

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

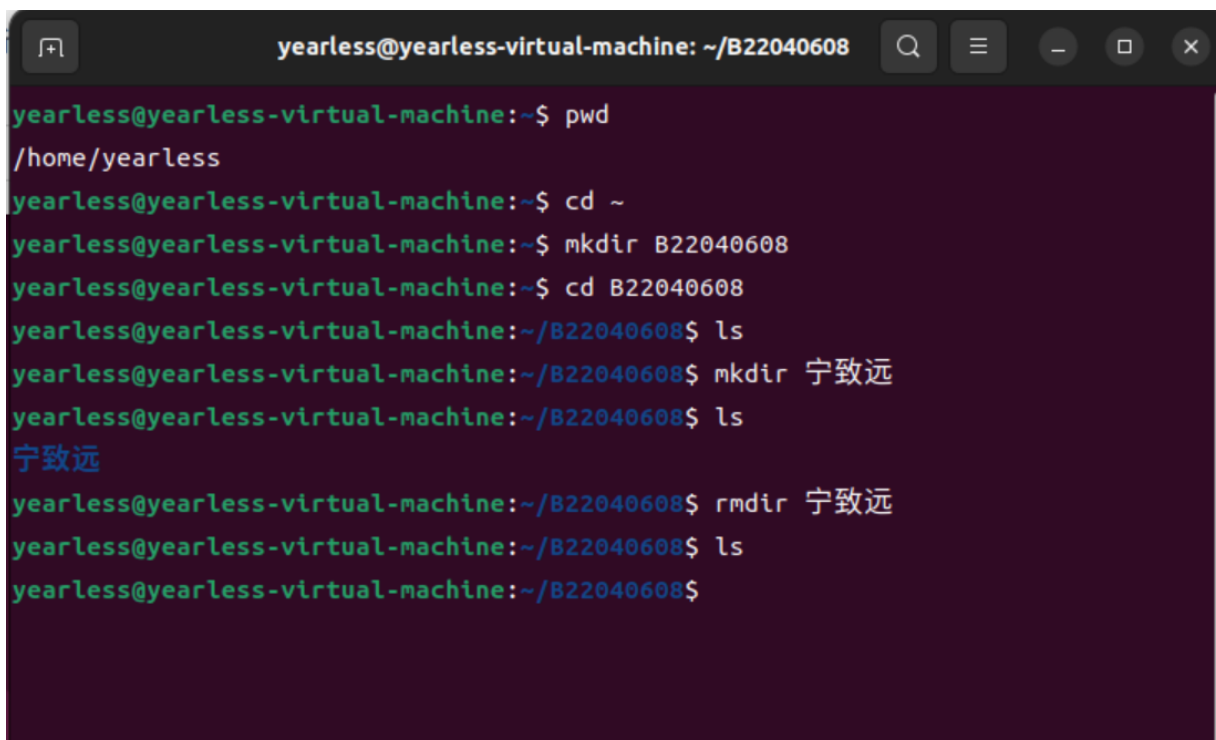
3. Experiment Step

(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 "yearless@yearless-virtual-machine: ~/B22040608". The terminal shows a sequence of commands and their outputs:
1. Command: `pwd`, Output: `/home/yearless`
2. Command: `cd ~`, Output: (no output)
3. Command: `mkdir B22040608`, Output: (no output)
4. Command: `cd B22040608`, Output: (no output)
5. Command: `ls`, Output: (no output)
6. Command: `mkdir 宁致远`, Output: (no output)
7. Command: `ls`, Output: `宁致远`
8. Command: `rmkdir 宁致远`, Output: (no output)
9. Command: `ls`, Output: (no output)
10. Command: (no command), Output: (no output)

(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.

```
yearless@yearless-virtual-machine:~/B22040608$ cd ~
yearless@yearless-virtual-machine:~$ touch 宁致远.txt
yearless@yearless-virtual-machine:~$ ls
公共的      下载          linklab.tar
模板        音乐          snap
宁致远.txt  桌面          VMwareTools-10.3.23-16594550
视频        B22040608    VMwareTools-10.3.23-16594550.tar.gz
图片        datalab-handout vmware-tools-distrib
文档        linklab
yearless@yearless-virtual-machine:~$ echo "hello world" > 宁致远.txt
yearless@yearless-virtual-machine:~$ cat 宁致远.txt
hello world
yearless@yearless-virtual-machine:~$ cp 宁致远.txt 宁致远2.txt
yearless@yearless-virtual-machine:~$ mv 宁致远.txt B22040608.txt
yearless@yearless-virtual-machine:~$ ls
公共的      文档          B22040608.txt    VMwareTools-10.3.23-16594550
模板        下载          datalab-handout  VMwareTools-10.3.23-16594550.tar.gz
宁致远2.txt 音乐          linklab          vmware-tools-distrib
视频        桌面          linklab.tar
图片        B22040608    snap
```

(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:

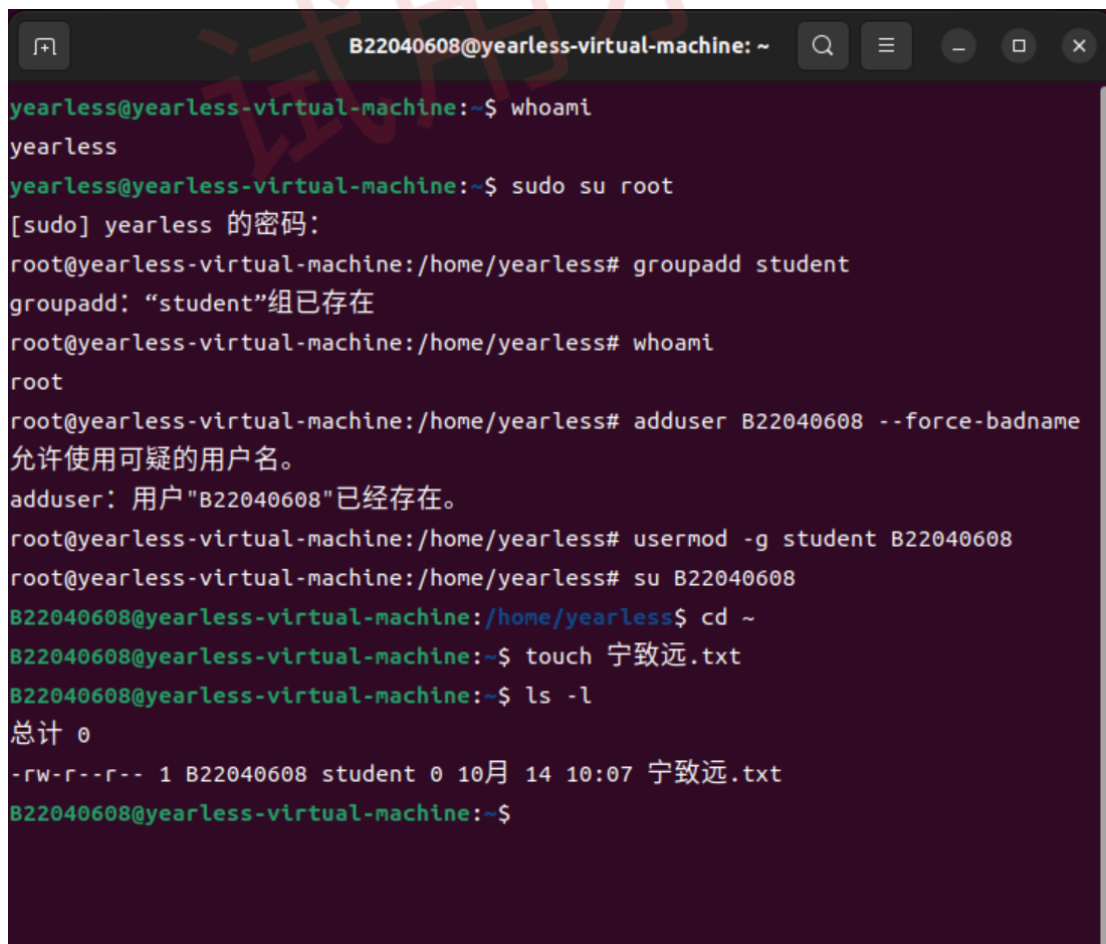
```
#groupadd student  
#whoami  
#adduser yourstudentID  
#usermod -g student yourstudentID
```

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.



```
B22040608@yearless-virtual-machine: ~  
yearless@yearless-virtual-machine:~$ whoami  
yearless  
yearless@yearless-virtual-machine:~$ sudo su root  
[sudo] yearless 的密码:  
root@yearless-virtual-machine:/home/yearless# groupadd student  
groupadd: "student"组已存在  
root@yearless-virtual-machine:/home/yearless# whoami  
root  
root@yearless-virtual-machine:/home/yearless# adduser B22040608 --force-badname  
允许使用可疑的用户名。  
adduser: 用户"B22040608"已经存在。  
root@yearless-virtual-machine:/home/yearless# usermod -g student B22040608  
root@yearless-virtual-machine:/home/yearless# su B22040608  
B22040608@yearless-virtual-machine:/home/yearless$ cd ~  
B22040608@yearless-virtual-machine:~$ touch 宁致远.txt  
B22040608@yearless-virtual-machine:~$ ls -l  
总计 0  
-rw-r--r-- 1 B22040608 student 0 10月 14 10:07 宁致远.txt  
B22040608@yearless-virtual-machine:~$
```

(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
```

```
B22040608@yearless-virtual-machine:~$ touch demo
B22040608@yearless-virtual-machine:~$ chmod 777 demo
B22040608@yearless-virtual-machine:~$ chmod a-x demo
B22040608@yearless-virtual-machine:~$ chmod go-w demo
B22040608@yearless-virtual-machine:~$ chmod g+w demo
B22040608@yearless-virtual-machine:~$ ls -l demo
-rw-rw-r-- 1 B22040608 student 0 10月 14 10:14 demo
B22040608@yearless-virtual-machine:~$ chmod a= demo
B22040608@yearless-virtual-machine:~$ ls -l demo
----- 1 B22040608 student 0 10月 14 10:14 demo
B22040608@yearless-virtual-machine:~$ chmod +t demo
B22040608@yearless-virtual-machine:~$ ls -l demo
-----T 1 B22040608 student 0 10月 14 10:14 demo
B22040608@yearless-virtual-machine:~$ chmod u+s demo
B22040608@yearless-virtual-machine:~$ ls -l demo
---S-----T 1 B22040608 student 0 10月 14 10:14 demo
B22040608@yearless-virtual-machine:~$ chmod u+rx demo
B22040608@yearless-virtual-machine:~$ ls -l demo
-r-s-----T 1 B22040608 student 0 10月 14 10:14 demo
B22040608@yearless-virtual-machine:~$ chmod g+rws demo
B22040608@yearless-virtual-machine:~$ ls -l demo
-r-srws--T 1 B22040608 student 0 10月 14 10:14 demo
```

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

###(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
```

```
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
```

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

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

```
yearless@yearless-virtual-machine:~$ grep '^n' test15.txt  
no, I study in njupt.  
yearless@yearless-virtual-machine:~$ grep '\.00$' test15.txt  
this line ends with .00  
He is 15. It is 16.00  
yearless@yearless-virtual-machine:~$ grep '5\.. ' test15.txt  
He is 15. It is 16.00  
yearless@yearless-virtual-machine:~$ grep '^[wy]' test15.txt  
wy is the short of my name.  
yearless@yearless-virtual-machine:~$
```

```
yearless@yearless-virtual-machine:~$ tar -czvf backup.tar.gz others  
others/  
others/456.txt  
others/123.txt  
others/backup.tar.gz  
yearless@yearless-virtual-machine:~$ cd others  
yearless@yearless-virtual-machine:~/others$ ls -l  
总计 4  
-rw-rw-r-- 1 yearless yearless 0 10月 14 10:31 123.txt  
-rw-rw-r-- 1 yearless yearless 0 10月 14 10:31 456.txt  
-rw-rw-r-- 1 yearless yearless 45 10月 14 10:45 backup.tar.gz  
yearless@yearless-virtual-machine:~/others$ cd ~  
yearless@yearless-virtual-machine:~$ tar -xzvf backup.tar.gz  
others/  
others/456.txt  
others/123.txt  
others/backup.tar.gz  
yearless@yearless-virtual-machine:~$ cd others  
yearless@yearless-virtual-machine:~/others$ ls -l  
ls: 无法访问 '~l': 没有那个文件或目录  
yearless@yearless-virtual-machine:~/others$ ls -l  
总计 4  
-rw-rw-r-- 1 yearless yearless 0 10月 14 10:31 123.txt  
-rw-rw-r-- 1 yearless yearless 0 10月 14 10:31 456.txt  
-rw-rw-r-- 1 yearless yearless 45 10月 14 10:45 backup.tar.gz  
yearless@yearless-virtual-machine:~/others$
```