Assignment 1 Report

Student: Chengbin Hu
1)First, It is easy to figure out how to measure cost of a system call.
So I first define a big number of loops I need to run.
There is a difficult to learn how to use gettimeofday(). So I check some samples and found use gettimeofday(&start,NULL) could assign the time to "start" variable. Also a struct timeval need to define for both start and end time.

Then I begin to start the loops. As suggestion I used read() to read 0 bytes for "loops" times.

Finally I read the time by gettimeofday(&end,NULL) and use this time and start time to get cost of one system call.

2)
The strategy to measure context switch is relative the same as system call. But it is difficult to find tools to perform it.

First I use cpu_set_t and sche_setaffinity to use one CPU core to run my test program.
Then I record the start time.
After that I run n times context switches.
Then I record the end time.

I checked google and found some people use sched_yield() to perform a context switches. The basic idea is use two while loops.
while (!syscall(SYS_futex, f, FUTEX_WAKE, 1, NULL, NULL, 42)){schedu_yield()}
while (syscall(SYS_futex, f, FUTEX_WAIT, 0xB, NULL, NULL, 42)) {schedu_yield()}
when syscall call once, it return 0 and run schedu_yield() to switch to another process.

After all the jobs done. I could calculate the time we need and print them out.