

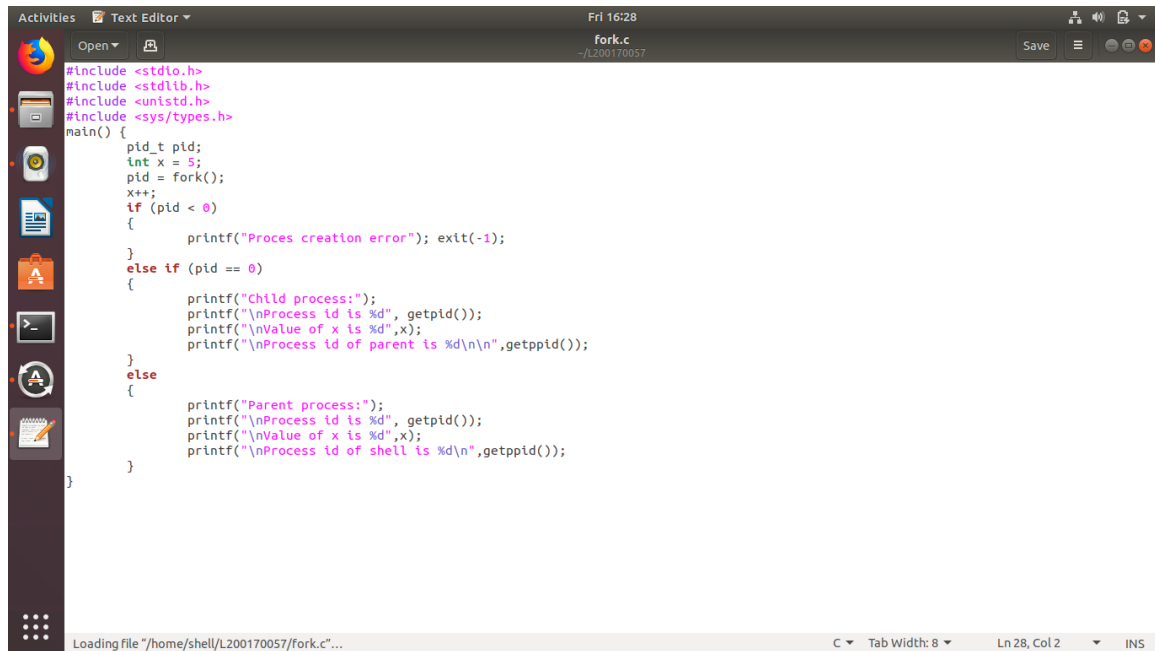
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NIM : L200170057

Kelas : C

## MODUL 8 : System Call

### 1. Fork.c



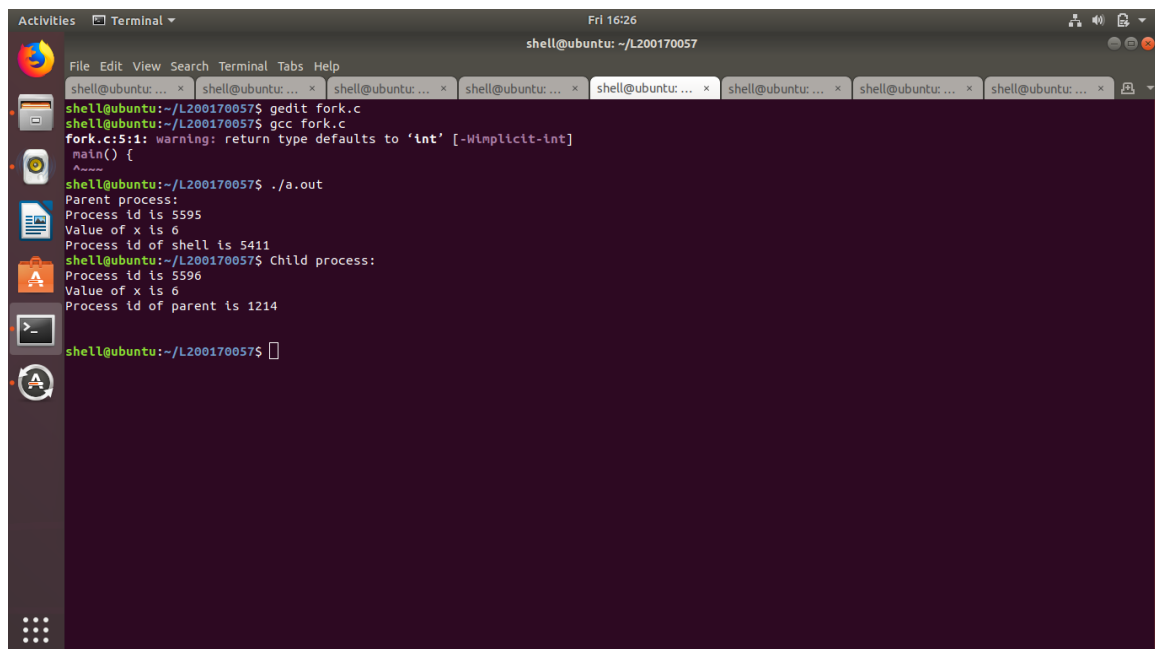
```
Activities Text Editor Fri 16:28
fork.c
~/L200170057 Save

#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("Proces 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", getppid());
    }
    else
    {
        printf("Parent process:");
        printf("\nProcess id is %d", getpid());
        printf("\nValue of x is %d", x);
        printf("\nProcess id of shell is %d\n", getppid());
    }
}
```

Loading file "/home/shell/L200170057/fork.c"...

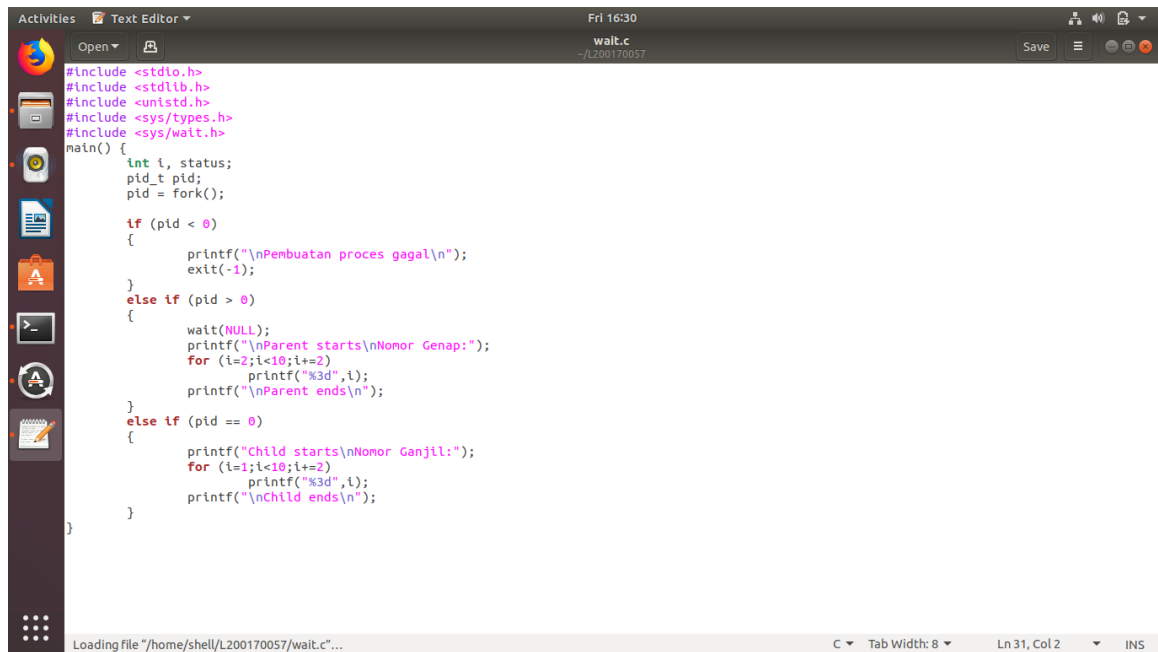
C Tab Width: 8 Ln 28, Col 2 INS



```
Activities Terminal Fri 16:26
shell@ubuntu: ~/L200170057

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shell@ubuntu: ... x shell@ubuntu: ... x shell@ubuntu: ... x shell@ubuntu: ... x shell@ubuntu: ... x shell@ubuntu: ... x shell@ubuntu: ... x shell@ubuntu: ... x
shell@ubuntu:~/L200170057$ gedit fork.c
shell@ubuntu:~/L200170057$ gcc fork.c
fork.c:5:1: warning: return type defaults to 'int' [-Wimplicit-int]
main() {
^~~~~~
shell@ubuntu:~/L200170057$ ./a.out
Parent process:
Process id is 5595
Value of x is 6
Process id of shell is 5411
shell@ubuntu:~/L200170057$ Child process:
Process id is 5596
Value of x is 6
Process id of parent is 1214
shell@ubuntu:~/L200170057$
```

## 2. Wait.c

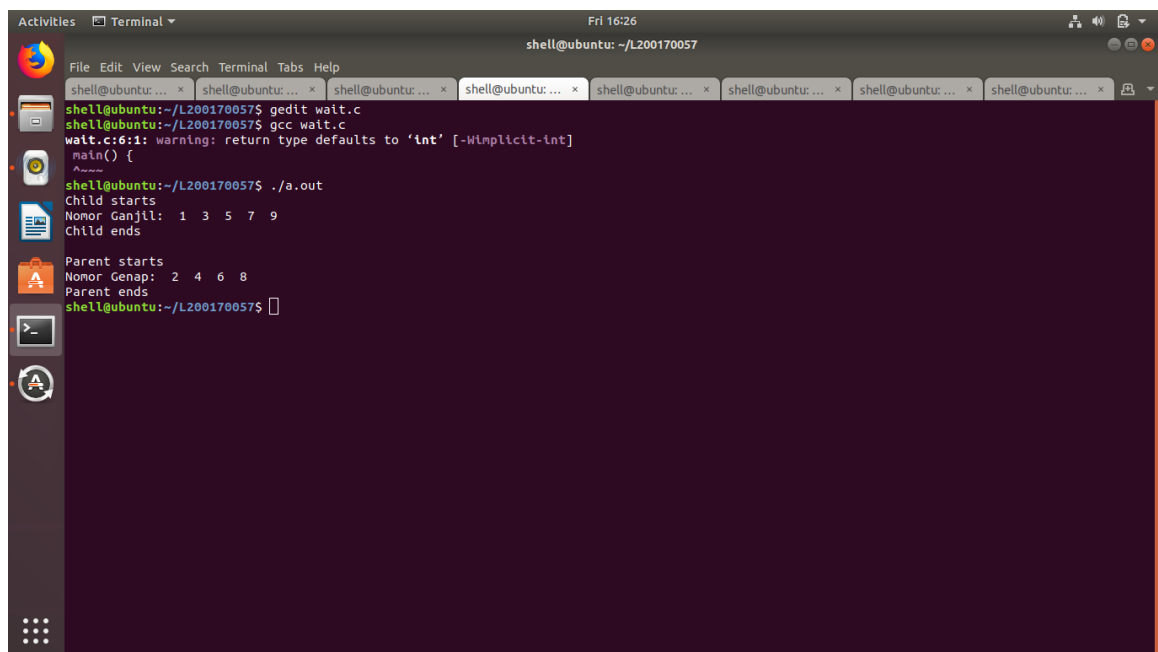


```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/wait.h>

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)
    {
        printf("Child starts\nNomor Ganjil:");
        for (i=1; i<10; i+=2)
            printf("%3d", i);
        printf("\nChild ends\n");
    }
}
```

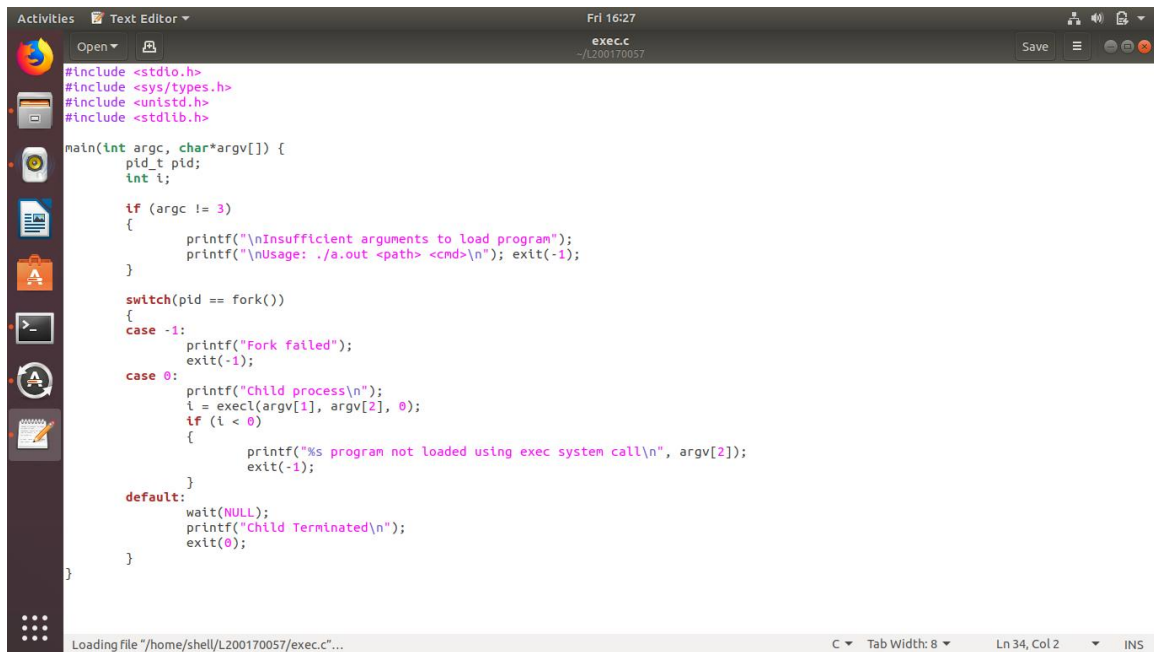
Loading file "/home/shell/L200170057/wait.c"...



```
shell@ubuntu: ~/L200170057
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shell@ubuntu:~/L200170057$ gcc wait.c
wait.c:6:1: warning: return type defaults to 'int' [-Wimplicit-int]
main() {
^~~~~~
shell@ubuntu:~/L200170057$ ./a.out
Child starts
Nomor Ganjil:  1  3  5  7  9
Child ends

Parent starts
Nomor Genap:  2  4  6  8
Parent ends
shell@ubuntu:~/L200170057$
```

### 3. Exec.c



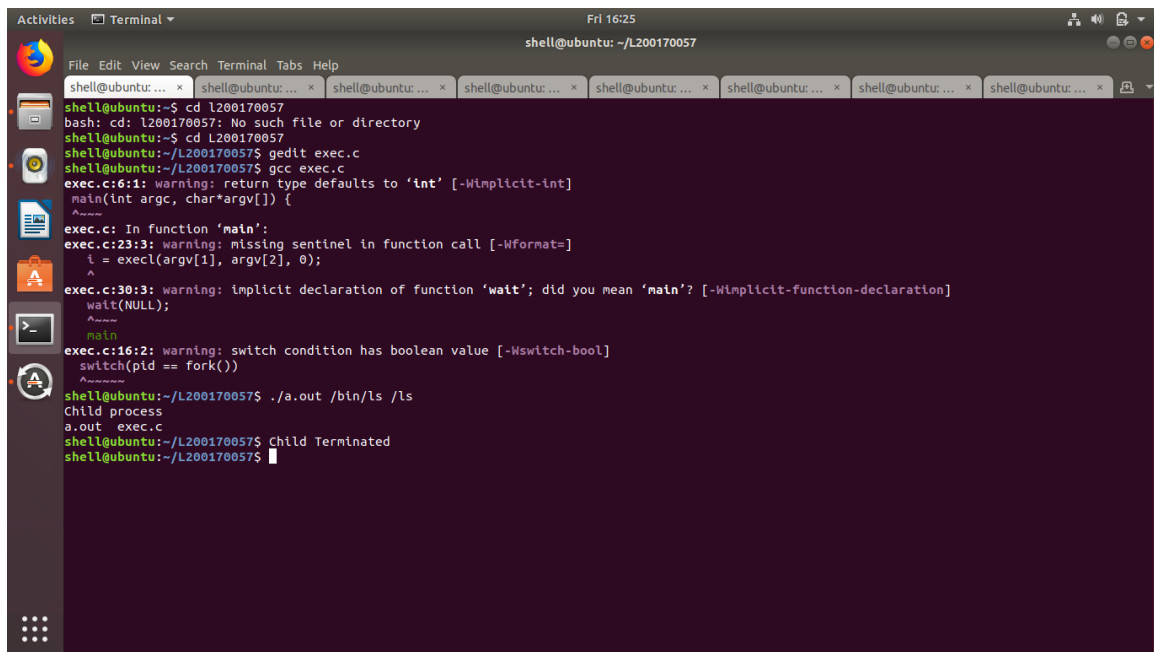
```
#include <stdio.h>
#include <sys/types.h>
#include <unistd.h>
#include <stdlib.h>

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);
    }
}
```

Loading file "/home/shell/L200170057/exec.c"...



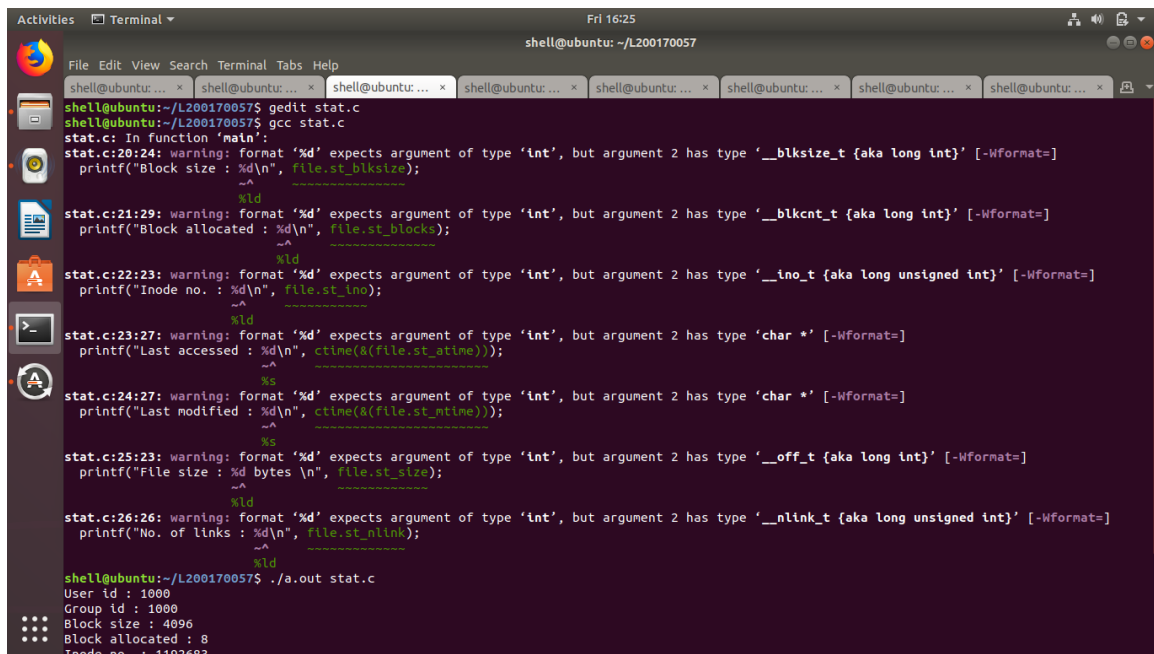
```
shell@ubuntu: ~/L200170057
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shell@ubuntu:~$ cd l200170057
bash: cd: l200170057: No such file or directory
shell@ubuntu:~$ cd l200170057
shell@ubuntu:~$ gcc exec.c
exec.c:6:1: warning: return type defaults to 'int' [-Wimplicit-int]
main(int argc, 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);
    ^~~~~~
exec.c:16:2: warning: switch condition has boolean value [-Wswitch-bool]
    switch(pid == fork())
    ^~~~~~
shell@ubuntu:~$ ./a.out /bin/ls /ls
Child process
a.out exec.c
shell@ubuntu:~$ Child Terminated
shell@ubuntu:~$
```

#### 4. Stat.c



```
#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("Block allocated : %d\n", file.st_blocks);
    printf("Inode no. : %d\n", file.st_ino);
    printf("Last accessed : %d\n", ctime(&(file.st_atime)));
    printf("Last modified : %d\n", 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" : "-");
    printf("\n");
    if(file.st_mode & S_IFREG)
```



```
shell@ubuntu:~/L200170057$ gcc stat.c
stat.c: In function 'main':
stat.c:20:24: 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);
                           ^~
stat.c:21:29: warning: format '%d' expects argument of type 'int', but argument 2 has type '__blkcnt_t {aka long int}' [-Wformat=]
    printf("Block allocated : %d\n", file.st_blocks);
                           ^~
stat.c:22:23: 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);
                           ^~
stat.c:23:27: warning: format '%d' expects argument of type 'int', but argument 2 has type 'char *' [-Wformat=]
    printf("Last accessed : %d\n", ctime(&(file.st_atime)));
                           ^~
stat.c:24:27: warning: format '%d' expects argument of type 'int', but argument 2 has type 'char *' [-Wformat=]
    printf("Last modified : %d\n", ctime(&(file.st_mtime)));
                           ^~
stat.c:25:23: 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);
                           ^~
stat.c:26:26: 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);
                           ^~

shell@ubuntu:~/L200170057$ ./a.out stat.c
User id : 1000
Group id : 1000
Block size : 4096
Block allocated : 8
Inode no. : 1192693
```

```
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shell@ubuntu: ~/L200170057
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shell@ubuntu:~/L200170057$ ./a.out stat.c
printf("Block allocated : %d\n", file.st_blocks);
~^
~^
~^
stat.c:22:23: 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);
~^
~^
~^
stat.c:23:27: warning: format '%d' expects argument of type 'int', but argument 2 has type 'char *' [-Wformat=]
printf("Last accessed : %d\n", ctime(&(file.st_atime)));
~^
~^
~^
stat.c:24:27: warning: format '%d' expects argument of type 'int', but argument 2 has type 'char *' [-Wformat=]
printf("Last modified : %d\n", ctime(&(file.st_mtime)));
~^
~^
~^
stat.c:25:23: 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);
~^
~^
~^
stat.c:26:26: 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);
~^
~^
~^
shell@ubuntu:~/L200170057$ ./a.out stat.c
User id : 1000
Group id : 1000
Block size : 4096
Block allocated : 8
Inode no. : 1192683
Last accessed : 1028107040
Last modified : 1028107040
File size : 1378 bytes
No. of links : 1
Permission : -rw-r--r--
file type : Regular
shell@ubuntu:~/L200170057$
```

## 5. Dirlist.c

```
Activities Text Editor Fri 16:27
dirlist.c
~/L200170057
Save
#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);
}
```

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```
Activities Terminal Fri 16:25 shell@ubuntu: ~/L200170057
File Edit View Search Terminal Tabs Help
shell@ubuntu:~/L200170057$ gedit dirlist.c
shell@ubuntu:~/L200170057$ gcc dirlist.c
dirlist.c:4:1: warning: return type defaults to 'int' [-Wimplicit-int]
main(int argc, char *argv[]){
^~~~~~
shell@ubuntu:~/L200170057$ ./a.out dirlist.c
dirlist.c: Not a directory
shell@ubuntu:~/L200170057$ ./a.out
Usage: ./a.out <dirname>
shell@ubuntu:~/L200170057$ ./a.out dirlist.c
dirlist.c: Not a directory
shell@ubuntu:~/L200170057$ ./a.out .
a.out
exec.c
dirlist.c
.
..
shell@ubuntu:~/L200170057$
```