

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.



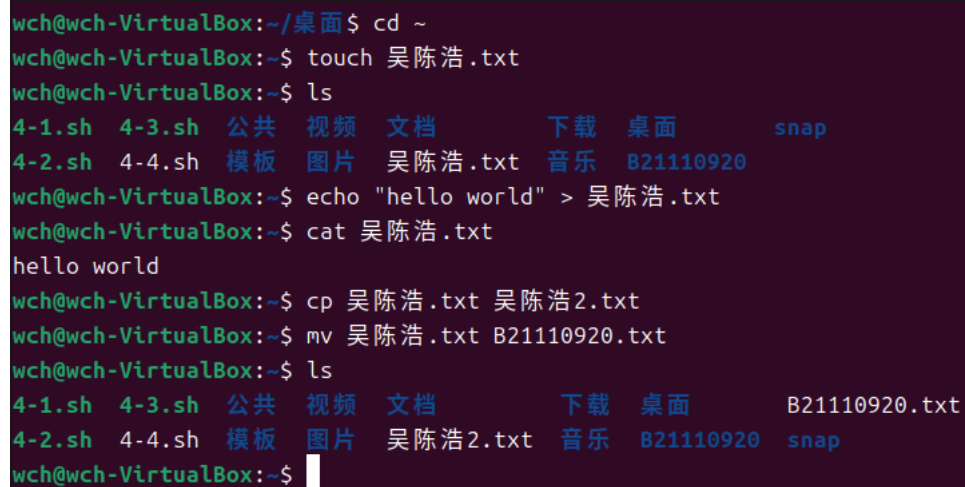
```
wch@wch-VirtualBox:~/桌面$ pwd
/home/wch/桌面
wch@wch-VirtualBox:~/桌面$ cd ~
wch@wch-VirtualBox:~$ mkdir B21110920
wch@wch-VirtualBox:~$ cd B21110920
wch@wch-VirtualBox:~/B21110920$ mkdir 吴陈浩
wch@wch-VirtualBox:~/B21110920$ ls
吴陈浩
wch@wch-VirtualBox:~/B21110920$ rmdir 吴陈浩
wch@wch-VirtualBox:~/B21110920$ ls
wch@wch-VirtualBox:~/B21110920$
```

(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.



```
wch@wch-VirtualBox:~/桌面$ cd ~  
wch@wch-VirtualBox:~$ touch 吴陈浩.txt  
wch@wch-VirtualBox:~$ ls  
4-1.sh  4-3.sh  公共  视频  文档          下载  桌面          snap  
4-2.sh  4-4.sh  模板  图片  吴陈浩.txt  音乐  B21110920  
wch@wch-VirtualBox:~$ echo "hello world" > 吴陈浩.txt  
wch@wch-VirtualBox:~$ cat 吴陈浩.txt  
hello world  
wch@wch-VirtualBox:~$ cp 吴陈浩.txt 吴陈浩2.txt  
wch@wch-VirtualBox:~$ mv 吴陈浩.txt B21110920.txt  
wch@wch-VirtualBox:~$ ls  
4-1.sh  4-3.sh  公共  视频  文档          下载  桌面          B21110920.txt  
4-2.sh  4-4.sh  模板  图片  吴陈浩2.txt  音乐  B21110920  snap  
wch@wch-VirtualBox:~$
```

(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.

```
wch@wch-VirtualBox:~/桌面$ whoami  
wch  
wch@wch-VirtualBox:~/桌面$ sudo su root  
[sudo] wch 的密码:  
root@wch-VirtualBox:/home/wch/桌面# groupadd student  
root@wch-VirtualBox:/home/wch/桌面# whoami  
root  
root@wch-VirtualBox:/home/wch/桌面# adduser b21110920  
info: 正在添加用户 "b21110920"...  
info: 从 1000 到 59999 中选择 UID/GID...  
info: 正在添加新组 "b21110920" (1002)...  
info: 正在添加新用户 "b21110920" (1002) 到组 "b21110920 (1002)"...  
info: 创建主目录 "/home/b21110920"...  
info: 正在从 "/etc/skel"复制文件...  
新的密码:  
无效的密码: 密码未通过字典检查 - ???????????/??????????  
重新输入新的密码:  
passwd: 已成功更新密码  
正在改变 b21110920 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  
info: 正在添加新用户 "b21110920"到附加组 "users" ...  
info: 正在添加用户 "b21110920"到 "users"组...  
root@wch-VirtualBox:/home/wch/桌面# usermod -g student b21110920
```

```

root@wch-VirtualBox:/home/wch/桌面# su b21110920
b21110920@wch-VirtualBox:/home/wch/桌面$ cd ~
b21110920@wch-VirtualBox:~$ touch 吴陈浩.txt
b21110920@wch-VirtualBox:~$ ls -l
吴陈浩.txt
b21110920@wch-VirtualBox:~$

```

(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.

```

wch@wch-VirtualBox:~$ touch demo
wch@wch-VirtualBox:~$ ls -l demo
-rw-rw-r-- 1 wch wch 0 10月 14 10:25 demo
wch@wch-VirtualBox:~$ chmod 777 demo
wch@wch-VirtualBox:~$ ls -l demo
-rwxrwxrwx 1 wch wch 0 10月 14 10:25 demo
wch@wch-VirtualBox:~$ chmod a-x demo
wch@wch-VirtualBox:~$ ls -l demo
-rw-rw-rw- 1 wch wch 0 10月 14 10:25 demo
wch@wch-VirtualBox:~$ chmod go-w demo
wch@wch-VirtualBox:~$ ls -l demo
-rw-r--r-- 1 wch wch 0 10月 14 10:25 demo
wch@wch-VirtualBox:~$ chmod g+w demo
wch@wch-VirtualBox:~$ ls -l demo
-rw-rw-r-- 1 wch wch 0 10月 14 10:25 demo
wch@wch-VirtualBox:~$ chmod a= demo
wch@wch-VirtualBox:~$ ls -l demo
----- 1 wch wch 0 10月 14 10:25 demo
wch@wch-VirtualBox:~$ chmod +t demo
wch@wch-VirtualBox:~$ ls -l demo
-----T 1 wch wch 0 10月 14 10:25 demo
wch@wch-VirtualBox:~$ chmod u+s demo
wch@wch-VirtualBox:~$ ls -l demo
---S-----T 1 wch wch 0 10月 14 10:25 demo
wch@wch-VirtualBox:~$ chmod u+rx demo
wch@wch-VirtualBox:~$ ls -l demo
-r-s-----T 1 wch wch 0 10月 14 10:25 demo
wch@wch-VirtualBox:~$ chmod g+rws demo
wch@wch-VirtualBox:~$ ls -l demo
-r-srws--T 1 wch wch 0 10月 14 10:25 demo
wch@wch-VirtualBox:~$

```

(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.

```
wch@wch-VirtualBox:~$ tar -czvf backup.tar.gz others
others/
others/吴陈浩.txt
others/B21110920.txt
wch@wch-VirtualBox:~$ ls -l
总计 68
-rwxrwxr-x 1 wch wch 148 10月 12 10:41 4-1.sh
-rwxrwxr-x 1 wch wch 312 10月 12 10:53 4-2.sh
-rwxrwxr-x 1 wch wch 174 10月 12 13:23 4-3.sh
-rw-rw-r-- 1 wch wch 0 10月 12 11:02 4-4.sh
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 公共
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 模板
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 视频
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 图片
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 文档
-rw-rw-r-- 1 wch wch 12 10月 14 10:08 吴陈浩2.txt
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 下载
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 音乐
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 桌面
drwxrwxr-x 2 wch wch 4096 10月 14 10:04 B21110920
-rw-rw-r-- 1 wch wch 12 10月 14 10:07 B21110920.txt
-rw-rw-r-- 1 wch wch 179 10月 14 10:35 backup.tar.gz
-r-srws--T 1 wch wch 0 10月 14 10:25 demo
drwxrwxr-x 2 wch wch 4096 10月 14 10:34 others
drwx----- 5 wch wch 4096 10月 12 12:20 snap
wch@wch-VirtualBox:~$ tar -xzvf backup.tar.gz
others/
others/吴陈浩.txt
others/B21110920.txt
wch@wch-VirtualBox:~$ ls -l
总计 68
-rwxrwxr-x 1 wch wch 148 10月 12 10:41 4-1.sh
-rwxrwxr-x 1 wch wch 312 10月 12 10:53 4-2.sh
-rwxrwxr-x 1 wch wch 174 10月 12 13:23 4-3.sh
-rw-rw-r-- 1 wch wch 0 10月 12 11:02 4-4.sh
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 公共
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 模板
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 视频
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 图片
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 文档
-rw-rw-r-- 1 wch wch 12 10月 14 10:08 吴陈浩2.txt
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 下载
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 音乐
drwxr-xr-x 2 wch wch 4096 10月 11 18:30 桌面
drwxrwxr-x 2 wch wch 4096 10月 14 10:04 B21110920
-rw-rw-r-- 1 wch wch 12 10月 14 10:07 B21110920.txt
-rw-rw-r-- 1 wch wch 179 10月 14 10:35 backup.tar.gz
-r-srws--T 1 wch wch 0 10月 14 10:25 demo
drwxrwxr-x 2 wch wch 4096 10月 14 10:34 others
drwx----- 5 wch wch 4096 10月 12 12:20 snap
```

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
```

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