1. *(Hardware/software interaction)* Which of the following instructions should be privileged? Very briefly, why?

a) Set value of timer

b) Read the clock

c) Clear memory

d) Turn off interrupts

e) Switch from user to kernel mode
2.

2.1
class CountdownEvent {
    Private variables:

    CountdownEvent (int count) {

    } // End of CountdownEvent

    void Increment () {

    } // End of Increment
void Decrement () {

} // End of Decrement

void Wait () {

} // End of Wait

} // End of class CountdownEvent
2.2 Semaphores also increment and decrement. How do the semantics of a CountdownEvent differ from a Semaphore?
2.3

class Barrier {
    private variables:

    Barrier (int n) {

    } // End of Barrier (int n)
void Done () {

} // End of Done()
}
} // End of Class Barrier
3.
Assumptions:

Describe the steps taken by a modern CPU and operating system to ensure that the read instruction successfully completes: