Lab 03: C programming in Linux by using GCC

A. Learning Outcome

- C Programming, compile, and run in Linux
- How C programs are executed
- Some basic coding principles

B. Lab Description

- Read about GCC to have the general knowledge about using it.
- Write a C program that displays the following menu and prompts for one-character input to invoke a menu option, as shown.

a. Display the present working directory
b. List names of the files in a given directory
c. Display whether a given typed file is an ordinary file or a directory. If that is a file, then display the content of it.
d. Show CPU info.
e. Show disk space usage.
g. Count number of directories in the current directory, display all of them one by one.
q. Exit the program

C. Your code should have the following structure:

- **Lab3.c:** Contains menu and the general flow of the main program
- **Func.h:** Includes all the header of functions which are used; require that each choice in menu has itself functions.
- **Func.c:** Implements detail the function which are declared in *Func.h*
- **Lab3run:** After compile, we have executable file that is *Lab3run*

Hint: You can use ***system(const char *)*** to call the command of system. In order to use that command, you must include ***stdlib.h*** library in your code.

D. Submission

Create the directory with a name like **<class>-<name><roll number>-Lab-03**, e.g.
SE0412-QuangTV00456-Lab03
Copy all your source code and run files to those folder.
Compress the folder to .zip file (with the same name) and upload to CMS.
At the beginning of your program, include comments reflecting accurate information for you in the format as below:

```
/*
Lab 04 - C Programming in Linux
Class ID : SE0411
Student ID : 00400
Student Name : Nguyễn Minh Đức
Due Date : 12 April 2010
I declare that this assignment is my own work
in accordance with FPT Policy.
```

```
*/
```

E. TEST CASES for LAB 03

```
**********************************************************************
Please choose from the following options; type the option
number and hit the <Enter> key.
a or A To display the current directory
b or B To list names of the files in a given directory
c or C To display whether a file is a simple file or directory
d or D To show CPU info
e or E To show disk space usage.
g or G To Count number of directories in the current directory
q or Q To exit the program.

**********************************************************************
Enter your choice and hit <Enter>: a
/home/nghia/Test/Shell
Hit <Enter> to continue.
Enter your choice and hit <Enter>: b
Please enter the directory path: /sys
total 4
drwxr-xr-x 12 root root 0 2009-07-18 13:18 .
drwxr-xr-x 21 root root 4096 2009-06-26 16:07 ..
drwxr-xr-x 2 root root 0 2009-07-18 13:18 block
drwxr-xr-x 21 root root 0 2009-07-18 13:18 bus
drwxr-xr-x 46 root root 0 2009-07-18 13:18 class
drwxr-xr-x 4 root root 0 2009-07-18 21:13 dev
drwxr-xr-x 10 root root 0 2009-07-18 13:18 devices
drwxr-xr-x 4 root root 0 2009-07-18 13:18 firmware
drwxr-xr-x 4 root root 0 2009-07-18 13:18 fs
drwxr-xr-x 6 root root 0 2009-07-18 13:18 kernel
drwxr-xr-x 97 root root 0 2009-07-18 13:18 module
drwxr-xr-x 2 root root 0 2009-07-18 13:18 power
Hit <Enter> to continue.

Enter your choice and hit <Enter>: b
Please enter the directory path: adirectory
adirectory is not a directory.
Hit <Enter> to continue.
```

```
Enter your choice and hit <Enter>: c
Please enter file name: afile
afile does not exist, or it is neither an ordinary file not a
directory.
Hit <Enter> to continue.

Enter your choice and hit <Enter>: c
Please enter file name: case_demo
case_demo is an ordinary file, with content:
aaaaaa
hello world of SE...
Hit <Enter> to continue.

Enter your choice and hit <Enter>: c
Please enter file name: dir1
dir1 is a directory.
Hit <Enter> to continue.

Enter your choice and hit <Enter>: d
processor    : 0
vendor_id    : GenuineIntel
cpu family    : 6
model        : 42
model name    : Intel(R) Core(TM) i5-2450M CPU @ 2.50GHz
stepping    : 7
cpu MHz        : 2394.508
cache size    : 6144 KB
fdiv_bug    : no
hlt_bug        : no
f00f_bug    : no
coma_bug    : no
fpu        : yes
fpu_exception    : yes
cpuid level    : 5
wp        : yes
flags        : fpu vme de pse tsc msr pae mce cx8 apic mtrr pge mca cmov
pat pse36 clflush mmx fxsr sse sse2 nx constant_tsc up pni monitor ssse3
bogomips    : 4789.01
clflush size    : 64
cache_alignment    : 64
address sizes    : 36 bits physical, 48 bits virtual
power management:

Enter your choice and hit <Enter>: e
Filesystem Size Used Avail Use% Mounted on
/dev/sda1 7.5G 2.8G 4.4G 39% /
tmpfs 249M 0 249M 0% /lib/init/rw
varrun 249M 112K 249M 1% /var/run
varlock 249M 0 249M 0% /var/lock
udev 249M 140K 249M 1% /dev
tmpfs 249M 76K 249M 1% /dev/shm
lrm 249M 2.2M 247M 1% /lib/modules/2.6.28-13-
generic/volatile
```

```
Hit <Enter> to continue.

Enter your choice and hit <Enter>: g
Number of directories in current directory: 3
Demo
Study
Movie
Hit <Enter> to continue.

Enter your choice and hit <Enter>: q
Bye now!
```