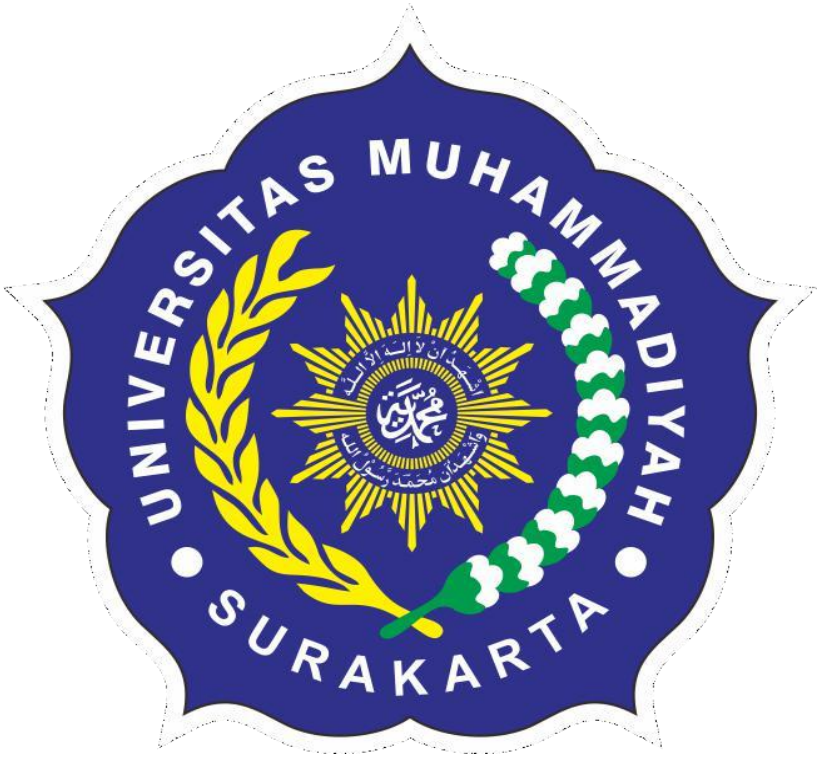
LAPORAN PRAKTIKUM SISTEM OPERASI
MODUL 8
"SYSTEM CALL"



Oleh:

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FORK.C

1. Pertama kita membuat program “C” dengan nama “fork” lalu save.

fork.c

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```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
main() {
    pid_t pid;
    int x = 5;
    pid = fork();
    x++;
    if (pid < 0)
    {
        printf("Proccess creation error"); exit(-1);
    }
    else if (pid == 0)
    {
        printf("Child proccess:");
        printf("\nProccess id is %d", getpid());
        printf("\nValue of x is %d", x);
        printf("\nProccess id of parent is %d\n\n", getppid());
    }
    else
    {
        printf("\nParent proccess:");
        printf("\nProccess id is %d", getpid());
```

2. Lalu compile file tersebut dengan “gcc fork.c”. jika tidak ada kesalahan akan muncul file a.out dan untuk menjalankan program tersebut dengan ./a.out maka hasilnya akan tampak dibawah.

```
bodhi@bodhi-VirtualBox:~$ sudo su
[sudo] password for bodhi:
root@bodhi-VirtualBox:/home/bodhi# cd Documents
root@bodhi-VirtualBox:/home/bodhi/Documents# dir
dirlist.c  exec.c  fork.c  stat.c  wait.c
root@bodhi-VirtualBox:/home/bodhi/Documents# gcc fork.c
fork.c:5:1: warning: return type defaults to ‘int’ [-Wimplicit-int]
 main() {
 ^~~~
root@bodhi-VirtualBox:/home/bodhi/Documents# ./a.out

Parent proccess:
Proccess id is 31098
Value of x is 6
Proccess id of shell is 31081
root@bodhi-VirtualBox:/home/bodhi/Documents# Child proccess:
Proccess id is 31099
Value of x is 6
Proccess id of parent is 1

root@bodhi-VirtualBox:/home/bodhi/Documents#
```

WAIT.C

1. Pertama kita membuat program “C” dengan nama “wait” lalu save.

wait.c

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```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/wait.h>
main(){
    int i, status;
    pid_t pid;
    pid = fork();

    if (pid < 0){
        printf("\nPembuatan proses gagal\n");
        exit(-1);
    }
    else if(pid > 0)
        {
        wait(NULL);
        printf("\nParent starts\nNomor Genap:");
        for (i=2;i<=10;i+=2)
            printf("%3d", i);
        printf("\nParent ends\n");
        }
    else if (pid == 0)
    {
```

2. Lalu compile file tersebut dengan “gcc wait.c”. jika tidak ada kesalahan akan muncul file a.out dan untuk menjalankan program tersebut dengan ./a.out maka hasilnya akan tampak dibawah.

root@bodhi-VirtualBox: /home/bodhi/Documents

```
root@bodhi-VirtualBox:/home/bodhi/Documents# gcc wait.c
wait.c:6:1: warning: return type defaults to 'int' [-Wimplicit-in
t]
 main(){
 ^~~~
root@bodhi-VirtualBox:/home/bodhi/Documents# ./a.out
Child starts
Nomor Ganjil :  1  3  5  7  9
Child ends

Parent starts
Nomor Genap:  2  4  6  8 10
Parent ends
root@bodhi-VirtualBox:/home/bodhi/Documents#
```

EXEC.C

1. Pertama kita membuat program “C” dengan nama “exec” lalu save.

exec.c

File Edit Search Options Help

```
#include <stdio.h>
#include <sys/types.h>
#include <unistd.h>
#include <stdlib.h>
main(int argc, char const *argv[])
{
    pid_t pid;
    int i;

    if (argc != 3)
    {
        printf("\nInsufficient arguments to load program");
        printf("\nUsage: ./a.out <path> <cmd>\n"); exit(-1);
    }
    switch(pid = fork())
    {
        case -1:
            printf("Fork failed");
            exit(-1);
        case 0:
            printf("Child proccess\n");
            i = execl(argv[1], argv[2], 0);
            if (i < 0)
            {
```

2. Lalu compile file tersebut dengan “gcc exec.c”. jika tidak ada kesalahan akan muncul file a.out dan untuk menjalankan program tersebut dengan ./a.out maka hasilnya akan tampak dibawah.

```
root@bodhi-VirtualBox:/home/bodhi/Documents# gcc exec.c


exec.c:5:1: warning: return type defaults to ‘int’ [-Wimplicit-int]
 main(int argc, char const *argv[])
 ^~~~
exec.c: In function ‘main’:
exec.c:22:13: warning: missing sentinel in function call [-Wformat=]
            i = execl(argv[1], argv[2], 0);
            ^
exec.c:29:13: warning: implicit declaration of function ‘wait’; did you mean ‘main’? [-Wimplicit-function-declaration]
            wait(NULL);
            ^~~~
            main
root@bodhi-VirtualBox:/home/bodhi/Documents# ./a.out /bin/ls ls
Child proccess
a.out  dirlist.c  exec.c  fork.c  stat.c  wait.c
Child Terminated
root@bodhi-VirtualBox:/home/bodhi/Documents#
```

STAT.C

1. Pertama kita membuat program “C” dengan nama “stat” lalu save.

stat.c

File Edit Search Options Help

```
#include <stdio.h>
#include <sys/stat.h>
#include <stdlib.h>
#include <time.h>
int main(int argc, char const *argv[]){
    struct stat
    file; int n;
    if (argc != 2)
    {
        printf("Usage: ./a.out <filename>\n"); exit(-1);
    }
    if ((n = stat(argv[1], &file)) == -1)
    {
        perror(argv[1]);
        exit(-1);
    }
    printf("User id : %d\n", file.st_uid);
    printf("Group id : %d\n", file.st_gid);
    printf("Block size : %d\n", file.st_blksize);
    printf("Blocks allocated : %d\n", file.st_blocks);
    printf("Inode no. : %d\n", file.st_ino);
    printf("Last accessed : %s\n", ctime(&(file.st_atime)));
    printf("Last modified : %s\n", ctime(&(file.st_mtime)));
    printf("File size : %d bytes\n", file.st_size);
```

2. Lalu compile file tersebut dengan “gcc stat.c”. jika tidak ada kesalahan akan muncul file a.out dan untuk menjalankan program tersebut dengan ./a.out maka hasilnya akan tampak dibawah.

```
root@bodhi-VirtualBox:/home/bodhi/Documents# gcc stat.c


stat.c: In function ‘main’:
stat.c:19:27: warning: format ‘%d’ expects argument of type ‘int’, but argument 2 has type ‘__blksize_t {aka long int}’ [-Wformat=]
     printf("Block size : %d\n", file.st_blksize);
                          ^~     ~~~~~~~~~~~~~~~
                          %ld
stat.c:20:33: warning: format ‘%d’ expects argument of type ‘int’, but argument 2 has type ‘__blkcnt_t {aka long int}’ [-Wformat=]
     printf("Blocks allocated : %d\n", file.st_blocks);
                                ^~    ~~~~~~~~~~~~~~~
                                %ld
stat.c:21:26: warning: format ‘%d’ expects argument of type ‘int’, but argument 2 has type ‘__ino_t {aka long unsigned int}’ [-Wformat=
     printf("Inode no. : %d\n", file.st_ino);
                         ^~     ~~~~~~~~~~~
                         %ld
stat.c:24:26: warning: format ‘%d’ expects argument of type ‘int’, but argument 2 has type ‘__off_t {aka long int}’ [-Wformat=]
     printf("File size : %d bytes\n", file.st_size);
                         ^~           ~~~~~~~~~~~
                         %ld
stat.c:25:29: warning: format ‘%d’ expects argument of type ‘int’, but argument 2 has type ‘__nlink_t {aka long unsigned int}’ [-Wformat
=]
     printf("No. of links : %d\n", file.st_nlink);
                            ^~     ~~~~~~~~~~~~
                            %ld
root@bodhi-VirtualBox:/home/bodhi/Documents# ./a.out fork.c
User id : 1000
Group id : 1000
Block size : 4096
Blocks allocated : 8
Inode no. : 1200352
Last accessed : Fri Dec 11 15:03:03 2020
Last modified : Fri Dec 11 14:56:39 2020

File size : 665 bytes
No. of links : 1
Permissions : -rw-rw-r--
File type : Regular
root@bodhi-VirtualBox:/home/bodhi/Documents#
```

DIRLIST.C

1. Pertama kita membuat program “C” dengan nama “dirlist” lalu save.

dirlist.c

File Edit Search Options Help

```
#include <stdio.h>
#include <stdlib.h>
#include <dirent.h>
main(int argc, char const *argv[])
{
    struct dirent *dptr;
    DIR *dname;

    if (argc != 2)
    {
        printf("Usage: ./a.out <dirname>\n");
        exit(-1);
    }
    if((dname = opendir(argv[1])) == NULL)
    {
        perror(argv[1]);
        exit(-1);
    }
    while(dptr=readdir(dname))
        printf("%s\n", dptr->d_name);

    closedir(dname);
}
```

2. Lalu compile file tersebut dengan “gcc dirlist.c”. jika tidak ada kesalahan akan muncul file a.out dan untuk menjalankan program tersebut dengan ./a.out maka hasilnya akan tampak dibawah.