

Exploring the linux: Implementing the ls Command

Assignment: Write program that will implement:

- `lsdir` Implementation of a limited `ls` command

The `lsdir` command is used to list information about the files in the directory mentioned in the current directory. The command with no parameters will list the directory of the current working directory. If a directory is specified and that library is in the path, then the appropriate directory will be displayed. If the directory is not found, and error message should be printed.

Algorithm:

1. Validate command input (correct number of parameters)
2. Check the existence of the directory mentioned in the command.
If a directory was not given, get the current working directory
3. Open the directory if exists.
4. Print the following for each file:
 - DIR if it is a directory
 - Permissions for owner/group/others
 - File Name
 - File size
 - Last modified date
6. Close the directory.

You can test your output with the real `ls` command

```
domanm2@abernathy: ~/test
domanm2@abernathy:~/test$ myls
Current working dir: /home/acc.domanm2/test
  rxwxr-xr-x      myls      13984   Mon Mar 13 15:18:43 2017
  rw-r--r--      myls.o     6776   Mon Mar 13 15:18:41 2017
  rw-r--r--      411Lab4.cpp 4509   Sun Mar 12 15:00:00 2017
DIR rxw-----      .      4096   Mon Mar 13 15:18:43 2017
DIR rxwxr-xr-x    test2     4096   Sun Mar 12 17:31:03 2017
  rw-r--r--      program2.cpp 1556   Sun Mar 12 18:33:15 2017
DIR rxwxr-xr-x    bin       4096   Wed Mar 8 16:19:08 2017
DIR rxw--x--x    ..        4096   Wed Mar 1 15:31:10 2017
  rw-r--r--      program1.cpp 1556   Sun Mar 12 18:33:15 2017
  rxwxr-xr-x      a.out     14408   Sun Mar 12 15:00:22 2017
  rw-r--r--      program3.cpp 1556   Sun Mar 12 18:33:15 2017
  rw-r--r--      myls.cpp    2630   Mon Mar 13 15:18:38 2017
  rw-r--r--      program4.cpp 2585   Sun Mar 12 15:09:57 2017
DIR rxwxr-xr-x    src       4096   Mon Mar 13 14:57:33 2017
domanm2@abernathy:~/test$ ls -l
total 76
-rw-r--r-- 1 domanm2 Domain Users 4509 Mar 6 20:37 411Lab4.cpp
-rwxr-xr-x 1 domanm2 Domain Users 14408 Mar 12 15:00 a.out
drwxr-xr-x 2 domanm2 Domain Users 4096 Mar 8 16:19 bin
-rwxr-xr-x 1 domanm2 Domain Users 13984 Mar 13 15:18 myls
-rw-r--r-- 1 domanm2 Domain Users 2630 Mar 13 15:18 myls.cpp
-rw-r--r-- 1 domanm2 Domain Users 6776 Mar 13 15:18 myls.o
lrwxrwxrwx 1 domanm2 Domain Users 12 Mar 12 18:34 program1.cpp -> program3.cpp
-rw-r--r-- 2 domanm2 Domain Users 1556 Mar 12 15:31 program2.cpp
-rw-r--r-- 2 domanm2 Domain Users 1556 Mar 12 15:31 program3.cpp
-rw-r--r-- 1 domanm2 Domain Users 2585 Mar 12 15:08 program4.cpp
drwxr-xr-x 2 domanm2 Domain Users 4096 Mar 13 14:57 src
drwxr-xr-x 2 domanm2 Domain Users 4096 Mar 12 17:31 test2
domanm2@abernathy:~/test$
```

Header files you will find necessary

Header Files Description:

sys/stat.h : constants for creating and opening a file(S_IREAD,S_IWRITE,S_IEXEC). This header file can be used to check the permissions of the files in the directory.

<http://linux.die.net/man/2/stat>

dirent.h : Includes the structures and functions of directory operations. It includes functions opendir(), readdir(), closedir() to open read and close the directories respectively.

<http://linux.die.net/man/3/opendir> and <http://linux.die.net/man/3/readdir>

time.h : This header file is used for time conversions and manipulations. It can be used to print the last modified date and time of the files in the directory.