

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
$rmdir your_name
$ls
```

```
dbnbw123@dbnbw123-virtual-machine:~$ pwd
/home/dbnbw123
dbnbw123@dbnbw123-virtual-machine:~$ cd ~
dbnbw123@dbnbw123-virtual-machine:~$ mkdir B22040605
dbnbw123@dbnbw123-virtual-machine:~$ cd B22040605
dbnbw123@dbnbw123-virtual-machine:~/B22040605$ mkdir 马润
dbnbw123@dbnbw123-virtual-machine:~/B22040605$ ls
马润
dbnbw123@dbnbw123-virtual-machine:~/B22040605$ rmdir 马润
dbnbw123@dbnbw123-virtual-machine:~/B22040605$ ls
dbnbw123@dbnbw123-virtual-machine:~/B22040605$
```

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

(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
```

```
dbnbw123@dbnbw123-virtual-machine:~/B22040605$ cd ~
dbnbw123@dbnbw123-virtual-machine:~$ touch 马润.txt
dbnbw123@dbnbw123-virtual-machine:~$ ls
公共的  archlab-handout  bits.c  printf.so
马润.txt  archlab-handout.tar  bomb441.tar  snap
模板  B18060329施易廷lab1.doc  copy.js  sum.js
视频  B22040605  Downloads  target207.tar
图片  B22040605马润lab1.doc  Dwnloads  target61.zip
文档  B22040605马润lab2.doc  linklab-B22040605  test1
下载  B22040605马润lab3.docx  linklab-B22040605.zip
音乐  B22040605马润lab4.docx  linux_2
终端  B22040605马润lab5.docx  ntarget61.tar
dbnbw123@dbnbw123-virtual-machine:~$ echo "hello world" > 马润.txt
dbnbw123@dbnbw123-virtual-machine:~$ cat 马润.txt
hello world
```

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

```
dbnbw123@dbnbw123-virtual-machine:~$ cp 马润.txt 马润2.txt
dbnbw123@dbnbw123-virtual-machine:~$ mv 马润.txt B22040605.txt
dbnbw123@dbnbw123-virtual-machine:~$ ls
公共的  archlab-handout  B22040605.txt  ntarget61.tar
马润2.txt  archlab-handout.tar  bits.c  printf.so
模板  B18060329施易廷lab1.doc  bomb441.tar  snap
视频  B22040605  copy.js  sum.js
图片  B22040605马润lab1.doc  Downloads  target207.tar
文档  B22040605马润lab2.doc  Dwnloads  target61.zip
下载  B22040605马润lab3.docx  linklab-B22040605  test1
音乐  B22040605马润lab4.docx  linklab-B22040605.zip
桌面  B22040605马润lab5.docx  linux_2
```

(3) User Management

Enter the following commands in sequence:

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

Enter the password of the current logged-in user,

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

Follow the prompts to create the user and add the

Switch to the user.

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

```
dbnbw123@dbnbw123-virtual-machine:~$ whoami
dbnbw123
dbnbw123@dbnbw123-virtual-machine:~$ sudo su root
[sudo] dbnbw123 的密码:
root@dbnbw123-virtual-machine:/home/dbnbw123# groupadd student
root@dbnbw123-virtual-machine:/home/dbnbw123# whoami
root
root@dbnbw123-virtual-machine:/home/dbnbw123# adduser b22040605
adduser: The user 'b22040605' already exists.
root@dbnbw123-virtual-machine:/home/dbnbw123# userdel b22040605
root@dbnbw123-virtual-machine:/home/dbnbw123# adduser b22040605
Adding user 'b22040605' ...
Adding new group 'b22040605' (1001) ...
Adding new user 'b22040605' (1001) with group 'b22040605' ...
The home directory '/home/b22040605' already exists. Not copying from '/etc/skel'.
adduser: Warning: The home directory '/home/b22040605' does not belong to the user you are currently creating.
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for b22040605
Enter the new value, or press ENTER for the default
Full Name []: b22040605
Room Number []: 20
Work Phone []: 181111111
Home Phone []: 22222222
Other []: 0000
Is the information correct? [Y/n] y
root@dbnbw123-virtual-machine:/home/dbnbw123# usermod -g student b22040605
dbnbw123@dbnbw123-virtual-machine:/home/dbnbw123# su b22040605
b22040605@dbnbw123-virtual-machine:/home/dbnbw123$ cd ~
b22040605@dbnbw123-virtual-machine:~$ touch 马润.txt
b22040605@dbnbw123-virtual-machine:~$ ls -l
total 0
-rw-r--r-- 1 b22040605 student 0 11月 11 10:29 马润.txt
b22040605@dbnbw123-virtual-machine:~$
```

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

(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.

```
dbnbw123@dbnbw123-virtual-machine:~$ touch demo
dbnbw123@dbnbw123-virtual-machine:~$ chmod 777 demo
dbnbw123@dbnbw123-virtual-machine:~$ ls -l demo
-rwxrwxrwx 1 dbnbw123 dbnbw123 0 11月 11 10:33 demo
dbnbw123@dbnbw123-virtual-machine:~$ chmod a-x demo
dbnbw123@dbnbw123-virtual-machine:~$ ls -l demo
-rw-rw-rw- 1 dbnbw123 dbnbw123 0 11月 11 10:33 demo
dbnbw123@dbnbw123-virtual-machine:~$ chmod go-w demo
dbnbw123@dbnbw123-virtual-machine:~$ ls -l demo
-rw-r--r-- 1 dbnbw123 dbnbw123 0 11月 11 10:33 demo
dbnbw123@dbnbw123-virtual-machine:~$ chmod g+w demo
dbnbw123@dbnbw123-virtual-machine:~$ ls -l demo
-rw-rw-r-- 1 dbnbw123 dbnbw123 0 11月 11 10:33 demo
dbnbw123@dbnbw123-virtual-machine:~$ chmod a= demo
dbnbw123@dbnbw123-virtual-machine:~$ ls -l demo
-----T 1 dbnbw123 dbnbw123 0 11月 11 10:33 demo
dbnbw123@dbnbw123-virtual-machine:~$ chmod +t demo
dbnbw123@dbnbw123-virtual-machine:~$ ls -l demo
-----T 1 dbnbw123 dbnbw123 0 11月 11 10:33 demo
dbnbw123@dbnbw123-virtual-machine:~$ chmod u+s demo
dbnbw123@dbnbw123-virtual-machine:~$ ls -l demo
--S-----T 1 dbnbw123 dbnbw123 0 11月 11 10:33 demo
dbnbw123@dbnbw123-virtual-machine:~$ chmod u+rx demo
dbnbw123@dbnbw123-virtual-machine:~$ ls -l demo
-r-s-----T 1 dbnbw123 dbnbw123 0 11月 11 10:33 demo
dbnbw123@dbnbw123-virtual-machine:~$ chmod g+rws demo
dbnbw123@dbnbw123-virtual-machine:~$ ls -l demo
-r-srws--T 1 dbnbw123 dbnbw123 0 11月 11 10:33 demo
dbnbw123@dbnbw123-virtual-machine:~$
```

###(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.

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
```

```
dbnbw123@dbnbw123-virtual-machine:~$ tar -czvf backup.tar.gz others  
others/  
others/t1.txt  
others/t2.txt  
dbnbw123@dbnbw123-virtual-machine:~$ ls -l  
总计 5780  
-rwxr-xr-x 2 dbnbw123 dbnbw123 4096 4月 1 2024 公共的  
-rw-rw-r-- 1 dbnbw123 dbnbw123 12 11月 11 10:20 马润2.txt  
-rwxr-xr-x 2 dbnbw123 dbnbw123 4096 4月 1 2024 模板  
-rwxr-xr-x 2 dbnbw123 dbnbw123 4096 4月 1 2024 视频  
-rwxr-xr-x 2 dbnbw123 dbnbw123 4096 4月 1 2024 图片  
-rwxr-xr-x 2 dbnbw123 dbnbw123 4096 4月 1 2024 文档  
-rwxr-xr-x 2 dbnbw123 dbnbw123 4096 10月 22 11:25 下载  
-rwxr-xr-x 2 dbnbw123 dbnbw123 4096 4月 1 2024 音乐  
-rwxr-xr-x 2 dbnbw123 dbnbw123 4096 5月 29 12:47 桌面
```

```
dbnbw123@dbnbw123-virtual-machine:~$ tar -xzf backup.tar.gz
```

```
others/
```

```
others/t1.txt
```

```
others/t2.txt
```

```
dbnbw123@dbnbw123-virtual-machine:~$ ls -l
```

```
总计 5780
```

rw-r--r--	2	dbnbw123	dbnbw123	4096	4月	1	2024	公共的
rw-rw-r--	1	dbnbw123	dbnbw123	12	11月	11	10:20	马润2.txt
rw-r--r--	2	dbnbw123	dbnbw123	4096	4月	1	2024	模板
rw-r--r--	2	dbnbw123	dbnbw123	4096	4月	1	2024	视频

```
dbnbw123@dbnbw123-virtual-machine:~$ grep '^n' ex1_5.txt
```

```
no, I study in njupt.
```

```
dbnbw123@dbnbw123-virtual-machine:~$ grep '\.00$' ex1_5.txt
```

```
this line ends with .00
```

```
He is 15. It is 16.00
```

```
dbnbw123@dbnbw123-virtual-machine:~$ grep '5\..' ex1_5.txt
```

```
He is 15. It is 16.00
```

```
dbnbw123@dbnbw123-virtual-machine:~$ grep '^[wy]' exe1_6.txt
```

```
grep: exe1_6.txt: 没有那个文件或目录
```

```
dbnbw123@dbnbw123-virtual-machine:~$ grep '^[wy]' exe1_5.txt
```

```
grep: exe1_5.txt: 没有那个文件或目录
```

```
dbnbw123@dbnbw123-virtual-machine:~$ grep '^[wy]' ex1_5.txt
```

```
wy is the short of my name.
```

```
dbnbw123@dbnbw123-virtual-machine:~$
```