Question 2. (5 points) What are the steps taken by the processor when an exception or an interrupt occurs?

Question 3. (5 points) In the case of a segmentation fault, register _____ is used to store the address of the instruction executing when the fault occurred. The cause of the exception is stored in the _____ register and the violating address is stored in the _____ register. When the fault is detected, the hardware will jump to the kernel at the address stored in the _____ register.

Question 4. (5 points) Consider a process `P` with the following code snippet

```
int x, rc;

y = x + 2;
rc = fork();
/* ... */
```

`fork()` is a system call that will issue the `ecall` instruction, causing a trap into the kernel. How does the kernel ensure that the state of `P` before the call to `fork` is the same as the one after `fork` returns.

Question 5. (10 points) Please write down two **sentences** describing two new things that you learned in this session.

Question 6. (10 points) Please write down two things that you are still not very clear about, or any questions that you might have that the session did not go over or did not cover well.