

SCSR2043 OPERATING SYSTEMS
[20 Marks]

| | | |
|---------|------------|-------|
| Name | Group 1 | Marks |
| Student | | |
| ID | | |
| Section | Section 02 | |

Instruction: Please answer all the following questions.

1. Type the following commands using a text editor and save it as a *yourname.sh* (Example: *ahmad.sh*).

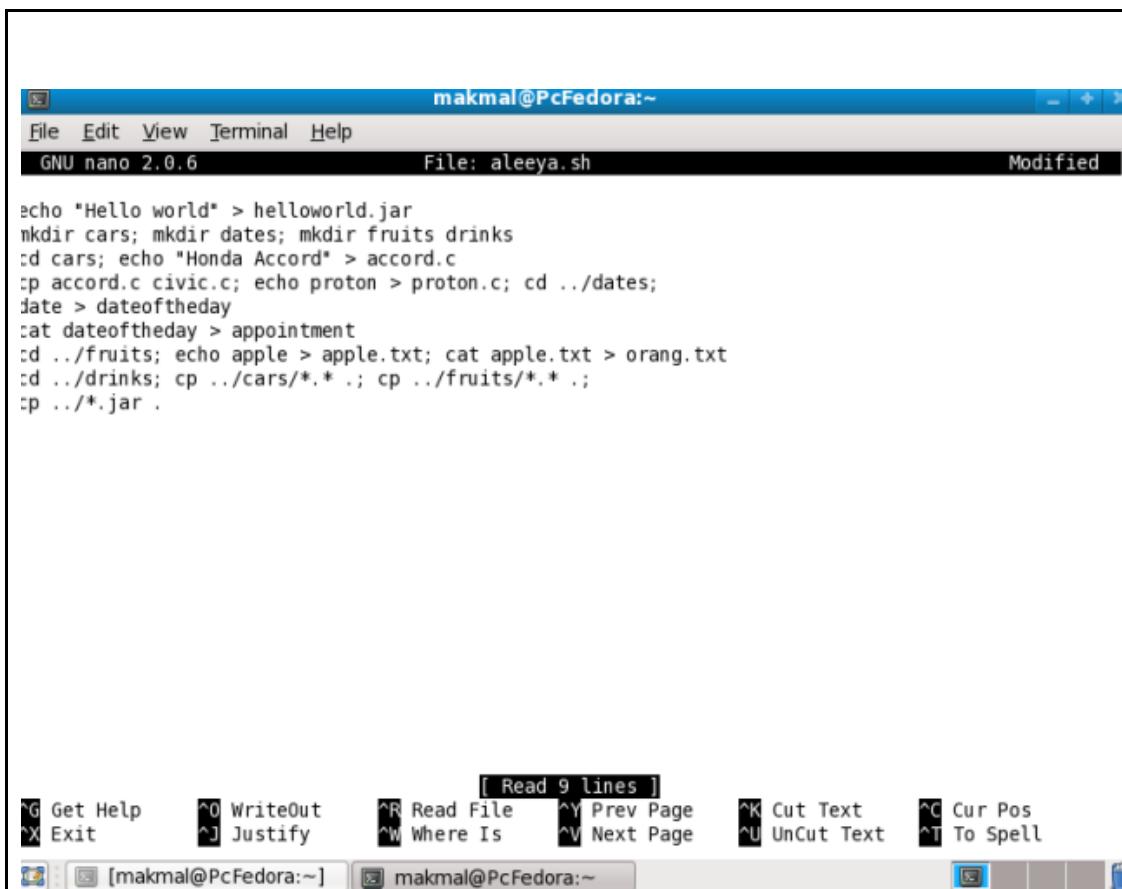
```
echo "Hello world" > helloworld.jar
mkdir cars; mkdir dates; mkdir fruits drinks
cd cars; echo "Honda Accord" > accord.c
cp accord.c civic.c; echo proton > proton.c; cd ../dates;
date > dateoftheday
cat dateoftheday > appointment
cd ../fruits; echo apple > apple.txt; cat apple.txt >
orange.txt
cd drinks; cp ../cars/*.* .; cp ../fruits/*.* .;
cp ../*.jar .
```

- a) Execute the script and draw a tree structure that contains created directories and files. The parent node of the directory begin with **\$HOME** directory.

[4 marks]



Print screen the script that you type;



The screenshot shows a terminal window titled "makmal@PcFedora:~". The window is running the "nano 2.0.6" text editor. The file being edited is "aleeya.sh", which contains the following script:

```
echo "Hello world" > helloworld.jar
mkdir cars; mkdir dates; mkdir fruits drinks
cd cars; echo "Honda Accord" > accord.c
cp accord.c civic.c; echo proton > proton.c; cd ../dates;
date > dateoftheday
cat dateoftheday > appointment
cd ../fruits; echo apple > apple.txt; cat apple.txt > orang.txt
cd ../drinks; cp ../cars/*.* .; cp ../fruits/*.* .;
cp ../*.jar .
```

The terminal window also displays a set of keyboard shortcuts at the bottom:

| | |
|--|---|
| [Read 9 lines] | |
| ^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos | ^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell |

Then draw the tree

```
makmal@PcFedora:~
```

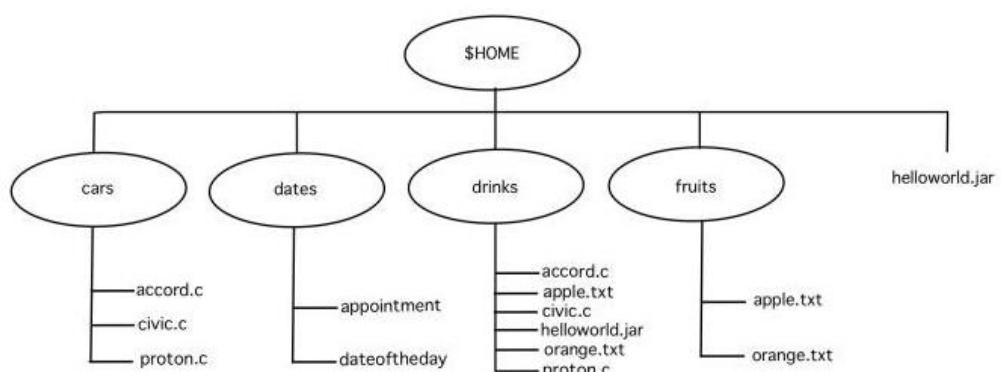
File Edit View Terminal Help

```

-- aleeya.sh
-- cars
  |-- accord.c
  |-- civic.c
  `-- proton.c
-- dates
  |-- appointment
  `-- dateoftheday
-- drinks
  |-- accord.c
  |-- apple.txt
  |-- civic.c
  |-- helloworld.jar
  |-- orang.txt
  `-- proton.c
-- fruits
  |-- apple.txt
  `-- orang.txt
-- helloworld.jar
-- patketul
  |-- Fiza
    |-- Banana
      |-- fork1.c
      `-- fork1result
    `-- Papaya
      `-- fork2.c
  `-- Muna
    |-- Durian
      `-- fork3.c

```

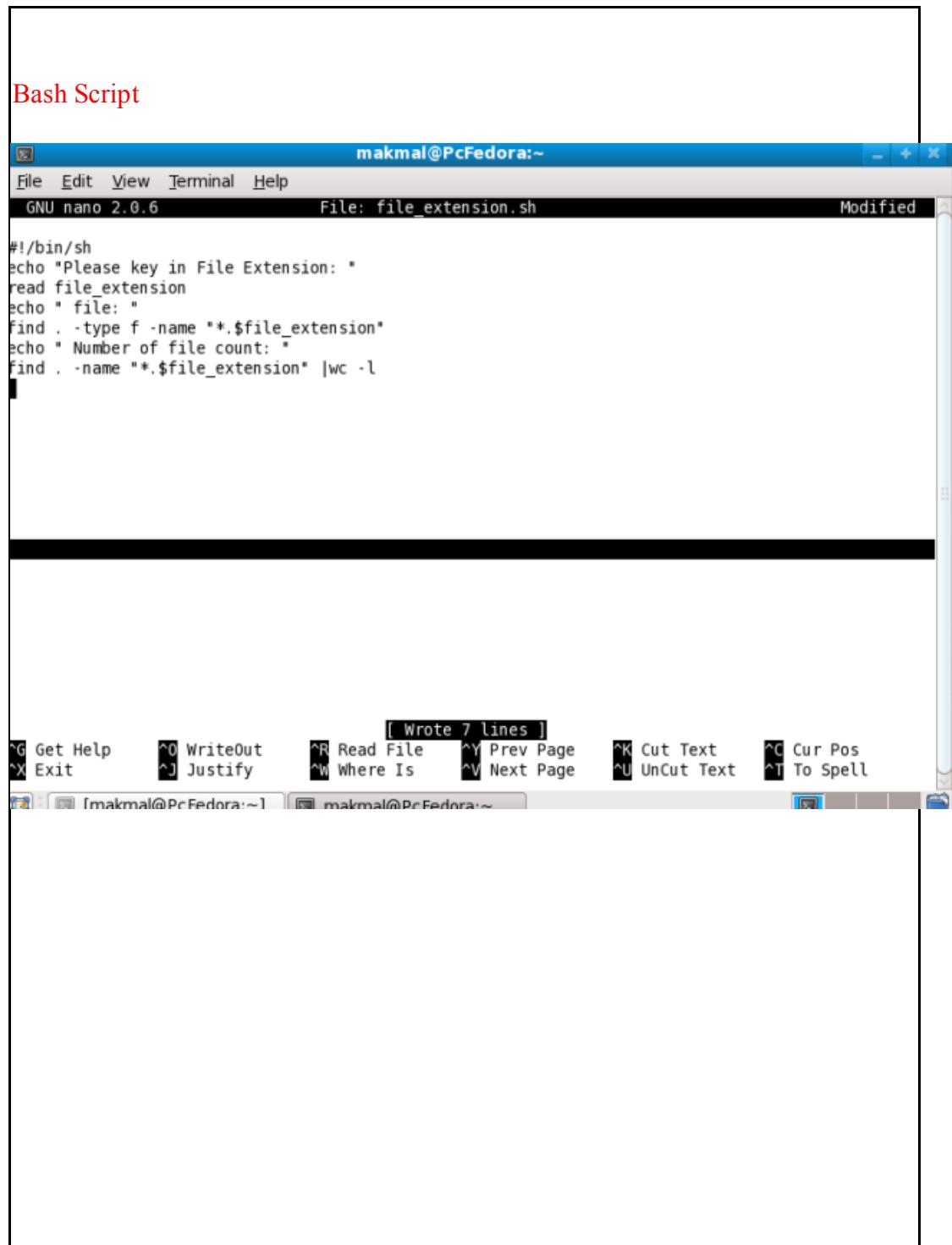
Tree Structure is given below



b) Write an interactive bash script that will read a type of file extension, display all those files, and count the number of files. To validate your script, display c program files, and enter “c” as the input to the bash script. [4 marks]

Print screen the bash script you type and run

Bash Script



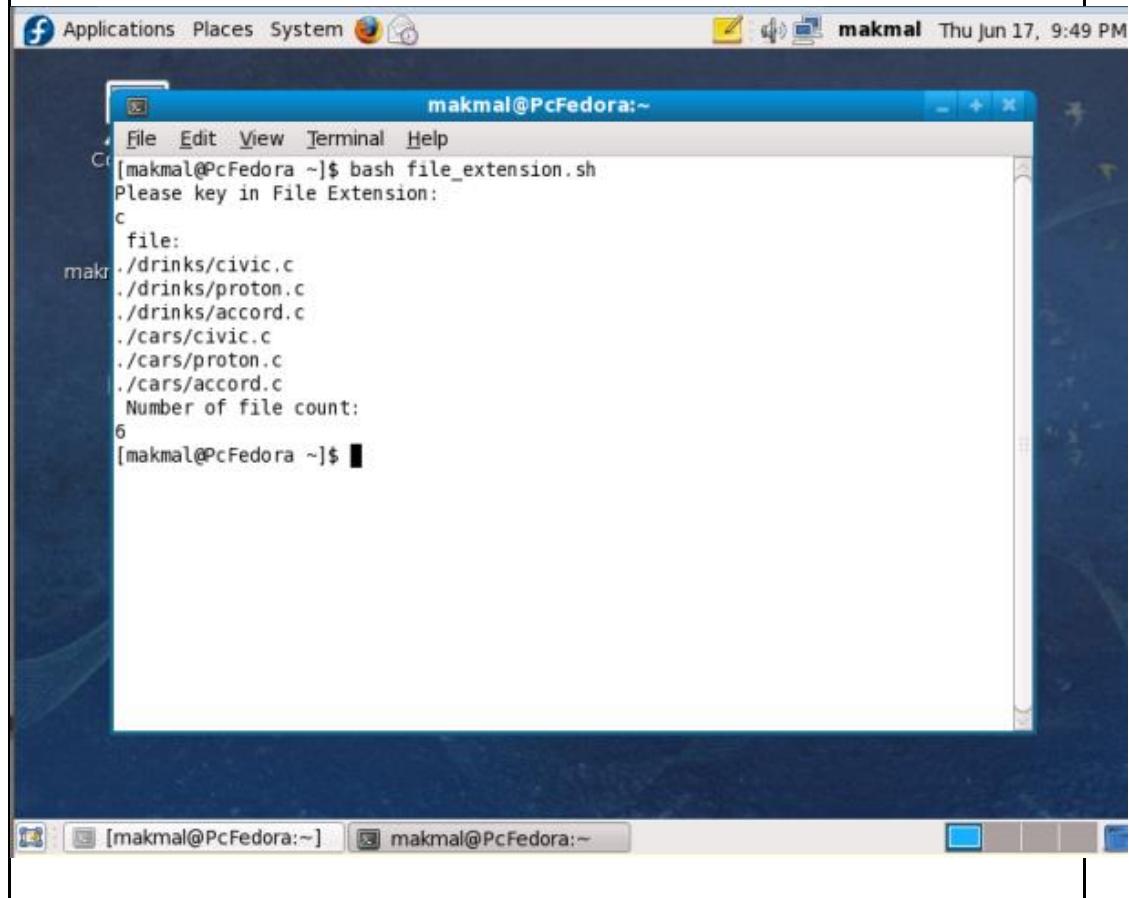
The screenshot shows a terminal window titled "makmal@PcFedora:~". The window title bar also displays "File: file_extension.sh" and "Modified". The terminal menu bar includes "File", "Edit", "View", "Terminal", and "Help". The status bar at the bottom shows "makmal@PcFedora:~1" and "makmal@PcFedora:~". The main terminal area contains the following bash script:

```
#!/bin/sh
echo "Please key in File Extension: "
read file_extension
echo " file: "
find . -type f -name "*.$file_extension"
echo " Number of file count: "
find . -name "*.$file_extension" |wc -l
```

At the bottom of the terminal, a message "[Wrote 7 lines]" is displayed above a series of keyboard shortcuts:

- ^G Get Help
- ^O WriteOut
- ^R Read File
- ^Y Prev Page
- ^K Cut Text
- ^C Cur Pos
- ^X Exit
- ^J Justify
- ^W Where Is
- ^V Next Page
- ^U Uncut Text
- ^T To Spell

Run



The screenshot shows a terminal window titled "makmal@PcFedora:~" running on a Fedora desktop. The window displays the following command and its output:

```
makmal@PcFedora ~]$ bash file_extension.sh
Please key in File Extension:
c
  file:
makr ./drinks/civic.c
./drinks/proton.c
./drinks/accord.c
./cars/civic.c
./cars/proton.c
./cars/accord.c
  Number of file count:
6
[makmal@PcFedora ~]$
```

The terminal window is part of a desktop environment with a blue theme. The desktop bar at the bottom shows the window title and the user's name. The taskbar at the bottom also displays the terminal window icon.

2. The following Figure 1 illustrates a tree structure of some directories and files.

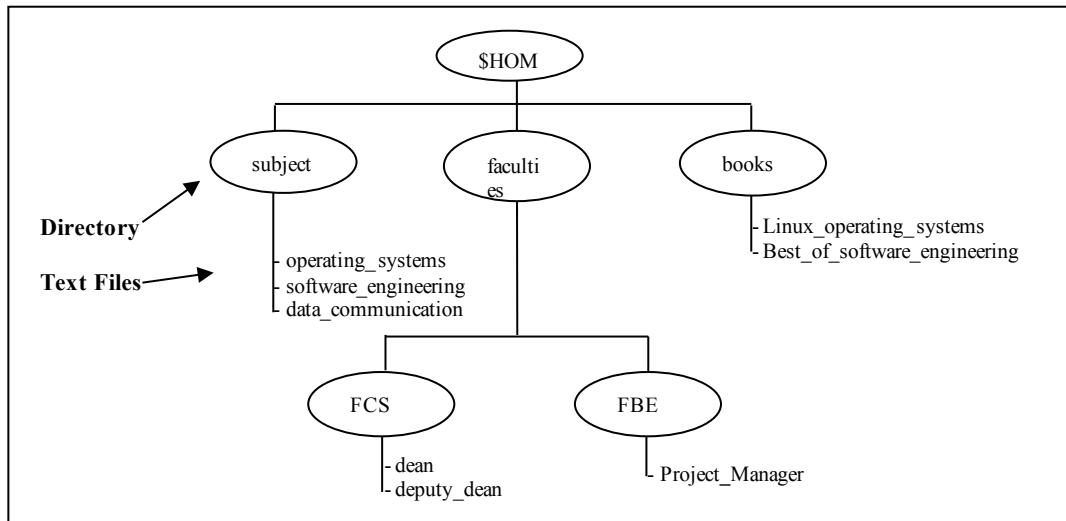
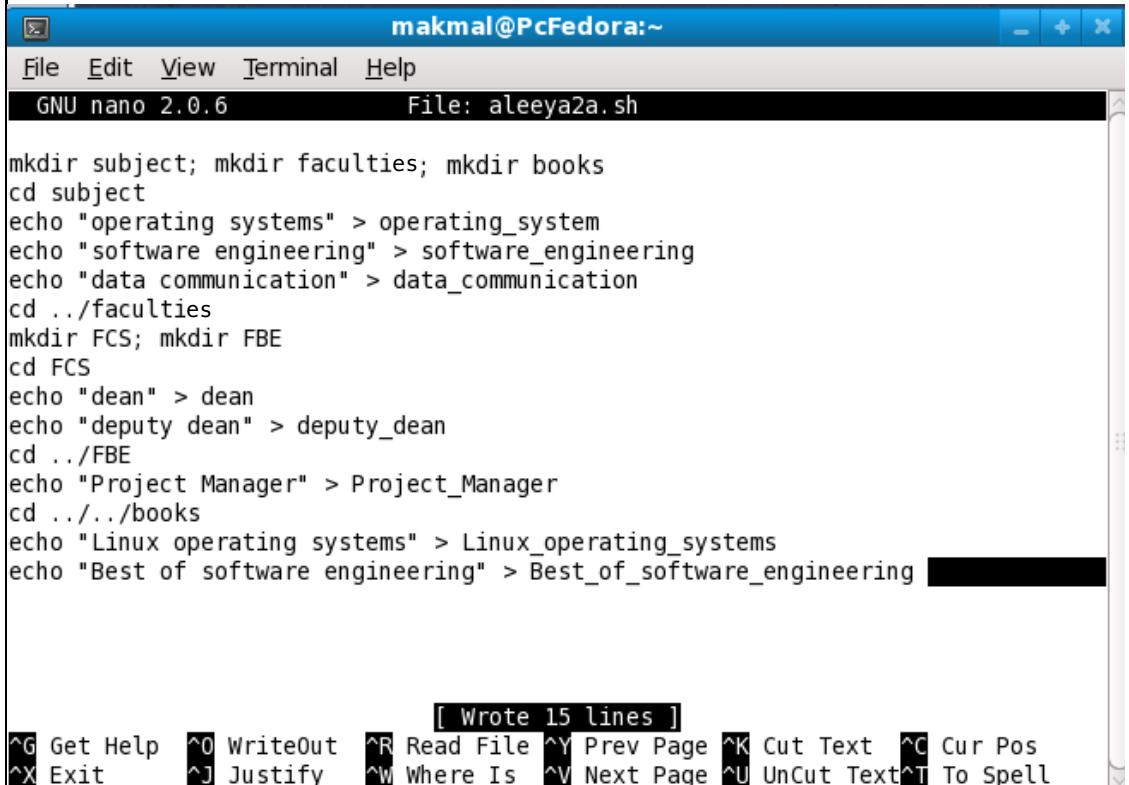


Figure 1

a) Write a bash script (called `myname2a.sh`) that will produce directories and files as in Figure 1. Each text files contain its filename without the underscore character. For example: text file `Project_Manager` contains `Project Manager`). [4 marks]

Print screen the bash script you type and run

Bash Script



A screenshot of a terminal window titled "makmal@PcFedora:~". The window shows a nano text editor with the file "aleeya2a.sh" open. The script content is as follows:

```
mkdir subject; mkdir faculties; mkdir books
cd subject
echo "operating systems" > operating_system
echo "software engineering" > software_engineering
echo "data communication" > data_communication
cd ../faculties
mkdir FCS; mkdir FBE
cd FCS
echo "dean" > dean
echo "deputy dean" > deputy_dean
cd ../FBE
echo "Project Manager" > Project_Manager
cd ../../books
echo "Linux operating systems" > Linux_operating_systems
echo "Best of software engineering" > Best_of_software_engineering
```

At the bottom of the terminal, a message indicates "[Wrote 15 lines]". Below the message are various nano key bindings:

- ^G Get Help
- ^O WriteOut
- ^R Read File
- ^Y Prev Page
- ^K Cut Text
- ^C Cur Pos
- ^X Exit
- ^J Justify
- ^W Where Is
- ^V Next Page
- ^U Uncut Text
- ^T To Spell

Run

```
6
[makmal@PcFedora ~]$ nano aleeya2a.sh
[makmal@PcFedora ~]$ chmod +x aleeya2a.sh
[makmal@PcFedora ~]$ ./aleeya2a.sh
[makmal@PcFedora ~]$ █
```

b) Complete the following table by writing the access control of directories or files that were produced. Given is the access control for directory called `book`.

[2 marks]

| Directory/File | Access Control |
|------------------------------|-------------------------|
| books | <code>drwxrwxr-x</code> |
| subjects | <code>drwxr-xr-x</code> |
| Best_of_software_engineering | <code>-rw--r--</code> |
| FCS | <code>drwxr-xr-x</code> |
| project_manager | <code>-rw-r-r--</code> |

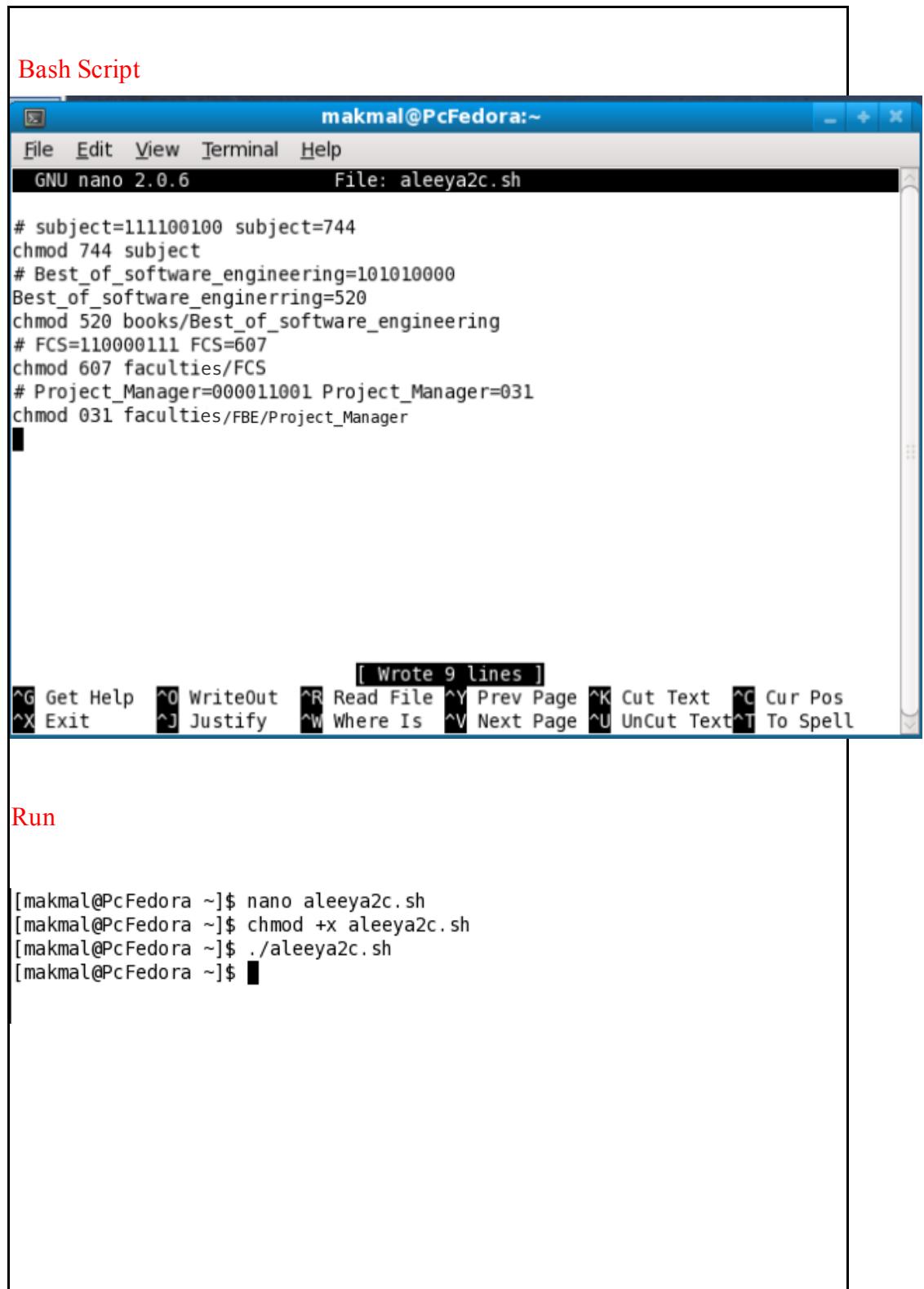
c) Write another bash script (called `myname2c.sh`) that will change the access control of the directories and files based on the following information:

[4 marks]

| Directory/File | Users | | | | | | | | |
|------------------------------|-------|---|---|-------|---|---|--------|---|---|
| | Owner | | | Group | | | Public | | |
| subjects | ✓ | ✓ | ✓ | ✓ | x | x | ✓ | x | x |
| Best_of_software_engineering | ✓ | x | ✓ | x | ✓ | x | x | x | x |
| FCS | ✓ | ✓ | x | x | x | x | ✓ | ✓ | ✓ |
| project_manager | x | x | x | x | ✓ | ✓ | x | x | ✓ |

Print screen the bash script you type and run

Bash Script



```
makmal@PcFedora:~  
File Edit View Terminal Help  
GNU nano 2.0.6 File: aleeya2c.sh  
  
# subject=111100100 subject=744  
chmod 744 subject  
# Best_of_software_engineering=101010000  
Best_of_software_enginerring=520  
chmod 520 books/Best_of_software_engineering  
# FCS=110000111 FCS=607  
chmod 607 faculties/FCS  
# Project_Manager=000011001 Project_Manager=031  
chmod 031 faculties/FBE/Project_Manager  
  
[ Wrote 9 lines ]  
^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos  
^X Exit ^J Justify ^W Where Is ^V Next Page ^U Uncut Text ^T To Spell
```

Run

```
[makmal@PcFedora ~]$ nano aleeya2c.sh  
[makmal@PcFedora ~]$ chmod +x aleeya2c.sh  
[makmal@PcFedora ~]$ ./aleeya2c.sh  
[makmal@PcFedora ~]$
```

d) Complete the following table by writing the access control for each directory or file after executing the bash script in question 2(c)). [2 marks]

| Directory/File | Access Control |
|------------------------------|----------------|
| subjects | drwxr--r-- |
| Best_of_software_engineering | -r-x-w---- |
| FCS | drw----rwx |
| project_manager | -----wx--x |

End of Lab 3

**** All the Best for Final Exam ****