

## PRAKTIKUM MODUL 8

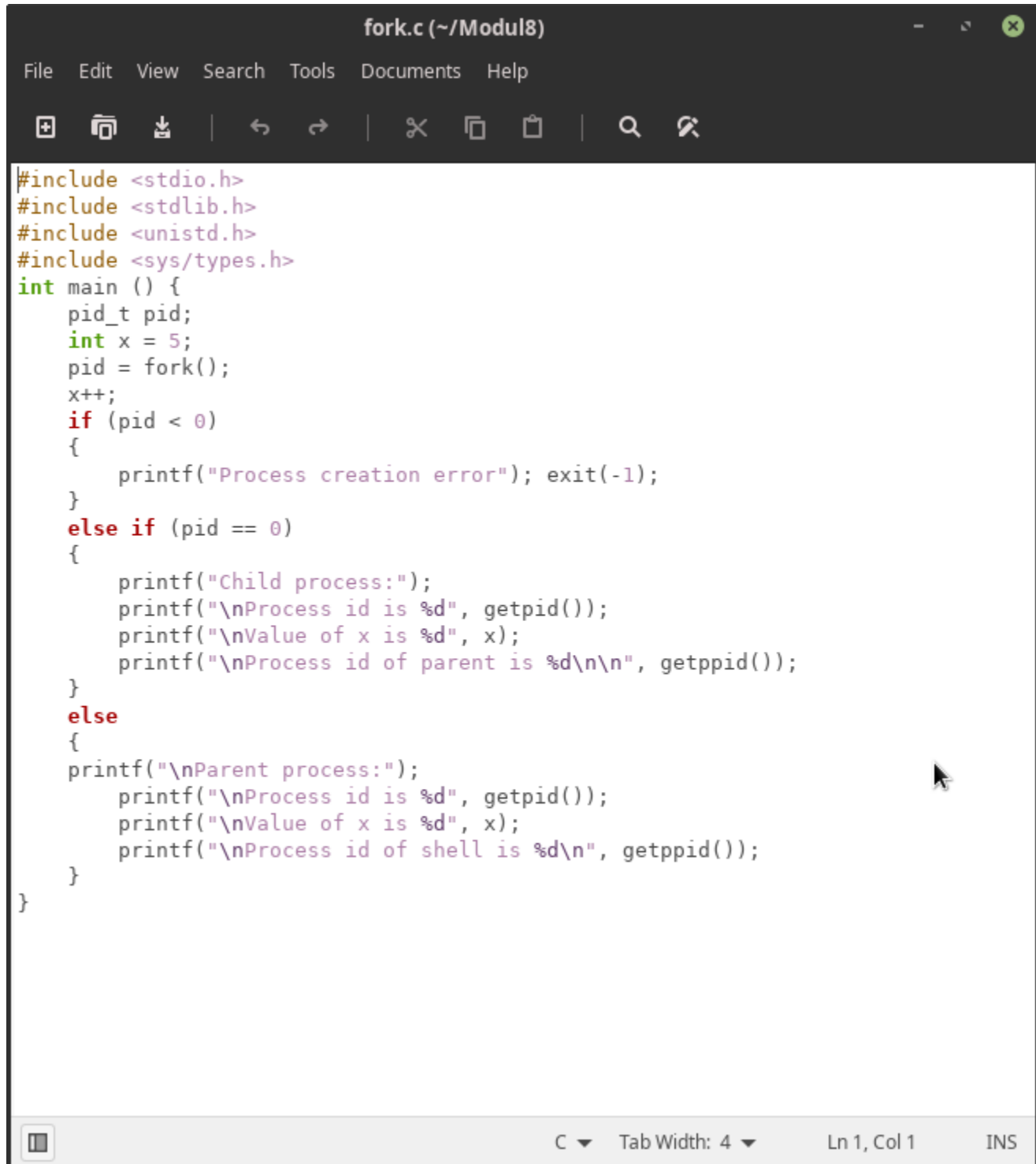
### SISTEM OPERASI

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NIM : L200180080

Kelas : B

fork.c



```
fork.c (~/Modul8)
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#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
int main () {
    pid_t pid;
    int x = 5;
    pid = fork();
    x++;
    if (pid < 0)
    {
        printf("Process creation error"); exit(-1);
    }
    else if (pid == 0)
    {
        printf("Child process:");
        printf("\nProcess id is %d", getpid());
        printf("\nValue of x is %d", x);
        printf("\nProcess id of parent is %d\n\n", getppid());
    }
    else
    {
        printf("\nParent process:");
        printf("\nProcess id is %d", getpid());
        printf("\nValue of x is %d", x);
        printf("\nProcess id of shell is %d\n", getppid());
    }
}
```

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root@afiq-Inspiron-3476: /home/afiq/Modul8

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afiq@afiq-Inspiron-3476:~\$ sudo su

[sudo] password for afiq:

root@afiq-Inspiron-3476:/home/afiq# cd Modul8

root@afiq-Inspiron-3476:/home/afiq/Modul8# gcc 'fork.c'

root@afiq-Inspiron-3476:/home/afiq/Modul8# ./a.out

Parent process:

Process id is 2629

Value of x is 6

Process id of shell is 2609

Child process:

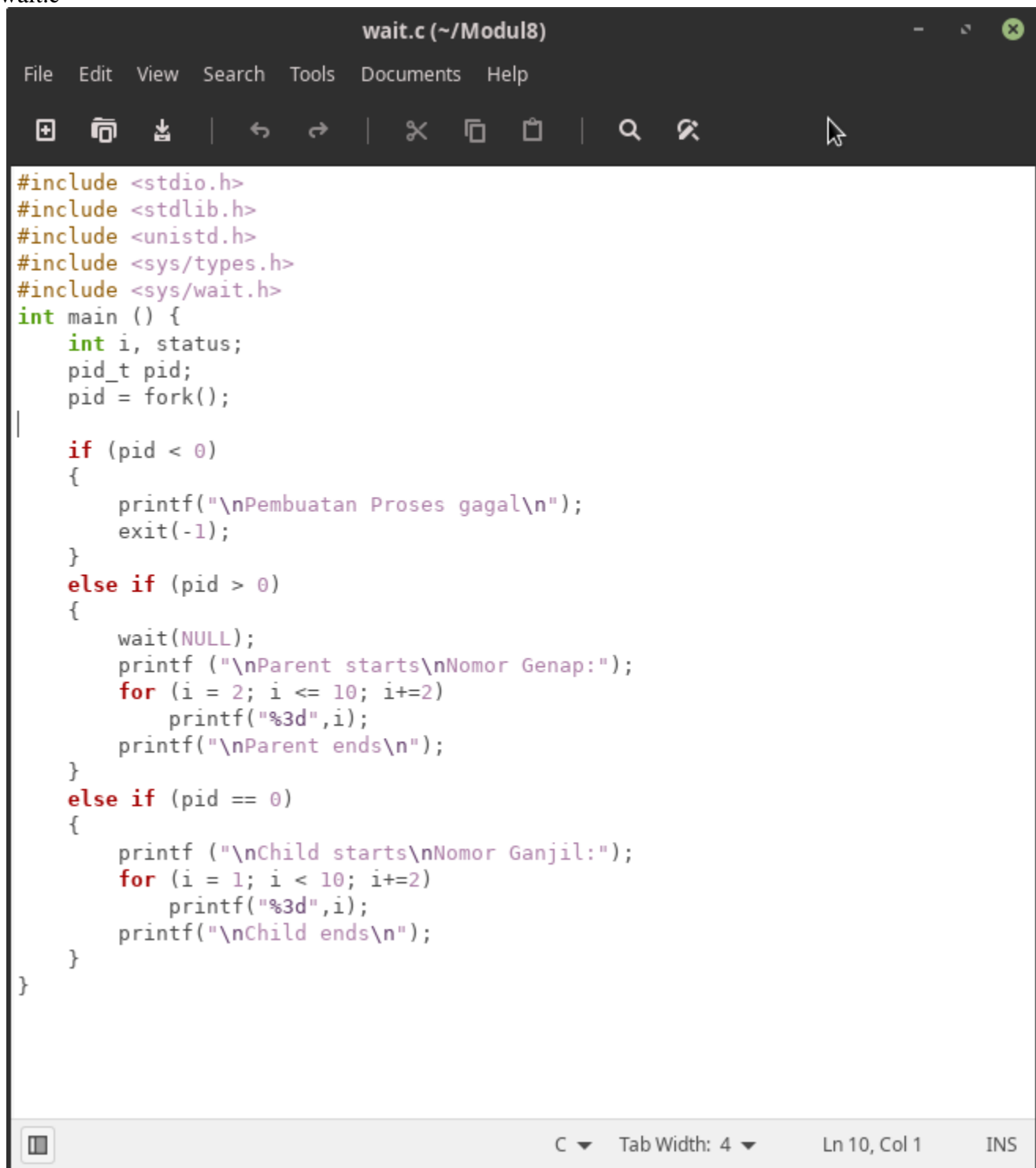
Process id is 2630

Value of x is 6

Process id of parent is 2629

root@afiq-Inspiron-3476:/home/afiq/Modul8#

wait.c



```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/wait.h>
int 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)
    {
        printf ("\nChild starts\nNomor Ganjil:");
        for (i = 1; i < 10; i+=2)
            printf("%3d",i);
        printf("\nChild ends\n");
    }
}
```

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root@afiq-Inspiron-3476: /home/afiq/Modul8

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afiq@afiq-Inspiron-3476:~\$ sudo su

[sudo] password for afiq:

root@afiq-Inspiron-3476:/home/afiq# cd Modul8

root@afiq-Inspiron-3476:/home/afiq/Modul8# gcc 'fork.c'

root@afiq-Inspiron-3476:/home/afiq/Modul8# ./a.out

Parent process:

Process id is 2629

Value of x is 6

Process id of shell is 2609

Child process:

Process id is 2630

Value of x is 6

Process id of parent is 2629

root@afiq-Inspiron-3476:/home/afiq/Modul8# gcc 'wait.c'

root@afiq-Inspiron-3476:/home/afiq/Modul8# ./a.out

Child starts

Nomor Ganjil: 1 3 5 7 9

Child ends

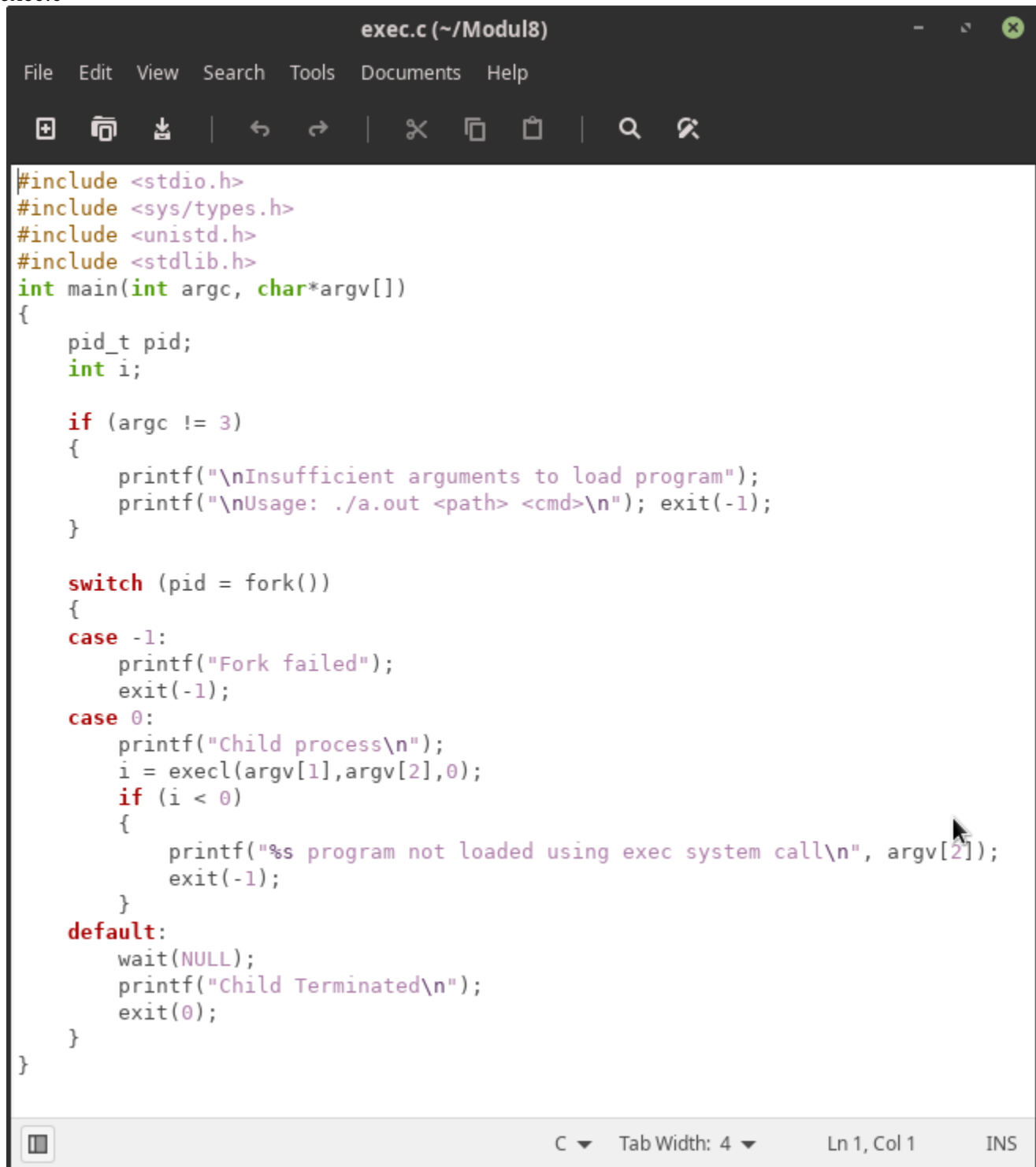
Parent starts

Nomor Genap: 2 4 6 8 10

Parent ends

root@afiq-Inspiron-3476:/home/afiq/Modul8#

exec.c



```
exec.c (~/Modul8)
File Edit View Search Tools Documents Help

#include <stdio.h>
#include <sys/types.h>
#include <unistd.h>
#include <stdlib.h>
int main(int argc, char*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 process\n");
            i = execl(argv[1],argv[2],0);
            if (i < 0)
            {
                printf("%s program not loaded using exec system call\n", argv[2]);
                exit(-1);
            }
        default:
            wait(NULL);
            printf("Child Terminated\n");
            exit(0);
    }
}
```

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root@afiq-Inspiron-3476: /home/afiq/Modul8

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afiq@afiq-Inspiron-3476:~\$ sudo su

[sudo] password for afiq:

root@afiq-Inspiron-3476:/home/afiq# cd Modul8

root@afiq-Inspiron-3476:/home/afiq/Modul8# gcc 'fork.c'

root@afiq-Inspiron-3476:/home/afiq/Modul8# ./a.out

Parent process:

Process id is 2629

Value of x is 6

Process id of shell is 2609

Child process:

Process id is 2630

Value of x is 6

Process id of parent is 2629

root@afiq-Inspiron-3476:/home/afiq/Modul8# gcc 'wait.c'

root@afiq-Inspiron-3476:/home/afiq/Modul8# ./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@afiq-Inspiron-3476:/home/afiq/Modul8# gcc exec.c

exec.c: In function 'main':

exec.c:23:9: warning: missing sentinel in function call [-Wformat=]

i = execl(argv[1],argv[2],0);

^

exec.c:30:9: warning: implicit declaration of function 'wait'; did you mean 'main'? [-W

implicit-function-declaration]

wait(NULL);

^~~~

main

root@afiq-Inspiron-3476:/home/afiq/Modul8# ./a.out /bin/ls ls

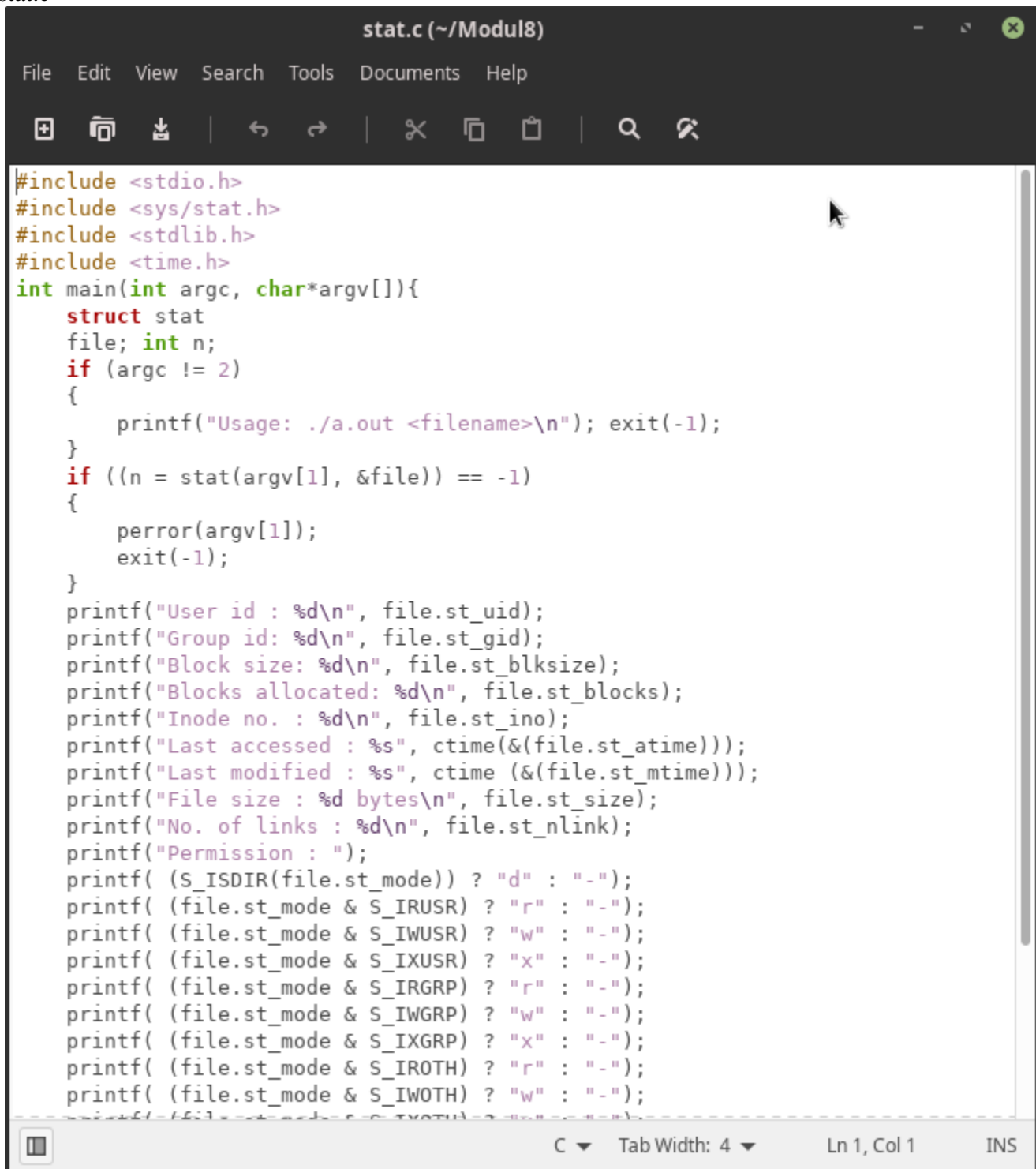
Child process

a.out contoh contoh.txt dirlist.c exec.c fork.c stat.c wait.c

Child Terminated

root@afiq-Inspiron-3476:/home/afiq/Modul8#

stat.c



```
stat.c (~/Modul8)
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#include <stdio.h>
#include <sys/stat.h>
#include <stdlib.h>
#include <time.h>
int main(int argc, char*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", ctime(&(file.st_atime)));
    printf("Last modified : %s", ctime (&(file.st_mtime)));
    printf("File size : %d bytes\n", file.st_size);
    printf("No. of links : %d\n", file.st_nlink);
    printf("Permission : ");
    printf( (S_ISDIR(file.st_mode)) ? "d" : "-");
    printf( (file.st_mode & S_IRUSR) ? "r" : "-");
    printf( (file.st_mode & S_IWUSR) ? "w" : "-");
    printf( (file.st_mode & S_IXUSR) ? "x" : "-");
    printf( (file.st_mode & S_IRGRP) ? "r" : "-");
    printf( (file.st_mode & S_IWGRP) ? "w" : "-");
    printf( (file.st_mode & S_IXGRP) ? "x" : "-");
    printf( (file.st_mode & S_IROTH) ? "r" : "-");
    printf( (file.st_mode & S_IWOTH) ? "w" : "-");
    printf( (file.st_mode & S_IXOTH) ? "x" : "-");
}
```

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root@afiq-Inspiron-3476: /home/afiq/Modul8

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```
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@afiq-Inspiron-3476:/home/afiq/Modul8# ./a.out contoh.txt
```

```
User id : 1000
```

```
Group id: 1000
```

```
Block size: 4096
```

```
Blocks allocated: 8
```

```
Inode no. : 788080
```

```
Last accessed : Tue Nov 26 01:04:09 2019
```

```
Last modified : Mon Nov 18 18:39:48 2019
```

```
File size : 15 bytes
```

```
No. of links : 1
```

```
Permission : -rw-rw-r--
```

```
File type : Regular
```

```
root@afiq-Inspiron-3476:/home/afiq/Modul8# ./a.out contoh
```

```
User id : 1000
```

```
Group id: 1000
```

```
Block size: 4096
```

```
Blocks allocated: 8
```

```
Inode no. : 788076
```

```
Last accessed : Tue Nov 26 01:03:56 2019
```

```
Last modified : Wed Nov 20 05:01:19 2019
```

```
File size : 4096 bytes
```

```
No. of links : 5
```

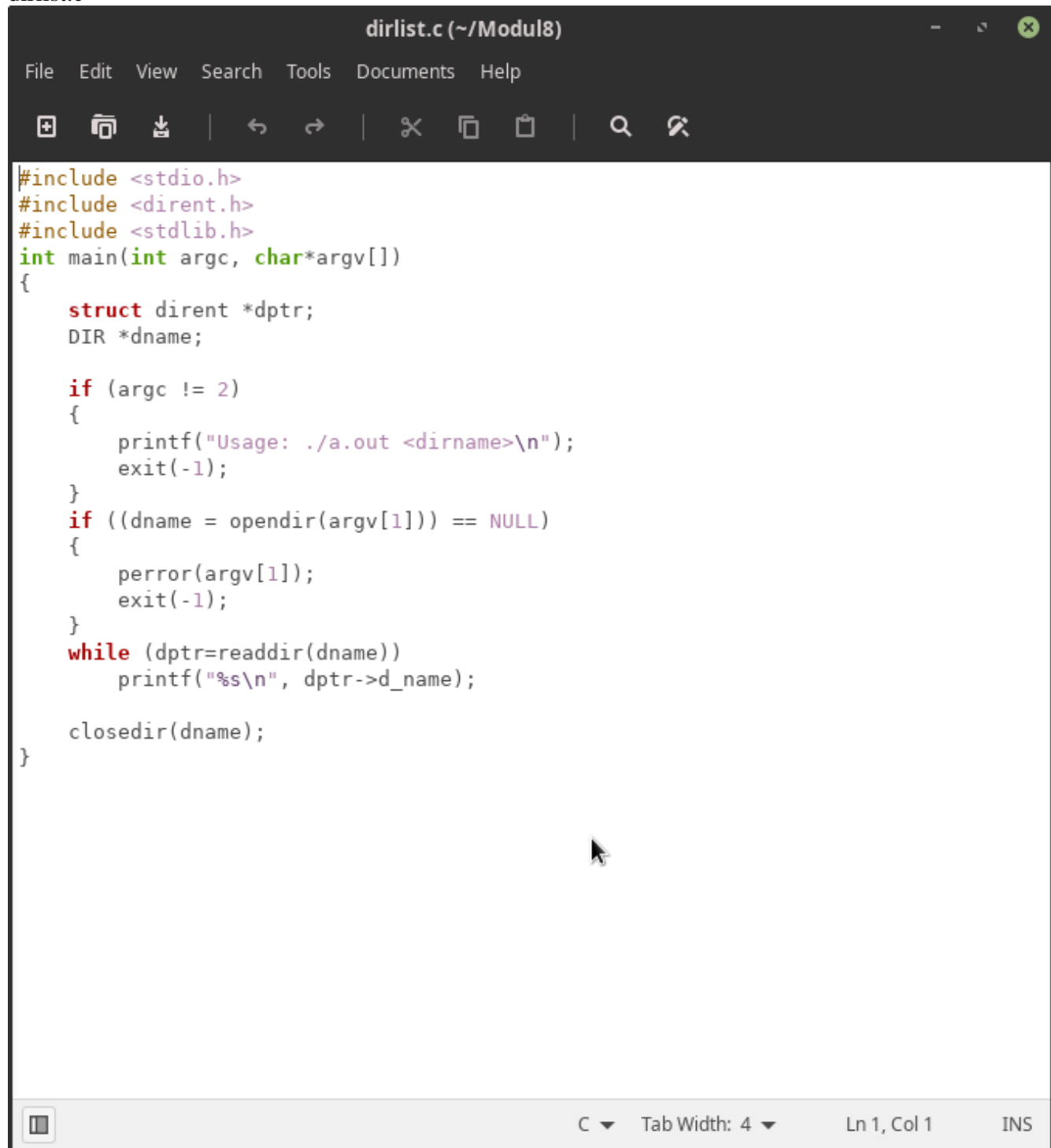
```
Permission : drwx-----
```

```
File type: Directory
```

```
root@afiq-Inspiron-3476:/home/afiq/Modul8#
```



dirlist.c



```
dirlist.c (~/Modul8)
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+ [Icons] [Icons] [Icons] [Icons] [Icons] [Icons] [Icons] [Icons]
#include <stdio.h>
#include <dirent.h>
#include <stdlib.h>
int main(int argc, char*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);
}
```

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afiq@afiq-Inspiron-3476:~\$ sudo su

[sudo] password for afiq:

root@afiq-Inspiron-3476:/home/afiq# cd Modul8

root@afiq-Inspiron-3476:/home/afiq/Modul8# gcc dirlist.c

root@afiq-Inspiron-3476:/home/afiq/Modul8# ./a.out contoh  
007

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T.N.

Afiq

root@afiq-Inspiron-3476:/home/afiq/Modul8#