

1. Objective

Get familiar with the Linux operating system environment through experiments and master the use of basic Linux commands.

2. Requirement

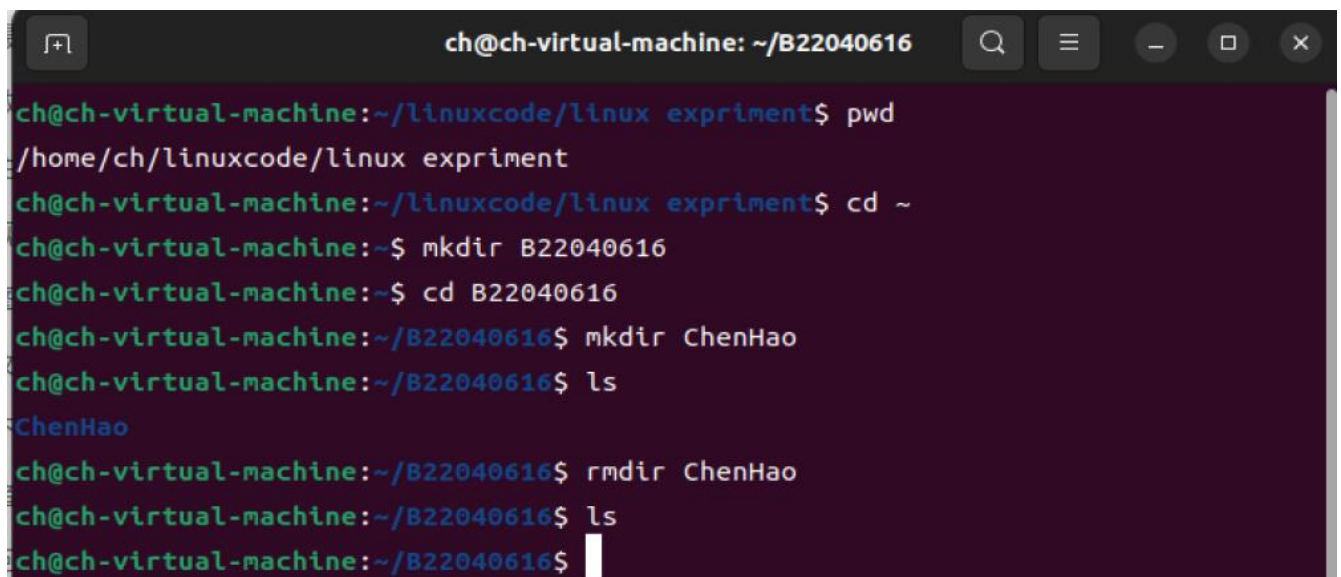
- Master the permission management of Linux files
- Master basic file and directory operations
- Linux user management
- File compression and archiving

3. Experiment Step (1) Directory Operation

Enter the following commands in sequence:

```
$pwd
$cd ~
$mkdir your_studentID
$cd your_studentID
$mkdir your_name
$ls
$rmkdir your_name
$ls
```

Save a screenshot of the above command along with the corresponding results, you must have your student number and name.

A screenshot of a terminal window titled 'ch@ch-virtual-machine: ~/B22040616'. The terminal shows a series of commands and their outputs: 'pwd' returns '/home/ch/linuxcode/linux expriment', 'cd ~' changes the directory to '~', 'mkdir B22040616' creates a new directory, 'cd B22040616' changes to that directory, 'mkdir ChenHao' creates a subdirectory, 'ls' lists the contents showing 'ChenHao', 'rmkdir ChenHao' removes the directory, and a final 'ls' command is entered without output. The terminal has a dark background with green and blue text.

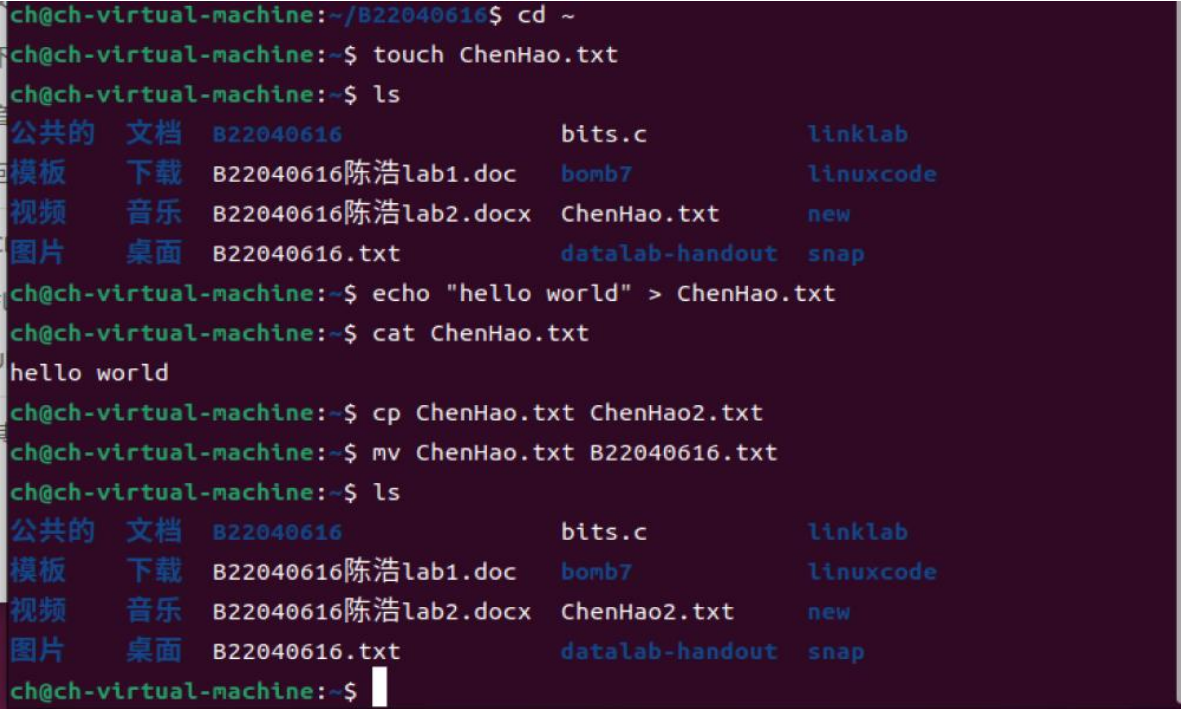
```
ch@ch-virtual-machine: ~/B22040616
ch@ch-virtual-machine:~/linuxcode/linux expriment$ pwd
/home/ch/linuxcode/linux expriment
ch@ch-virtual-machine:~/linuxcode/linux expriment$ cd ~
ch@ch-virtual-machine:~$ mkdir B22040616
ch@ch-virtual-machine:~$ cd B22040616
ch@ch-virtual-machine:~/B22040616$ mkdir ChenHao
ch@ch-virtual-machine:~/B22040616$ ls
ChenHao
ch@ch-virtual-machine:~/B22040616$ rmdir ChenHao
ch@ch-virtual-machine:~/B22040616$ ls
ch@ch-virtual-machine:~/B22040616$
```

(2) File operation

Enter the following commands in sequence:

```
$cd ~
$touch yourname.txt
$ls
$echo "hello world" > yourname.txt
$cat yourname.txt
$cp yourname.txt yourname2.txt
$mv yourname.txt yourstudentid.txt
$ls
```

Save a screenshot of the above command along with the corresponding results, you must have your student number and name.



```
ch@ch-virtual-machine:~/B22040616$ cd ~
ch@ch-virtual-machine:~$ touch ChenHao.txt
ch@ch-virtual-machine:~$ ls
公共的  文档  B22040616  bits.c  linklab
模板    下载  B22040616陈浩lab1.doc  bomb7  linuxcode
视频    音乐  B22040616陈浩lab2.docx  ChenHao.txt  new
图片    桌面  B22040616.txt  datalab-handout  snap
ch@ch-virtual-machine:~$ echo "hello world" > ChenHao.txt
ch@ch-virtual-machine:~$ cat ChenHao.txt
hello world
ch@ch-virtual-machine:~$ cp ChenHao.txt ChenHao2.txt
ch@ch-virtual-machine:~$ mv ChenHao.txt B22040616.txt
ch@ch-virtual-machine:~$ ls
公共的  文档  B22040616  bits.c  linklab
模板    下载  B22040616陈浩lab1.doc  bomb7  linuxcode
视频    音乐  B22040616陈浩lab2.docx  ChenHao2.txt  new
图片    桌面  B22040616.txt  datalab-handout  snap
ch@ch-virtual-machine:~$
```

(3) User Management

Enter the following commands in sequence:

```
$whoami
$sudo su root
```

Enter the password of the current logged-in user, not the root password, and then enter:

```
#groupadd student
#whoami
#adduser yourstudentID
#usermod -g student yourstudentID
```

Follow the prompts to create the user and add the user to the student group.

Switch to the user.

```
#su yourstudentID
$cd ~
$touch yourname.txt
$ls -l
```

View the properties of the file, including the owner user and the group to which the owner user belongs.

```
ch@ch-virtual-machine:~$ whoami
ch
ch@ch-virtual-machine:~$ sudo su root
[sudo] ch 的密码:
root@ch-virtual-machine:/home/ch# groupadd student
root@ch-virtual-machine:/home/ch# whoami
root
```

```
root@ch-virtual-machine:/home/ch# groupadd student
root@ch-virtual-machine:/home/ch# whoami
root
root@ch-virtual-machine:/home/ch# adduser B22040616
adduser: 请输入匹配 NAME_REGEX[_SYSTEM] 配置选项配置的正则表达式的用户名。
使用 `--force-badname` 选项可以放松检查或者重新配置 NAME_REGEX。
root@ch-virtual-machine:/home/ch# adduser b22040616
正在添加用户"b22040616"...
正在添加新组"b22040616" (1002)...
正在添加新用户"b22040616" (1001) 到组"b22040616"...
创建主目录"/home/b22040616"...
正在从"/etc/skel"复制文件...
新的密码:
重新输入新的密码:
passwd: 已成功更新密码
正在改变 b22040616 的用户信息
请输入新值, 或直接敲回车键以使用默认值
    全名 []:
    房间号码 []:
    工作电话 []:
    家庭电话 []:
    其它 []:
这些信息是否正确? [Y/n]
```

```

root@ch-virtual-machine:/home/ch# su b22040616
b22040616@ch-virtual-machine:/home/ch$ cd ~
b22040616@ch-virtual-machine:~$ touch ChenHao.txt
b22040616@ch-virtual-machine:~$ ls -l
总计 0
-rw-rw-r-- 1 b22040616 b22040616 0 10月 14 09:56 ChenHao.txt

```

(4) Permission management

Enter the following commands in sequence:

```

$ touch demo
$ chmod 777 demo
$ chmod a-x demo          # result is rw-rw-rw-
$ chmod go-w demo         # result is rw-r--r--
$ chmod g+w demo          # result is rw-rw-r--
$ chmod a= demo           # result is -----
$ chmod +t demo           # result is -----T
$ chmod u+s demo          # result is --S-----T
$ chmod u+rx demo         # result is r-s-----T
$ chmod g+rws demo        # result is r-srws--T

```

After entering each line, run `ls -l demo` to view the result.

```

ch@ch-virtual-machine:~/linuxcode/linux_expriment$ chmod 777 demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ ls -l
总计 0
-rwxrwxrwx 1 ch ch 0 10月 14 10:01 demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ chmod a-x demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ ls -l
总计 0
-rw-rw-rw- 1 ch ch 0 10月 14 10:01 demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ chmod go-w demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ ls -l
总计 0
-rw-r--r-- 1 ch ch 0 10月 14 10:01 demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ chmod g+w demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ ls -l
总计 0
-rw-rw-r-- 1 ch ch 0 10月 14 10:01 demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ chmod a= demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ ls -l
总计 0
----- 1 ch ch 0 10月 14 10:01 demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ chmod +t demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ ls -l
总计 0
-----T 1 ch ch 0 10月 14 10:01 demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ chmod u+s demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ ls -l
总计 0
---S-----T 1 ch ch 0 10月 14 10:01 demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ chmod u+rx demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ ls -l
总计 0
-r-s-----T 1 ch ch 0 10月 14 10:01 demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ chmod g+rws demo
ch@ch-virtual-machine:~/linuxcode/linux_expriment$ ls -l
总计 0
-r-srws--T 1 ch ch 0 10月 14 10:01 demo

```


(5) Other management

Create folder "others" in the main directory of the user, go to the folder, and create two files with the name of any file. Then run the following commands in sequence.

```
$tar -czvf backup.tar.gz others
$ls -l
$tar -xzvf backup.tar.gz
$ls -l
```

Observe changes in the process.

```
ch@ch-virtual-machine:~$ tar -czvf backup.tar.gz others
others/
others/111/
others/222.txt
others/backup.tar.gz
ch@ch-virtual-machine:~$ ls -l
总计 56
drwxr-xr-x 2 ch ch 4096 4月 1 2024 公共的
drwxr-xr-x 2 ch ch 4096 4月 1 2024 模板
drwxr-xr-x 2 ch ch 4096 4月 1 2024 视频
drwxr-xr-x 2 ch ch 4096 4月 1 2024 图片
drwxr-xr-x 3 ch ch 4096 6月 12 09:25 文档
drwxr-xr-x 4 ch ch 4096 6月 20 15:46 下载
drwxr-xr-x 2 ch ch 4096 4月 1 2024 音乐
drwxr-xr-x 2 ch ch 4096 5月 7 09:50 桌面
drwxrwxr-x 2 ch ch 4096 10月 14 09:47 B22040616
-rw-rw-r-- 1 ch ch 248 10月 14 10:10 backup.tar.gz
-rw-rw-r-- 1 ch ch 12 10月 14 09:50 ChenHao2.txt
drwxrwxr-x 3 ch ch 4096 10月 14 09:45 linuxcode
drwxrwxr-x 3 ch ch 4096 10月 14 10:08 others
drwx----- 5 ch ch 4096 4月 1 2024 snap
```

Create a textfile file and make it as follows:

```
no, I study in njupt.
this line ends with 00
this line ends with .00
I am 25 years old.
He is 15. It is 16.00
wy is the short of my name.
```

Search for all lines beginning with the character "n" in the file textfile

```
$ grep '^n' textfile
```

Search the textfile for all lines ending in ".00"

```
$ grep '\.00$' textfile
```

Search for all lines in the textfile that contain the number 5, followed by the character ".", followed by any character

```
$ grep '5\..' textfile
```

Search for all lines starting with the characters "w" and "y" in the file textfile

```
$ grep '^[wy]'textfile
```

```
ch@ch-virtual-machine:~$ grep '^n' text.txt
no, I study in njupt.
ch@ch-virtual-machine:~$ grep '\.00$' text.txt
this line ends with .00
He is 15. It is 16.00
ch@ch-virtual-machine:~$ grep '5\..' text.txt
He is 15. It is 16.00
ch@ch-virtual-machine:~$ grep '^[wy]' text.txt
wy is the short of my name.
ch@ch-virtual-machine:~$
```