

# **Experiment 1**

## **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
```

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
```

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

```
zouxin@zouxin-virtual-machine: $ touch zouxin.txt  
zouxin@zouxin-virtual-machine: $ ls  
823040920 B23040920.txt Desktop Documents Downloads Music Pictures Public snap Templates Videos ZOUXIN2.txt zouxin.txt  
zouxin@zouxin-virtual-machine: $ echo "hello world" > zouxin.txt  
zouxin@zouxin-virtual-machine: $ cat zouxin.txt  
hello world  
zouxin@zouxin-virtual-machine: $ cp zouxin.txt zouxin2.txt  
zouxin@zouxin-virtual-machine: $ mv zouxin.txt B23040920.txt  
zouxin@zouxin-virtual-machine: $ ls  
823040920 B23040920.txt Desktop Documents Downloads Music Pictures Public snap Templates Videos zouxin2.txt ZOUXIN2.txt  
zouxin@zouxin-virtual-machine: $ echo B23040920zouxin  
B23040920zouxin
```

### (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.

```
zouxin@zouxin-virtual-machine: $ whoami
zouxin
zouxin@zouxin-virtual-machine: $ sudo su root
[sudo] password for zouxin:
root@zouxin-virtual-machine:/home/zouxin# groupadd student
groupadd: group 'student' already exists
root@zouxin-virtual-machine:/home/zouxin# whoami
root
root@zouxin-virtual-machine:/home/zouxin# adduser B23040920
adduser: Please enter a username matching the regular expression configured
via the NAME_REGEX[_SYSTEM] configuration variable. Use the '--force-badname'
option to relax this check or reconfigure NAME_REGEX.
root@zouxin-virtual-machine:/home/zouxin# usermod -g student B23040920
usermod: user 'B23040920' does not exist
root@zouxin-virtual-machine:/home/zouxin# su B23040920
su: user B23040920 does not exist or the user entry does not contain all the required fields
root@zouxin-virtual-machine:/home/zouxin# cd ~
root@zouxin-virtual-machine:~# touch zouxin.txt
root@zouxin-virtual-machine:~# ls -l
total 4
drwx----- 5 root root 4096 10月 25 14:11 snap
-rw-r--r-- 1 root root 0 12月 28 01:20 zouxin.txt
root@zouxin-virtual-machine:~# echo B23040920zouxin
B23040920zouxin
```

## (4) Permission management

Enter the following commands in sequence:

```
$ touch demo
$ chmod 777 demo
$ chmod a-x demo
$ chmod go-w demo
$ chmod g+w demo
$ chmod a= demo
$ chmod +t demo
$ chmod u+s demo
$ chmod u+rx demo
$ chmod g+rws demo
```

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

```
root@zouxin-virtual-machine:~# touch demo
root@zouxin-virtual-machine:~# chmod 777 demo
root@zouxin-virtual-machine:~# ls -l demo
-rwxrwxrwx 1 root root 0 12月 28 01:22 demo
root@zouxin-virtual-machine:~# chmod a-x demo
root@zouxin-virtual-machine:~# ls -l demo
-rw-rw-rw- 1 root root 0 12月 28 01:22 demo
root@zouxin-virtual-machine:~# chmod go-w demo
root@zouxin-virtual-machine:~# ls -l demo
-rw-r--r-- 1 root root 0 12月 28 01:22 demo
root@zouxin-virtual-machine:~# chmod g+w demo
root@zouxin-virtual-machine:~# ls -l demo
-rw-rw-r-- 1 root root 0 12月 28 01:22 demo
root@zouxin-virtual-machine:~# chmod a= demo
root@zouxin-virtual-machine:~# ls -l demo
----- 1 root root 0 12月 28 01:22 demo
root@zouxin-virtual-machine:~# chmod +t demo
root@zouxin-virtual-machine:~# ls -l demo
-----T 1 root root 0 12月 28 01:22 demo
root@zouxin-virtual-machine:~# chmod u+s demo
root@zouxin-virtual-machine:~# ls -l demo
---S----T 1 root root 0 12月 28 01:22 demo
root@zouxin-virtual-machine:~# chmod u+rx demo
root@zouxin-virtual-machine:~# ls -l demo
-r-s----T 1 root root 0 12月 28 01:22 demo
root@zouxin-virtual-machine:~# chmod g+rws demo
root@zouxin-virtual-machine:~# ls -l demo
-r-srwS--T 1 root root 0 12月 28 01:22 demo
root@zouxin-virtual-machine:~# echo B23040920zouxin
B23040920zouxin
-----
```

## (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.

```

zouxin@zouxin-virtual-machine:~/Desktop$ cd ~
zouxin@zouxin-virtual-machine:~$ mkdir others
zouxin@zouxin-virtual-machine:~$ cd others
zouxin@zouxin-virtual-machine:~/others$ touch file1 file2
zouxin@zouxin-virtual-machine:~/others$ cd ~
zouxin@zouxin-virtual-machine:~$ tar -czvf backup.tar.gz others
others/
others/file2
others/file1
zouxin@zouxin-virtual-machine:~$ ls -l
total 64
drwxrwxr-x 2 zouxin zouxin 4096 12月 28 01:06 B23040920
-rw-rw-r-- 1 zouxin zouxin 12 12月 28 01:11 B23040920.txt
-rw-rw-r-- 1 zouxin zouxin 155 12月 28 01:43 backup.tar.gz
drwxr-xr-x 7 zouxin zouxin 4096 12月 28 01:42 Desktop
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Documents
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Downloads
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Music
drwxrwxr-x 4 zouxin zouxin 4096 12月 28 01:34 other
drwxrwxr-x 2 zouxin zouxin 4096 12月 28 01:43 others
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Pictures
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Public
drwx----- 3 zouxin zouxin 4096 10月 25 14:11 snap
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Templates
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Videos
-rw-rw-r-- 1 zouxin zouxin 12 12月 28 01:13 zouxin2.txt
-rw-rw-r-- 1 zouxin zouxin 12 12月 12 10:57 ZOUXIN2.txt
zouxin@zouxin-virtual-machine:~$ tar -xzvf backup.tar.gz
others/
others/file2
others/file1
zouxin@zouxin-virtual-machine:~$ ls -l
total 64
drwxrwxr-x 2 zouxin zouxin 4096 12月 28 01:06 B23040920
-rw-rw-r-- 1 zouxin zouxin 12 12月 28 01:11 B23040920.txt
-rw-rw-r-- 1 zouxin zouxin 155 12月 28 01:43 backup.tar.gz
drwxr-xr-x 7 zouxin zouxin 4096 12月 28 01:42 Desktop
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Documents
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Downloads
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Music
drwxrwxr-x 4 zouxin zouxin 4096 12月 28 01:34 other
drwxrwxr-x 2 zouxin zouxin 4096 12月 28 01:43 others
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Pictures
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Public
drwx----- 3 zouxin zouxin 4096 10月 25 14:11 snap
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Templates
drwxr-xr-x 2 zouxin zouxin 4096 10月 25 14:11 Videos
-rw-rw-r-- 1 zouxin zouxin 12 12月 28 01:13 zouxin2.txt
-rw-rw-r-- 1 zouxin zouxin 12 12月 12 10:57 ZOUXIN2.txt
zouxin@zouxin-virtual-machine:~$ echo B23040920
B23040920
zouxin@zouxin-virtual-machine:~$ echo b23040920zouxin
b23040920zouxin

```

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 myfile  
\$ grep '^n' myfile

Search the myfile for all lines ending in ".00"  
\$ grep '\.00\$' myfile

Search for all lines in the myfile that contain the number 5, followed by the character ".", followed by any character  
\$ grep '5\..\*' myfile

Search for all lines starting with the characters "w" and "y" in the file myfile  
\$ grep '^wy' myfile

```
zouxin@zouxin-virtual-machine:~$ echo b23040920zouxin
b23040920zouxin
zouxin@zouxin-virtual-machine:~$ touch myfile.txt
zouxin@zouxin-virtual-machine:~$ echo "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." > myfile.txt
zouxin@zouxin-virtual-machine:~$ cat myfile.txt
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.
zouxin@zouxin-virtual-machine:~$ grep '^n' myfile
>
> ^C
zouxin@zouxin-virtual-machine:~$ grep '^n' myfile.txt
no, I study in njupt.
zouxin@zouxin-virtual-machine:~$ grep '\.00$' myfile.txt
this line ends with .00
He is 15. It is 16.00
zouxin@zouxin-virtual-machine:~$ grep '5\..*' myfile.txt
He is 15. It is 16.00
zouxin@zouxin-virtual-machine:~$ grep '^wy' myfile.txt
wy is the short of my name.
```