Operating Systems Design Lab
Computer Engineering Department
Spring 2023/2024
Lab 8: Times and Timers

Objectives

1. To lean how to use times and timers in Linux.

Prelab

1. Read Chapter 9 of the textbook.
2. Read the manual pages of the following functions:

```
int getitimer(int which, struct itimerval *curr_value);
int setitimer(int which, struct itimerval *new_value, struct itimerval *old_value);
```

Experiment

Part 1: Performance Measurement

Given the two functions below, write a program to measure their execution times in microseconds using the `ITIMER_VIRTUAL` interval timer.

```
int a[1024][1024];

void function1(){
    for(int k=0;k<10;k++)
       for(int i=0;i<1024; i++)
           for(int j=0;j<1024; j++)
              a[i][j] = 0;
}

void function2(){
    for(int k=0;k <10 ; k++)
       for(int i=0;i<1024; i++)
           for(int j=0;j<1024; j++)
               a[j][i] = 0;
}
```

Part 2: Periodic Tasks

Use the `ITIMER_REAL` interval timer to run the following function every 3 seconds.

```
void print_time(){
    time_t t = time(NULL);
    char* str = ctime(&t);
    str[strlen(str)-1]='\0';
    printf("\r%s",str);// ctime(&t));
    fflush(stdout);
}
```