

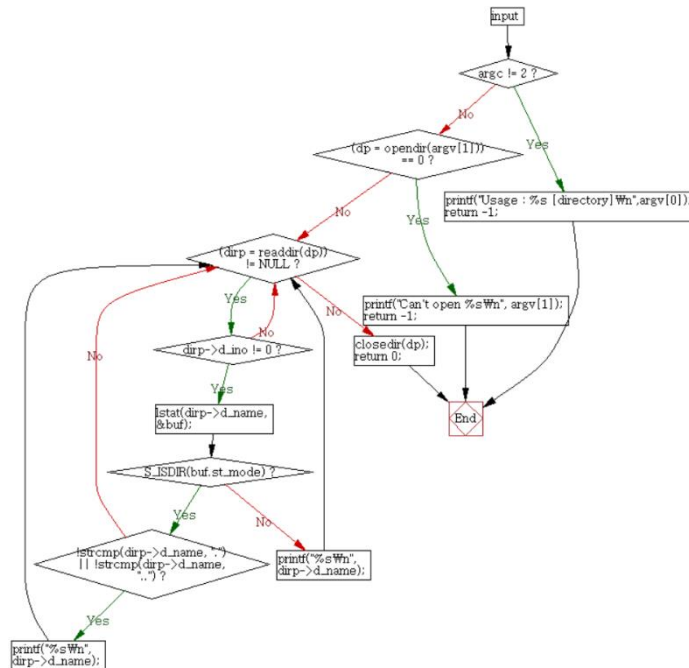
## &lt;Assignment2-2&gt;

과제명	Assignment2-2(ls command implementation)			
과목명	시스템프로그래밍(H020-3-0922-01)(화 5 목 6)			
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개발기간	2020.04.26			
개발 환경	OperatingSystem	Linux (Ubuntu 18.04 LTS)		
	Language	C		
	Development Tools	Visual Studio Code, gcc Compiler		
	Library	sys/types.h, stdio.h, dirent.h		
과제 요구사항 및 구현 내용	<ul style="list-style-type: none"><li>- Display directory information</li><li>- Use opendir(), readdir(), closedir() function.</li><li>- The routines for Error handling are required</li></ul>			

## 1. Introduction

Assignment2-2는 ls command implemetation으로 input 디렉토리 경로의 정보를 출력하는 것인데 그 중 only file name만 출력하도록 했다 ('.' : current directory, '..' : parent directory 포함) 디렉토리 정보를 확인하기 위해 opendir(), readdir(), closedir()를 사용하였고, 파일 정보인지 확인하기 위해 lstat function, current, parent directory를 포함하여 출력하기 위해 strcmp function를 사용하였다.

## 2. Flow Chart



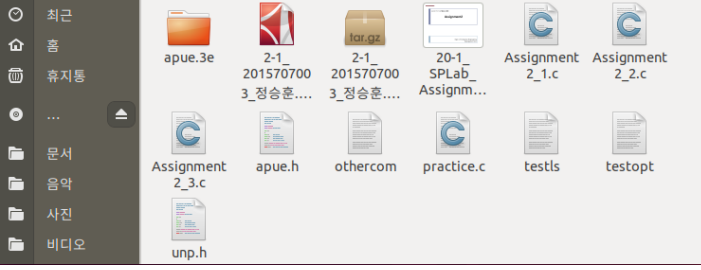
## 3. Source Code

```

1  #include <sys/types.h>
2  #include <dirent.h> // defines a file system independent directory entry
3  #include <stdio.h>
4  #include <sys/stat.h> // for use lstat function to save file information
5  #include <string.h>
6  int main(int argc, char **argv)
7  {
8      DIR *dp; // for open directory access, we need this structure
9      struct dirent *dirp;
10     struct stat buf;
11     ////////////////////////////////////////////////// arg input ///////////////////////////////////
12     if (argc != 2) { // must excute two argument
13         printf("Usage : %s [directory]\n", argv[0]);
14         return -1;
15     }
16
17     if ((dp = opendir(argv[1])) == 0) { // opens a directory stream corresponding to the directory name
18         printf("Can't open %s\n", argv[1]);
19         return -1;
20     }
21     while ((dirp = readdir(dp)) != NULL) {
22         if (dirp->d_ino != 0) {
23             lstat(dirp->d_name, &buf); // get file information
24             if (S_ISDIR(buf.st_mode)) { // directory file
25                 if (!strcmp(dirp->d_name, ".") || !strcmp(dirp->d_name, ".."))
26                     printf("%s\n", dirp->d_name); // current, parent directory print
27                 else continue; // except ignoring
28             }
29             else if (S_ISREG(buf.st_mode)) // regular file
30                 printf("%s\n", dirp->d_name);
31             else if (S_ISFIFO(buf.st_mode)) // directory file
32                 printf("%s\n", dirp->d_name);
33             else if (S_ISLNK(buf.st_mode)) // symbolic link
34                 printf("%s\n", dirp->d_name);
35             else if (S_ISCHR(buf.st_mode)) // character special file (Keyboard, mouse, ...)
36                 printf("%s\n", dirp->d_name);
37             else if (S_ISBLK(buf.st_mode)) // block special file (USB storage device)
38                 printf("%s\n", dirp->d_name);
39             else if (S_ISSOCK(buf.st_mode)) // socket
40                 printf("%s\n", dirp->d_name);
41         }
42     }
43     ////////////////////////////////////////////////// print content ///////////////////////////////////
44     closedir(dp); // closes the directory stream associated with dirp
45     return 0;
46 }
47
48 
```

## 4. Result

```
jsh0116@jsh0116-VirtualBox: ~/Desktop/System_Programming/hw
파일(F) 편집(E) 보기(V) 검색(S) 터미널(T) 도움말(H)
jsh0116@jsh0116-VirtualBox:~/Desktop/System_Programming/hw$ ls
2-1_2015707003_정승훈.pdf  Assignment2_1.c  apue.3e  practice.c  unp.h
2-1_2015707003_정승훈.tar.gz  Assignment2_2.c  apue.h  testls
20-1_SPLab_Assignment2.pdf  Assignment2_3.c  othercom  testopt
jsh0116@jsh0116-VirtualBox:~/Desktop/System_Programming/hw$ code Assignment2_2.c
jsh0116@jsh0116-VirtualBox:~/Desktop/System_Programming/hw$ gcc -o testls Assignment2_2.c
jsh0116@jsh0116-VirtualBox:~/Desktop/System_Programming/hw$ ./testls ~/Desktop/System_Programming/hw
Assignment2_1.c
practice.c
apue.h
othercom
testopt
..
.
unp.h
testls
Assignment2_2.c
Assignment2_3.c
2-1_2015707003_정승훈.tar.gz
2-1_2015707003_정승훈.pdf
20-1_SPLab_Assignment2.pdf
jsh0116@jsh0116-VirtualBox:~/Desktop/System_Programming/hw$
```



```
jsh0116@jsh0116-VirtualBox:~/Desktop/System_Programming/hw$ ./testls /var/spool/mqueue
Can't open /var/spool/mqueue
```