

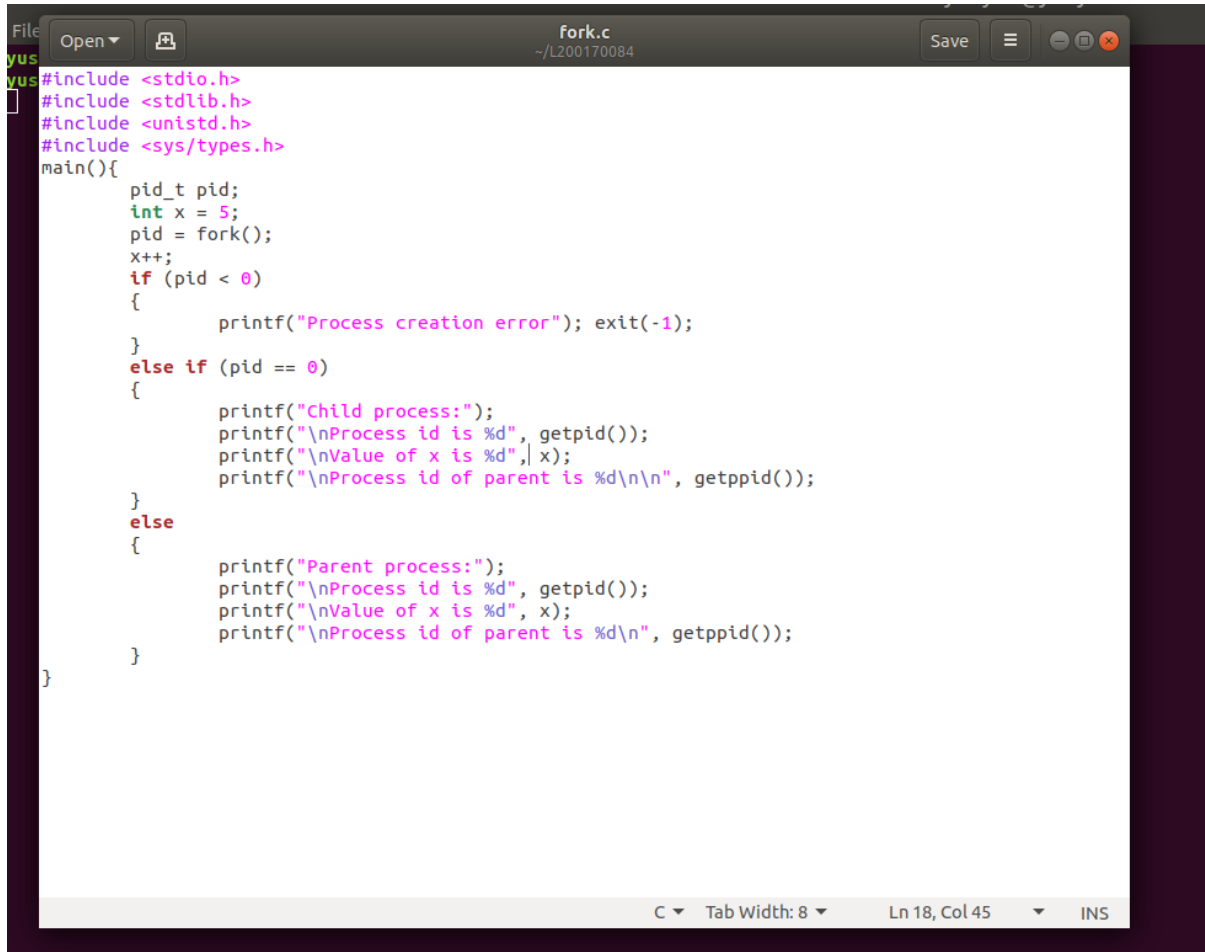
Nama : Pawitro Purbangkoro

NIM : L200170045

Kelas : B

## MODUL 08

1. Ketikkan 'gedit fork.c' kemudian tulis kode program seperti di bawah ini:

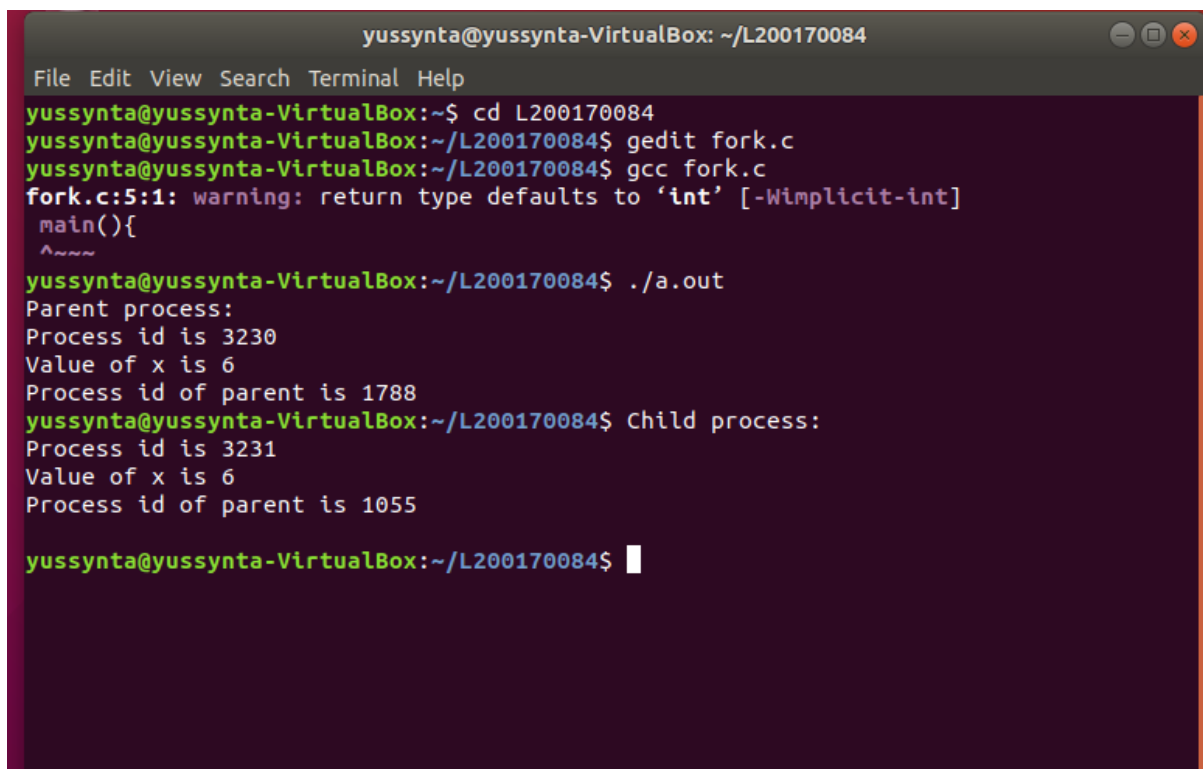


```
File Open [icon] fork.c Save [icon] [icon] [icon]
~/L200170084
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
main(){
    pid_t pid;
    int x = 5;
    pid = fork();
    x++;
    if (pid < 0)
    {
        printf("Process creation error"); exit(-1);
    }
    else 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("Parent process:");
        printf("\nProcess id is %d", getpid());
        printf("\nValue of x is %d", x);
        printf("\nProcess id of parent is %d\n", getppid());
    }
}
```

C Tab Width: 8 Ln 18, Col 45 INS

2. Kemudian ngengkompilasi dan menjalankan program tersebut:

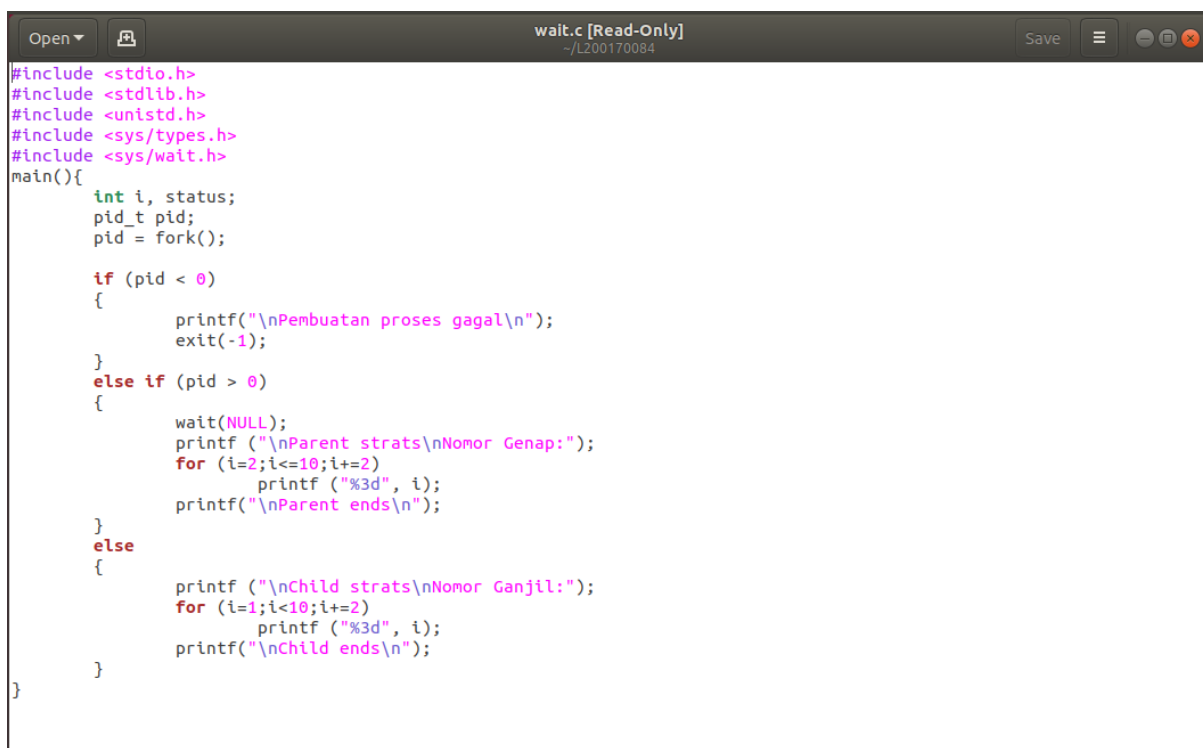
- \$gcc fork.c
- \$./a.out



```
yussynta@yussynta-VirtualBox: ~/L200170084
File Edit View Search Terminal Help
yussynta@yussynta-VirtualBox:~$ cd L200170084
yussynta@yussynta-VirtualBox:~/L200170084$ gedit fork.c
yussynta@yussynta-VirtualBox:~/L200170084$ gcc fork.c
fork.c:5:1: warning: return type defaults to 'int' [-Wimplicit-int]
main(){
    ^~~~~
yussynta@yussynta-VirtualBox:~/L200170084$ ./a.out
Parent process:
Process id is 3230
Value of x is 6
Process id of parent is 1788
yussynta@yussynta-VirtualBox:~/L200170084$ Child process:
Process id is 3231
Value of x is 6
Process id of parent is 1055

yussynta@yussynta-VirtualBox:~/L200170084$
```

3. Ketikkan 'gedit exec.c' kemudian tulis kode program seperti di bawah ini:



```
wait.c [Read-Only]
~/L200170084
Open Save
#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 strats\nNomor Genap:");
        for (i=2;i<=10;i+=2)
            printf ("%3d", i);
        printf("\nParent ends\n");
    }
    else
    {
        printf ("\nChild strats\nNomor Ganjil:");
        for (i=1;i<=10;i+=2)
            printf ("%3d", i);
        printf("\nChild ends\n");
    }
}
```

4. Kemudian ngengkompilasi dan menjalankan program tersebut:

- \$gcc fork.c
- \$./a.out

```
yussynta@yussynta-VirtualBox: ~/L200170084
File Edit View Search Terminal Help
yussynta@yussynta-VirtualBox:~$ cd L200170084
yussynta@yussynta-VirtualBox:~/L200170084$ gedit fork.c
yussynta@yussynta-VirtualBox:~/L200170084$ gcc fork.c
fork.c:5:1: warning: return type defaults to 'int' [-Wimplicit-int]
main(){
^~~~
yussynta@yussynta-VirtualBox:~/L200170084$ ./a.out
Parent process:
Process id is 3230
Value of x is 6
Process id of parent is 1788
yussynta@yussynta-VirtualBox:~/L200170084$ Child process:
Process id is 3231
Value of x is 6
Process id of parent is 1055

yussynta@yussynta-VirtualBox:~/L200170084$ gedit wait.c
yussynta@yussynta-VirtualBox:~/L200170084$ gcc wait.c
wait.c:6:1: warning: return type defaults to 'int' [-Wimplicit-int]
main(){
^~~~
yussynta@yussynta-VirtualBox:~/L200170084$ ./a.out

Child strats
Nomor Ganjil:  1  3  5  7  9
Child ends

Parent strats
Nomor Genap:   2  4  6  8 10
Parent ends
yussynta@yussynta-VirtualBox:~/L200170084$
```

5. Lanjutkan dengan mengetikkan 'gedit exec.c' kemudian tulis kode program seperti di bawah ini:

```
exec.c [Read-Only]
~/L200170084
Save

#include <stdio.h>
#include <sys/types.h>
#include <unistd.h>
#include <stdlib.h>
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);
    }
}
```

6. Kemudian ngengkompilasi dan menjalankan program tersebut:

- \$gcc exec.c
- \$./a.out /bin/ls ls

```
yussynta@yussynta-VirtualBox: ~/L200170084
File Edit View Search Terminal Help
Process id of parent is 1788
yussynta@yussynta-VirtualBox:~/L200170084$ Child process:
Process id is 3231
Value of x is 6
Process id of parent is 1055

yussynta@yussynta-VirtualBox:~/L200170084$ gedit wait.c
yussynta@yussynta-VirtualBox:~/L200170084$ gcc wait.c
wait.c:6:1: warning: return type defaults to 'int' [-Wimplicit-int]
main(){
~~~~~
yussynta@yussynta-VirtualBox:~/L200170084$ ./a.out

Child strats
Nomor Ganjil:  1  3  5  7  9
Child ends

Parent strats
Nomor Genap:  2  4  6  8 10
Parent ends
yussynta@yussynta-VirtualBox:~/L200170084$ gedit exec.c
yussynta@yussynta-VirtualBox:~/L200170084$ gcc exec.c
exec.c:5:1: warning: return type defaults to 'int' [-Wimplicit-int]
main(int argc, char*argv[]){
~~~~~
exec.c: In function 'main':
exec.c:23:3: warning: missing sentinel in function call [-Wformat=]
    i = execl(argv[1], argv[2], 0);
    ^
exec.c:30:3: warning: implicit declaration of function 'wait'; did you mean 'main'?
[-Wimplicit-function-declaration]
    wait(NULL);
    ~~~~~
    main
yussynta@yussynta-VirtualBox:~/L200170084$ ./a.out /bin/ls /ls
Child process
a.out dirlist.c exec.c fork.c stat.c wait.c
Child Terminated
yussynta@yussynta-VirtualBox:~/L200170084$
```

7. Lanjutkan dengan mengetikkan 'gedit stat.c' kemudian tulis kode program seperti di bawah ini:

```
stat.c [Read-Only]
~/L200170084
Save

#include <stdio.h>
#include <sys/stat.h>
#include <stdlib.h>
#include <time.h>

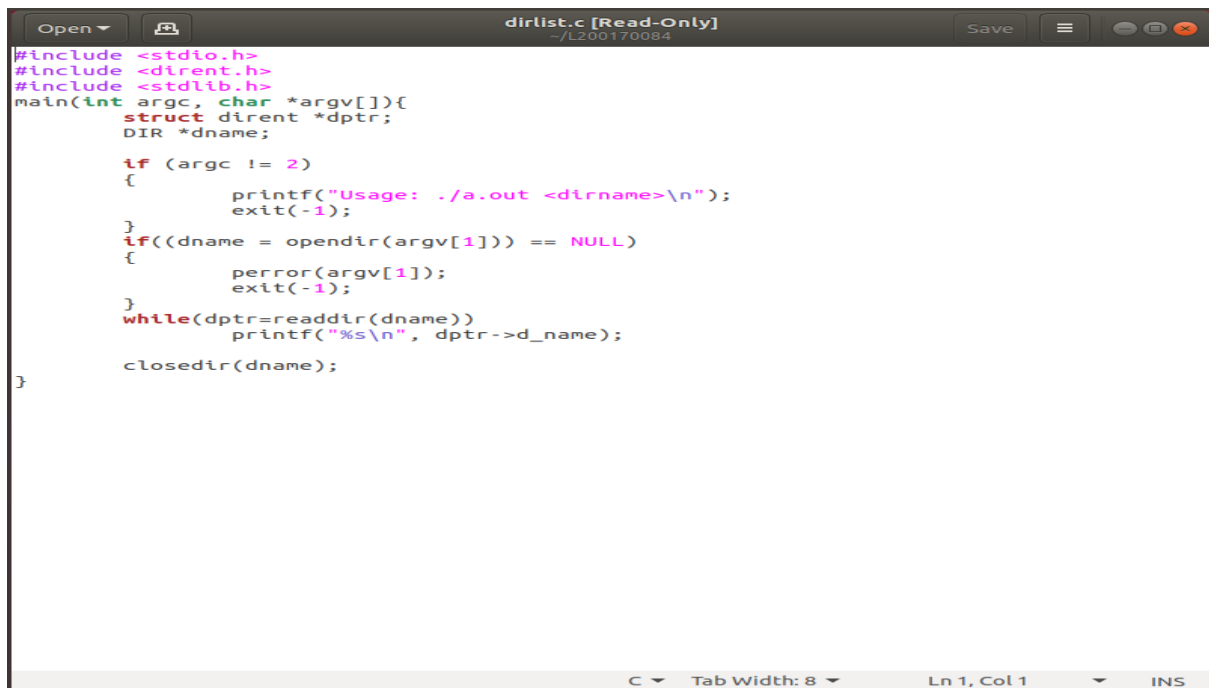
int main(int argc, char*argv[]){
    struct stat
    file; int n;
    if (argc != 2)
    {
        printf("Usage: ./a.out <filename>\n"); exit(-1);
    }
    if ((n = stat(argv[1], &file)) == -1)
    {
        perror(argv[1]);
        exit(-1);
    }
    printf("User id : %d\n", file.st_uid);
    printf("Group 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\n", ctime(&(file.st_atime)));
    printf("Last modifier : %s\n", ctime(&(file.st_mtime)));
    printf("File size : %d bytes\n", file.st_size);
    printf("No. of links : %d\n", file.st_nlink);
    printf("Permissions : ");
    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" : "-");
    printf("\n");
    if(file.st_mode & S_IFREG)
        printf("File type : Regular\n");
    if(file.st_mode & S_IFDIR)
        printf("File type : Directory\n");
}
```

8. Kemudian ngengkompilasi dan menjalankan program tersebut:

- `$gcc stat.c`
- `$/a.out /bin/ls ls`

```
yussynta@yussynta-VirtualBox: ~/L200170084
File Edit View Search Terminal Help
[-Wimplicit-function-declaration]
wait(NULL);
^~~~
main
yussynta@yussynta-VirtualBox:~/L200170084$ ./a.out /bin/ls /ls
Child process
a.out dirlist.c exec.c fork.c stat.c wait.c
Child Terminated
yussynta@yussynta-VirtualBox:~/L200170084$ gedit stat.c
yussynta@yussynta-VirtualBox:~/L200170084$ gcc stat.c
stat.c: In function 'main':
stat.c:20:24: warning: format '%d' expects argument of type 'int', but argument 2 h
as type '__blksize_t {aka long int}' [-Wformat=]
printf("Block size : %d\n", file.st_blksize);
      ^
      %ld
stat.c:21:30: warning: format '%d' expects argument of type 'int', but argument 2 h
as type '__blkcnt_t {aka long int}' [-Wformat=]
printf("Blocks allocated : %d\n", file.st_blocks);
      ^
      %ld
stat.c:22:23: warning: format '%d' expects argument of type 'int', but argument 2 h
as type '__ino_t {aka long unsigned int}' [-Wformat=]
printf("Inode no. : %d\n", file.st_ino);
      ^
      %ld
stat.c:25:23: warning: format '%d' expects argument of type 'int', but argument 2 h
as type '__off_t {aka long int}' [-Wformat=]
printf("File size : %d bytes\n", file.st_size);
      ^
      %ld
stat.c:26:26: warning: format '%d' expects argument of type 'int', but argument 2 h
as type '__nlink_t {aka long unsigned int}' [-Wformat=]
printf("No. of links : %d\n", file.st_nlink);
      ^
      %ld
yussynta@yussynta-VirtualBox:~/L200170084$ ./a.out /bin/ls /ls
Usage: ./a.out <filename>
yussynta@yussynta-VirtualBox:~/L200170084$
```

9. Lanjutkan dengan mengetikkan 'gedit dirlist.c' kemudian tulis kode program seperti di bawah ini:



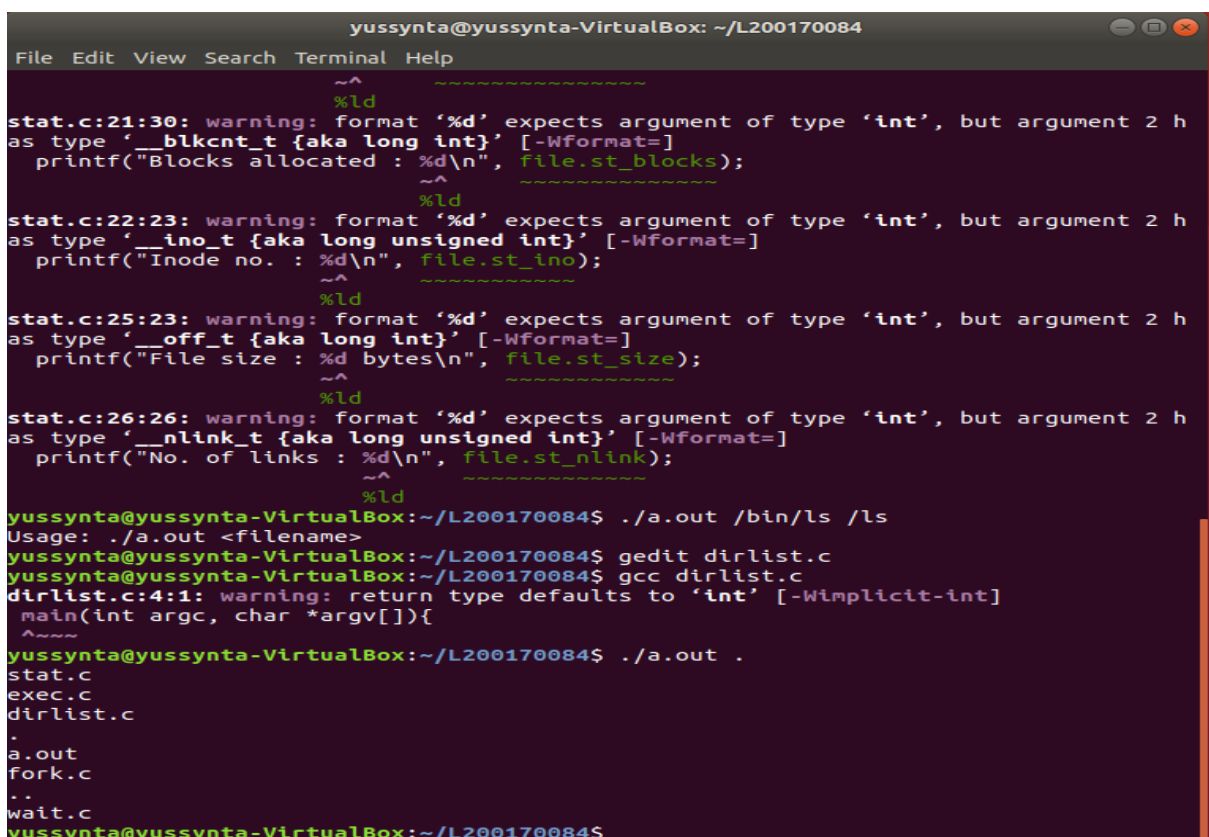
```
#include <stdio.h>
#include <dirent.h>
#include <stdlib.h>
main(int argc, char *argv[]){
    struct dirent *dptr;
    DIR *dname;

    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);
}
```

10. Kemudian ngengkompilasi dan menjalankan program tersebut:

- \$gcc dirlist.c
- \$./a.out .



```
yussynta@yussynta-VirtualBox: ~/L200170084
File Edit View Search Terminal Help

stat.c:21:30: warning: format '%d' expects argument of type 'int', but argument 2 h
as type '__blkcnt_t {aka long int}' [-Wformat=]
    printf("Blocks allocated : %d\n", file.st_blocks);
                                ^~
stat.c:22:23: warning: format '%d' expects argument of type 'int', but argument 2 h
as type '__ino_t {aka long unsigned int}' [-Wformat=]
    printf("Inode no. : %d\n", file.st_ino);
                        ^~
stat.c:25:23: warning: format '%d' expects argument of type 'int', but argument 2 h
as type '__off_t {aka long int}' [-Wformat=]
    printf("File size : %d bytes\n", file.st_size);
                        ^~
stat.c:26:26: warning: format '%d' expects argument of type 'int', but argument 2 h
as type '__nlink_t {aka long unsigned int}' [-Wformat=]
    printf("No. of links : %d\n", file.st_nlink);
                        ^~
yussynta@yussynta-VirtualBox:~/L200170084$ ./a.out /bin/ls /ls
Usage: ./a.out <filename>
yussynta@yussynta-VirtualBox:~/L200170084$ gedit dirlist.c
yussynta@yussynta-VirtualBox:~/L200170084$ gcc dirlist.c
dirlist.c:4:1: warning: return type defaults to 'int' [-Wimplicit-int]
    main(int argc, char *argv[]){
    ^~~~
yussynta@yussynta-VirtualBox:~/L200170084$ ./a.out .
stat.c
exec.c
dirlist.c
.
a.out
fork.c
..
wait.c
yussynta@yussynta-VirtualBox:~/L200170084$
```