

Name: Shubhangi Agrawal (20BCE1161)

Exercise 4

System call vs Procedural Call

First case: read system call and ‘sum’ procedural call

Code:

```
#include<stdio.h>
#include<unistd.h>
#include<sys/time.h>
int sum(int a,int b){
    int c=a+b;
    return c;
}
void main(){
    struct timeval t1;
    gettimeofday(&t1,NULL);
    int a=5,b=6,c;
    for(int i=0;i<10000;i++)
        c= sum(a,b);
    struct timeval t2;
    gettimeofday(&t2,NULL);
    printf("For procedural call: %ld\n",t2.tv_usec-t1.tv_usec);
    gettimeofday(&t1,NULL);
    int pipe1[2];
    char regno[10]={'2','0','b','c','e','1','1','6','1'};
    for(int i=0;i<10000;i++)
        read(pipe1[1],regno,sizeof(regno));
    gettimeofday(&t2,NULL);
    printf("For system call: %ld\n",t2.tv_usec-t1.tv_usec);
}
```

Output:

```
shubhangi@Shubhi:/mnt/e/VIT/4thsem/OS/lab/linuxpractice/20bce1161/lab4_system_procedural_call$ cc procedural_system1.c
shubhangi@Shubhi:/mnt/e/VIT/4thsem/OS/lab/linuxpractice/20bce1161/lab4_system_procedural_call$ ./a.out
For procedural call: 29
For system call: 1092
```

Second test case: write system call vs 'dfs' procedural cal

Code:

```
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
#include<sys/time.h>
#include<unistd.h>

int adj[6][6] ={{0, 1, 0, 1, 0, 0} ,
               {1, 0, 1, 0, 1, 0} ,
               {0, 1, 0, 1, 1, 1} ,
               {1, 0, 1, 0, 0, 1} ,
               {0, 1, 1, 0, 0, 1} ,
               {0, 0, 1, 1, 1, 0} };

int vis[6]={0,0,0,0,0,0};
int stack[6],top=0;
void dfs(int src){
    stack[top]=src;
    while(top!=-1){
        src=stack[top--];

        for(int i=5;i>0;i--){
            if(adj[src][i]==1 && vis[i]==0)
            {
                stack[++top]=i;
                vis[i]=1;
            }
        }
    }
}

int main(){
    struct timeval t1;
    gettimeofday(&t1,NULL);
    for(int i=0;i<10000;i++)
```

```
dfs(0);  
struct timeval t2;  
gettimeofday(&t2,NULL);  
printf("For procedural call: %ld\n",t2.tv_usec-t1.tv_usec);  
gettimeofday(&t1,NULL);  
int pipe1[2];  
char regno[10]={'2','0','b','c','e','1','1','6','1'};  
for(int i=0;i<10000;i++)  
    write(pipe1[1],regno,sizeof(regno));  
gettimeofday(&t2,NULL);  
printf("For system call: %ld\n",t2.tv_usec-t1.tv_usec);  
return 0;  
}
```

Output:

```
shubhangi@Shubhi:/mnt/e/VIT/4thsem/OS/lab/linuxpractice/20bce1161/lab4_system_procedural_call$ cc proc_syscall2.c  
shubhangi@Shubhi:/mnt/e/VIT/4thsem/OS/lab/linuxpractice/20bce1161/lab4_system_procedural_call$ ./a.out  
For procedural call: 38  
For system call: 1407
```