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

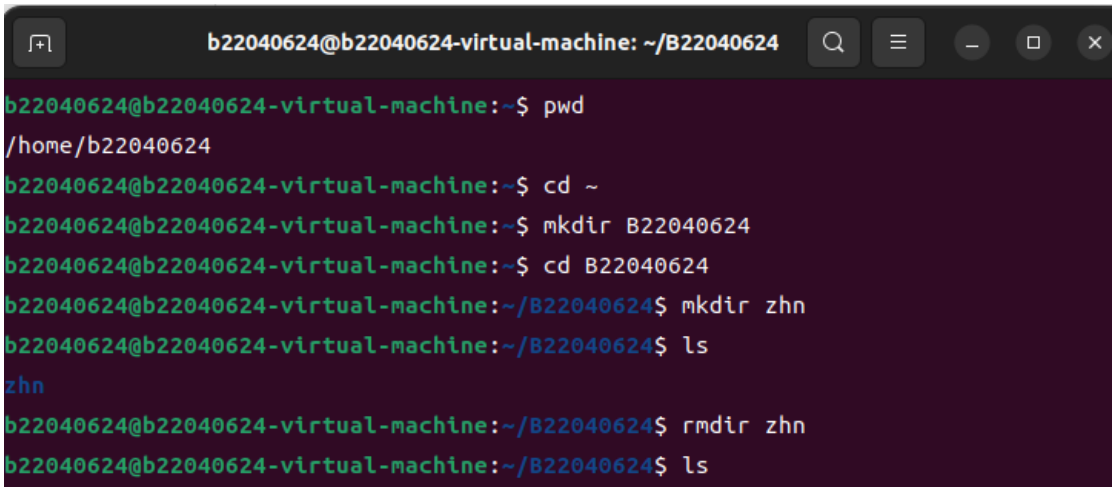
3. Experiment Step

(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.

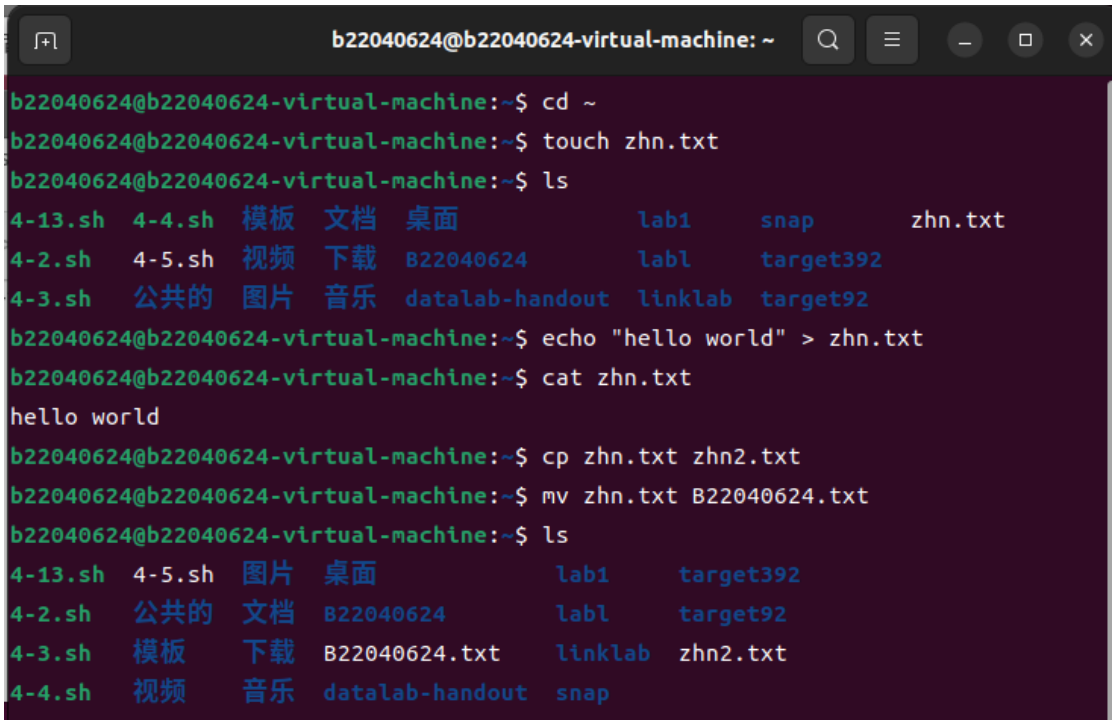


(2) File operation

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.



(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.

```
b22040624@b22040624-virtual-machine:~$ whoami
b22040624
b22040624@b22040624-virtual-machine:~$ sudo su root
[sudo] b22040624 的密码：
root@b22040624-virtual-machine:/home/b22040624# groupadd student
root@b22040624-virtual-machine:/home/b22040624# whoami
root
```

```
root@b22040624-virtual-machine:/home/b22040624# adduser b22040624zhn
正在添加用户"b22040624zhn"...
正在添加新组"b22040624zhn" (1002)...
正在添加新用户"b22040624zhn" (1001) 到组"b22040624zhn"...
创建主目录"/home/b22040624zhn"...
正在从"/etc/skel"复制文件...
新的密码:
无效的密码: 密码少于 8 个字符
重新输入新的密码:
抱歉，密码不匹配。
新的密码:
重新输入新的密码:
passwd: 已成功更新密码
正在改变 b22040624zhn 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@b22040624-virtual-machine:/home/b22040624# su b22040624zhn
b22040624zhn@b22040624-virtual-machine:/home/b22040624$ cd ~
b22040624zhn@b22040624-virtual-machine:~$ touch zhn.txt
b22040624zhn@b22040624-virtual-machine:~$ ls -1
zhn.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.

```
b22040624@b22040624-virtual-machine:~$  touch demo
b22040624@b22040624-virtual-machine:~$  ls -l demo
-rw-rw-r-- 1 b22040624 b22040624 0 10月 14 10:12 demo
b22040624@b22040624-virtual-machine:~$ chmod 777 demo
b22040624@b22040624-virtual-machine:~$  ls -l demo
-rwxrwxrwx 1 b22040624 b22040624 0 10月 14 10:12 demo
b22040624@b22040624-virtual-machine:~$ chomd a-x demo
找不到命令 “chomd”，您的意思是：
  “chmod” 命令来自 Debian 软件包 coreutils (8.32-4.1ubuntu1)
尝试 sudo apt install <deb name>
b22040624@b22040624-virtual-machine:~$ chmod a-x demo
b22040624@b22040624-virtual-machine:~$  ls -l demo
-rw-rw-rw- 1 b22040624 b22040624 0 10月 14 10:12 demo
b22040624@b22040624-virtual-machine:~$ chmod go-w demo
b22040624@b22040624-virtual-machine:~$  ls -l demo
-rw-r--r-- 1 b22040624 b22040624 0 10月 14 10:12 demo
b22040624@b22040624-virtual-machine:~$ chmod g+w demo
b22040624@b22040624-virtual-machine:~$  ls -l demo
-rw-rw-r-- 1 b22040624 b22040624 0 10月 14 10:12 demo
b22040624@b22040624-virtual-machine:~$ chmod a= demo
b22040624@b22040624-virtual-machine:~$  ls -l demo
---------- 1 b22040624 b22040624 0 10月 14 10:12 demo
b22040624@b22040624-virtual-machine:~$ chmod +t demo
b22040624@b22040624-virtual-machine:~$  ls -l demo
---------T 1 b22040624 b22040624 0 10月 14 10:12 demo
b22040624@b22040624-virtual-machine:~$ chmod u+s demo
b22040624@b22040624-virtual-machine:~$  ls -l demo
---S-----T 1 b22040624 b22040624 0 10月 14 10:12 demo
b22040624@b22040624-virtual-machine:~$ chmod u+rx demo
b22040624@b22040624-virtual-machine:~$  ls -l demo
-r-s-----T 1 b22040624 b22040624 0 10月 14 10:12 demo
b22040624@b22040624-virtual-machine:~$ chmod g+rws demo
b22040624@b22040624-virtual-machine:~$  ls -l demo
-r-srwS--T 1 b22040624 b22040624 0 10月 14 10:12 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.
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
```

```
b22040624@b22040624-virtual-machine:~/others$ tar -czvf backup.tar.gz others
tar: others：无法 stat：没有那个文件或目录
tar: 由于前次错误，将以上次的错误状态退出
b22040624@b22040624-virtual-machine:~/others$ ls -l
总计 4
-rw-rw-r-- 1 b22040624 b22040624 45 10月 14 10:23 backup.tar.gz
-rw-rw-r-- 1 b22040624 b22040624  0 10月 14 10:19 zhn2.txt
-rw-rw-r-- 1 b22040624 b22040624  0 10月 14 10:19 zhn.txt
b22040624@b22040624-virtual-machine:~/others$ tar -xzvf backup.tar.gz
b22040624@b22040624-virtual-machine:~/others$ ls -l
总计 4
-rw-rw-r-- 1 b22040624 b22040624 45 10月 14 10:23 backup.tar.gz
-rw-rw-r-- 1 b22040624 b22040624  0 10月 14 10:19 zhn2.txt
-rw-rw-r-- 1 b22040624 b22040624  0 10月 14 10:19 zhn.txt
b22040624@b22040624-virtual-machine:~/others$
```

```
b22040624@b22040624-virtual-machine:~/others$ grep ^n textfile.txt
no, I study in njupt.
```

```
b22040624@b22040624-virtual-machine:~/others$ grep '\.00$' textfile.txt
this line ends with .00
He is 15. It is 16.00
b22040624@b22040624-virtual-machine:~/others$  grep '5\..' textfile.txt
He is 15. It is 16.00
```

```
b22040624@b22040624-virtual-machine:~/others$ grep '^[wy]' textfile.txt
wy is the short of my name.
```