

1. Objective

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

2. Requirement

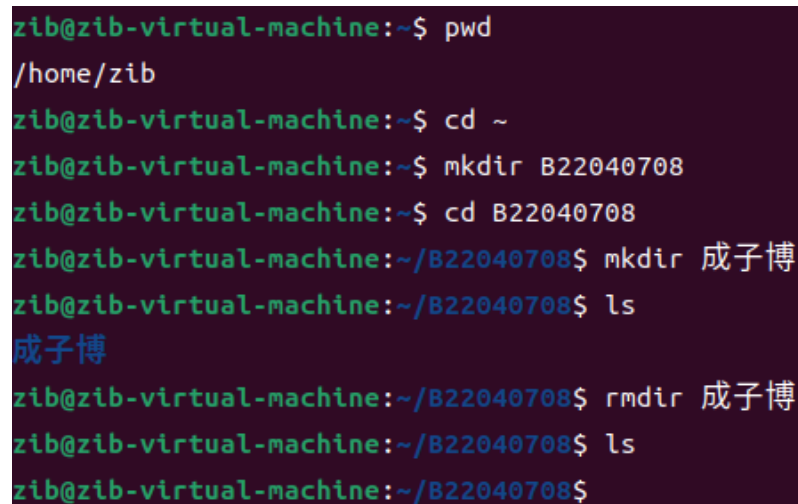
- Master the permission management of Linux files
- Master basic file and directory operations
- Linux user management
- File compression and archiving

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.



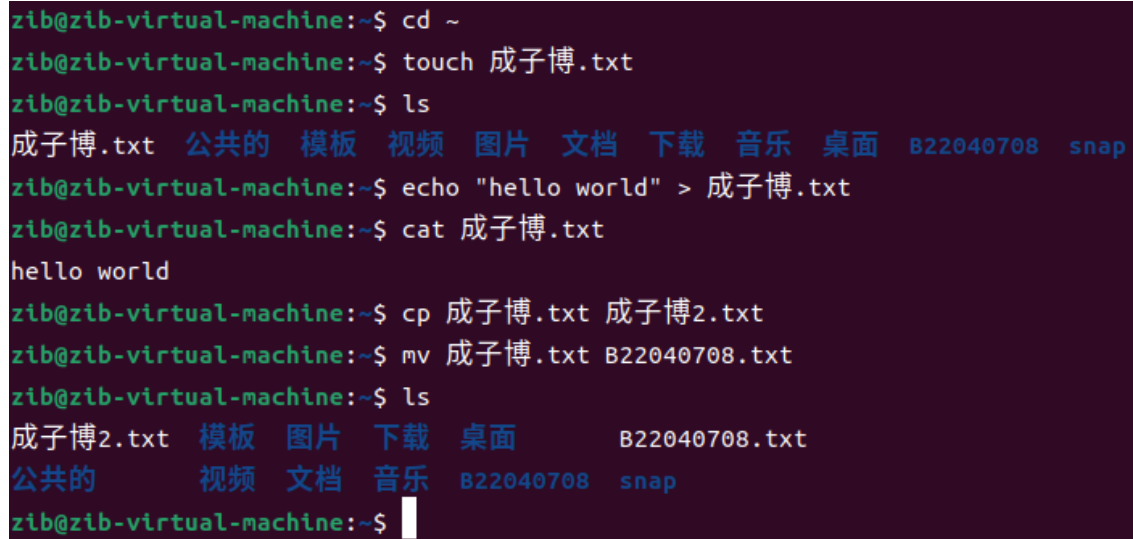
```
zib@zib-virtual-machine:~$ pwd
/home/zib
zib@zib-virtual-machine:~$ cd ~
zib@zib-virtual-machine:~$ mkdir B22040708
zib@zib-virtual-machine:~$ cd B22040708
zib@zib-virtual-machine:~/B22040708$ mkdir 成子博
zib@zib-virtual-machine:~/B22040708$ ls
成子博
zib@zib-virtual-machine:~/B22040708$ rmdir 成子博
zib@zib-virtual-machine:~/B22040708$ ls
zib@zib-virtual-machine:~/B22040708$
```

(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.



```
zib@zib-virtual-machine:~$ cd ~
zib@zib-virtual-machine:~$ touch 成子博.txt
zib@zib-virtual-machine:~$ ls
成子博.txt  公共的  模板  视频  图片  文档  下载  音乐  桌面  B22040708  snap
zib@zib-virtual-machine:~$ echo "hello world" > 成子博.txt
zib@zib-virtual-machine:~$ cat 成子博.txt
hello world
zib@zib-virtual-machine:~$ cp 成子博.txt 成子博2.txt
zib@zib-virtual-machine:~$ mv 成子博.txt B22040708.txt
zib@zib-virtual-machine:~$ ls
成子博2.txt  模板  图片  下载  桌面  B22040708.txt
公共的      视频  文档  音乐  B22040708  snap
zib@zib-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
```

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

```
zib@zib-virtual-machine:~$ whoami
zib
zib@zib-virtual-machine:~$ sudo su root
[sudo] zib 的密码:
root@zib-virtual-machine:/home/zib# groupadd student
root@zib-virtual-machine:/home/zib# whoami
root
root@zib-virtual-machine:/home/zib# adduser b22040708
正在添加用户"b22040708"...
正在添加新组"b22040708" (1002)...
正在添加新用户"b22040708" (1001) 到组"b22040708"...
创建主目录"/home/b22040708"...
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 b22040708 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]
root@zib-virtual-machine:/home/zib# usermod -g student b22040708
root@zib-virtual-machine:/home/zib# su b22040708
b22040708@zib-virtual-machine:/home/zib$ cd ~
b22040708@zib-virtual-machine:~$ touch 成子博.txt
b22040708@zib-virtual-machine:~$ ls -l
总计 0
-rw-r--r-- 1 b22040708 student 0 11月 11 10:37 成子博.txt
b22040708@zib-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
```

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

```
zib@zib-virtual-machine:~/demo$ touch demo
zib@zib-virtual-machine:~/demo$ chmod 777 demo
zib@zib-virtual-machine:~/demo$ ls -l
总计 0
-rwxrwxrwx 1 zib zib 0 11月 11 10:48 demo
zib@zib-virtual-machine:~/demo$ chmod a-x demo
zib@zib-virtual-machine:~/demo$ ls -l
总计 0
-rw-rw-rw- 1 zib zib 0 11月 11 10:48 demo
zib@zib-virtual-machine:~/demo$ chmod go-w demo
zib@zib-virtual-machine:~/demo$ ls -l
总计 0
-rw-r--r-- 1 zib zib 0 11月 11 10:48 demo
zib@zib-virtual-machine:~/demo$ chmod g+w demo
zib@zib-virtual-machine:~/demo$ ls -l
总计 0
-rw-rw-r-- 1 zib zib 0 11月 11 10:48 demo
zib@zib-virtual-machine:~/demo$ chmod a= demo
zib@zib-virtual-machine:~/demo$ ls -l
总计 0
----- 1 zib zib 0 11月 11 10:48 demo
zib@zib-virtual-machine:~/demo$ chmod +t demo
zib@zib-virtual-machine:~/demo$ ls -l
总计 0
-----T 1 zib zib 0 11月 11 10:48 demo
zib@zib-virtual-machine:~/demo$ chmod u+s demo
zib@zib-virtual-machine:~/demo$ ls -l
总计 0
---S-----T 1 zib zib 0 11月 11 10:48 demo
zib@zib-virtual-machine:~/demo$ chmod u+rx demo
zib@zib-virtual-machine:~/demo$ ls -l
总计 0
-r-s-----T 1 zib zib 0 11月 11 10:48 demo
zib@zib-virtual-machine:~/demo$ chmod g+rws demo
zib@zib-virtual-machine:~/demo$ ls -l
总计 0
-r-srws--T 1 zib zib 0 11月 11 10:48 demo
zib@zib-virtual-machine:~/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.

```

zib@zib-virtual-machine:~$ tar -czvf backup.tar.gz others
others/
others/2
others/1
zib@zib-virtual-machine:~$ ls -l
总计 48
drwxr-xr-x 2 zib zib 4096 4月 3 2024 公共的
drwxr-xr-x 2 zib zib 4096 4月 3 2024 模板
drwxr-xr-x 2 zib zib 4096 4月 3 2024 视频
drwxr-xr-x 3 zib zib 4096 5月 17 16:36 图片
drwxr-xr-x 2 zib zib 4096 4月 5 2024 文档
drwxr-xr-x 6 zib zib 4096 10月 30 15:04 下载
drwxr-xr-x 2 zib zib 4096 4月 3 2024 音乐
drwxr-xr-x 4 zib zib 4096 11月 11 10:08 桌面
-rw-rw-r-- 1 zib zib 254 11月 11 11:03 backup.tar.gz
drwxrwxr-x 2 zib zib 4096 11月 11 10:59 others
drwx----- 5 zib zib 4096 4月 4 2024 snap
-rw-rw-r-- 1 zib zib 138 11月 11 10:59 textfile
zib@zib-virtual-machine:~$ tar -xzvf backup.tar.gz
others/
others/2
others/1
zib@zib-virtual-machine:~$ ls -l
总计 48
drwxr-xr-x 2 zib zib 4096 4月 3 2024 公共的
drwxr-xr-x 2 zib zib 4096 4月 3 2024 模板
drwxr-xr-x 2 zib zib 4096 4月 3 2024 视频
drwxr-xr-x 3 zib zib 4096 5月 17 16:36 图片
drwxr-xr-x 2 zib zib 4096 4月 5 2024 文档
drwxr-xr-x 6 zib zib 4096 10月 30 15:04 下载
drwxr-xr-x 2 zib zib 4096 4月 3 2024 音乐
drwxr-xr-x 4 zib zib 4096 11月 11 10:08 桌面
-rw-rw-r-- 1 zib zib 254 11月 11 11:03 backup.tar.gz
drwxrwxr-x 2 zib zib 4096 11月 11 10:59 others
drwx----- 5 zib zib 4096 4月 4 2024 snap
-rw-rw-r-- 1 zib zib 138 11月 11 10:59 textfile
zib@zib-virtual-machine:~$

```

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
```

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