

实验一

1. Objective

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

2. 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
```

实验结果如下：

A terminal window with a dark background and light green text. The window title is 'b22040820@b22040820-virtual-machine: ~/B22040820'. The terminal shows a sequence of commands and their outputs: 'pwd' returns '/home/b22040820/test'; 'cd ~' returns to the home directory; 'mkdir B22040820' creates a new directory; 'cd B22040820' enters the new directory; 'mkdir 周展远' creates a subdirectory named '周展远'; 'ls' lists the contents, showing '周展远'; 'rmdir 周展远' removes the subdirectory; 'ls' is run again, showing an empty directory. The window has standard Linux window controls (minimize, maximize, close) and a search icon in the top right.

```
b22040820@b22040820-virtual-machine: ~/test$ pwd
/home/b22040820/test
b22040820@b22040820-virtual-machine: ~/test$ cd ~
b22040820@b22040820-virtual-machine: ~$ mkdir B22040820
b22040820@b22040820-virtual-machine: ~$ cd B22040820
b22040820@b22040820-virtual-machine: ~/B22040820$ mkdir 周展远
b22040820@b22040820-virtual-machine: ~/B22040820$ ls
周展远
b22040820@b22040820-virtual-machine: ~/B22040820$ rmdir 周展远
b22040820@b22040820-virtual-machine: ~/B22040820$ ls
b22040820@b22040820-virtual-machine: ~/B22040820$
```

(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
```

实验结果如下：

```
b22040820@b22040820-virtual-machine:~/B22040820$ cd ~
b22040820@b22040820-virtual-machine:~$ touch 周展远.txt
b22040820@b22040820-virtual-machine:~$ ls
公共的  视频  文档  音乐      桌面      Documents  test
模板    图片  下载  周展远.txt B22040820  snap
b22040820@b22040820-virtual-machine:~$ echo "hello world" > 周展远.txt
b22040820@b22040820-virtual-machine:~$ cat 周展远.txt
hello world
b22040820@b22040820-virtual-machine:~$ cp 周展远.txt 周展远2.txt
b22040820@b22040820-virtual-machine:~$ mv 周展远.txt B22040820.txt
b22040820@b22040820-virtual-machine:~$ ls
公共的  视频  文档  音乐      桌面      B22040820.txt  snap
模板    图片  下载  周展远2.txt B22040820  Documents      test
b22040820@b22040820-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

实验结果如下：

```

b22040820@b22040820-virtual-machine:~$ sudo su root
[sudo] b22040820 的密码:
root@b22040820-virtual-machine:/home/b22040820# groupadd student
root@b22040820-virtual-machine:/home/b22040820# whoami
root
root@b22040820-virtual-machine:/home/b22040820# adduser B22040820
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@b22040820-virtual-machine:/home/b22040820# adduser B22040820
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@b22040820-virtual-machine:/home/b22040820# adduser --force-badname B22040820
允许使用可疑的用户名。
正在添加用户"B22040820"...
正在添加新组"B22040820" (1002)...
正在添加新用户"B22040820" (1001) 到组"B22040820"...
创建主目录"/home/B22040820"...
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 B22040820 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] y
root@b22040820-virtual-machine:/home/b22040820# usermod -g student B22040820
root@b22040820-virtual-machine:/home/b22040820# su B22040820
B22040820@b22040820-virtual-machine:/home/b22040820$ cd ~
B22040820@b22040820-virtual-machine:~$ touch 周展远.txt
B22040820@b22040820-virtual-machine:~$ ls -l
周展远.txt
B22040820@b22040820-virtual-machine:~$ stat
周展远.txt      .bash_logout  .bashrc      .profile
B22040820@b22040820-virtual-machine:~$ stat
周展远.txt      .bash_logout  .bashrc      .profile
B22040820@b22040820-virtual-machine:~$ stat 周展远.txt
  文件: 周展远.txt
  大小: 0                块: 0          IO 块大小: 4096   普通空文件
设备: 803h/2051d        Inode: 396359   硬链接: 1
权限: (0644/-rw-r--r--)  Uid: ( 1001/B22040820)   Gid: ( 1001/ student)
访问时间: 2024-10-14 10:05:11.292820486 +0800
修改时间: 2024-10-14 10:05:11.292820486 +0800

```

(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
实验结果如下：
```

```
B22040820@b22040820-virtual-machine:~$ touch demo
B22040820@b22040820-virtual-machine:~$ chmod 777 demo
B22040820@b22040820-virtual-machine:~$ ls -l demo
-rwxrwxrwx 1 B22040820 student 0 10月 14 10:09 demo
B22040820@b22040820-virtual-machine:~$ chmod a-x demo
B22040820@b22040820-virtual-machine:~$ ls -l demo
-rw-rw-rw- 1 B22040820 student 0 10月 14 10:09 demo
B22040820@b22040820-virtual-machine:~$ chmod go-w demo
B22040820@b22040820-virtual-machine:~$ ls -l demo
-rw-r--r-- 1 B22040820 student 0 10月 14 10:09 demo
B22040820@b22040820-virtual-machine:~$ chmod g+w demo
B22040820@b22040820-virtual-machine:~$ ls -l demo
-rw-rw-r-- 1 B22040820 student 0 10月 14 10:09 demo
B22040820@b22040820-virtual-machine:~$ chmod a= demo
B22040820@b22040820-virtual-machine:~$ ls -l demo
----- 1 B22040820 student 0 10月 14 10:09 demo
B22040820@b22040820-virtual-machine:~$ chmod +t demo
B22040820@b22040820-virtual-machine:~$ ls -l demo
-----T 1 B22040820 student 0 10月 14 10:09 demo
B22040820@b22040820-virtual-machine:~$ chmod u+s demo
B22040820@b22040820-virtual-machine:~$ ls -l demo
--S-----T 1 B22040820 student 0 10月 14 10:09 demo
B22040820@b22040820-virtual-machine:~$ chmod u+rx demo
B22040820@b22040820-virtual-machine:~$ ls -l demo
-r-s-----T 1 B22040820 student 0 10月 14 10:09 demo
B22040820@b22040820-virtual-machine:~$ chmod g+rws demo
B22040820@b22040820-virtual-machine:~$ ls -l demo
-r-srwS--T 1 B22040820 student 0 10月 14 10:09 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.

```
B22040820@b22040820-virtual-machine:~$ mkdir others
B22040820@b22040820-virtual-machine:~$ cd others
B22040820@b22040820-virtual-machine:~/others$ touch test01
B22040820@b22040820-virtual-machine:~/others$ touch test02
B22040820@b22040820-virtual-machine:~/others$ cd
```

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.

```
B22040820@b22040820-virtual-machine:~$ tar -czvf backup.tar.gz others
others/
others/test01
others/test02
B22040820@b22040820-virtual-machine:~$ ls -l
总计 12
-rw-r--r-- 1 B22040820 student  0 10月 14 10:05 周展远.txt
-rw-r--r-- 1 B22040820 student 168 10月 14 10:35 backup.tar.gz
-r-srws--T 1 B22040820 student  0 10月 14 10:09 demo
drwxr-xr-x 2 B22040820 student 4096 10月 14 10:27 others
-rw-r--r-- 1 B22040820 student 138 10月 14 10:32 test.text
-rw-r--r-- 1 B22040820 student  0 10月 14 10:32 text.txt
B22040820@b22040820-virtual-machine:~$ tar -xzvf backup.tar.gz others/
others/
others/test01
others/test02
B22040820@b22040820-virtual-machine:~$ ls -l
总计 12
-rw-r--r-- 1 B22040820 student  0 10月 14 10:05 周展远.txt
-rw-r--r-- 1 B22040820 student 168 10月 14 10:35 backup.tar.gz
-r-srws--T 1 B22040820 student  0 10月 14 10:09 demo
drwxr-xr-x 2 B22040820 student 4096 10月 14 10:27 others
-rw-r--r-- 1 B22040820 student 138 10月 14 10:32 test.text
-rw-r--r-- 1 B22040820 student  0 10月 14 10:32 text.txt
```

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
```

```
B22040820@b22040820-virtual-machine:~$ touch test.txt
B22040820@b22040820-virtual-machine:~$ vim test.txt
B22040820@b22040820-virtual-machine:~$ grep '^n' test.txt
no, I study in njupt.
B22040820@b22040820-virtual-machine:~$ grep '\.00$' test.txt
this line ends with .00
He is 15. It is 16.00
B22040820@b22040820-virtual-machine:~$ grep '$\.'" test.txt
B22040820@b22040820-virtual-machine:~$ grep '5\.'" test.txt
He is 15. It is 16.00
B22040820@b22040820-virtual-machine:~$ grep '^[wy]' test.txt
wy is the short of my name.
```