

## **Lab1 Writeup**

### **Team6**

**Qian Chen (qianchen)**

**Yurui Zhou (yuruiz)**

**Siqi Wang (siqiw)**

1. Compile binary for an architecture that is different from the current host.
2. In x86-32, user program put syscall number in %eax and arguments in other registers. Then it invokes the syscall interrupt to transit into kernel mode. The kernel executes the syscall according to %eax, and returns to the user space after it finishes. The return value is kept in %eax.
3. Reentrancy means the program can be interrupted in the middle and then be called again before the previous one finishes.  
Thread-safety means the program can guarantee the safety of shared resources in a multi-thread context.
4. In a preemptive kernel the scheduler can interrupt a driver or kernel function and force context-switch before it finishes.  
Yes.
5. When there are multiple threads accessing or modifying the data structure.
6. When the kernel is preemptive or when using multi-processor or hyperthreading.
7. Locking mechanisms like mutex, semaphore and read-write lock.
8. Given a pointer to a member in the structure, return a pointer to the whole structure.  
By subtracting the offset of the member in the structure from the pointer.