

南京邮电大学

实验报告

(2024 / 2025 学年 第 一 学期)

专 业 信息安全

学 生 姓 名 潘韬

班 级 学 号 B22041622

指 导 教 师 王磊

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
```

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

```
pt@pt-VMware-Virtual-Platform:~/桌面$ pwd
/home/pt/桌面
pt@pt-VMware-Virtual-Platform:~/桌面$ cd ~
pt@pt-VMware-Virtual-Platform:~$ mkdir b22041622
pt@pt-VMware-Virtual-Platform:~$ cd b22041622
pt@pt-VMware-Virtual-Platform:~/b22041622$ mkdir pt
pt@pt-VMware-Virtual-Platform:~/b22041622$ ls
pt
pt@pt-VMware-Virtual-Platform:~/b22041622$ rmdir pt
pt@pt-VMware-Virtual-Platform:~/b22041622$ ls
pt@pt-VMware-Virtual-Platform:~/b22041622$
```

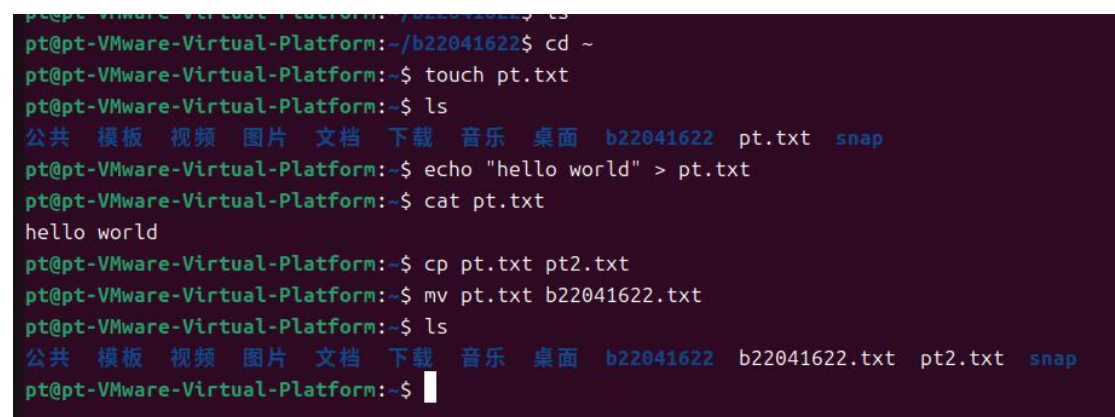
Save a screenshot of the above command along with the corresponding results, you must have your student number and name.

(2) File operation

Enter the following commands in sequence:

enter:

```
$cd ~  
$touch yourname.txt  
$ls  
$echo "hello world" > yourname.txt  
$cat yourname.txt  
$cp yourname.txt yourname2.txt  
$mv yourname.txt yourstudentid.txt  
$ls
```

A screenshot of a terminal window showing a series of commands and their outputs. The prompt is 'pt@pt-VMware-Virtual-Platform: ~/b22041622\$'. The commands and outputs are: 'cd ~' (output: '~'), 'touch pt.txt', 'ls' (output: '公共 模板 视频 图片 文档 下载 音乐 桌面 b22041622 pt.txt snap'), 'echo "hello world" > pt.txt', 'cat pt.txt' (output: 'hello world'), 'cp pt.txt pt2.txt', 'mv pt.txt b22041622.txt', 'ls' (output: '公共 模板 视频 图片 文档 下载 音乐 桌面 b22041622 b22041622.txt pt2.txt snap'), and finally '\$'.

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

```
#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.

```

pt@pt-VMware-Virtual-Platform:~$ whoami
pt
pt@pt-VMware-Virtual-Platform:~$ sudo su root
[sudo] pt 的密码:
对不起，请重试。
[sudo] pt 的密码:
root@pt-VMware-Virtual-Platform:/home/pt# groupadd student
root@pt-VMware-Virtual-Platform:/home/pt# whoami
root
root@pt-VMware-Virtual-Platform:/home/pt# adduser b22041622
info: 正在添加用户 "b22041622"...
info: 从 1000 到 59999 中选择 UID/GID...
info: 正在添加新组 "b22041622" (1002)...
info: 正在添加新用户 "b22041622" (1002) 到组 "b22041622 (1002)"...
info: 创建主目录 "/home/b22041622"...
info: 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 b22041622 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]
info: 正在添加新用户 "b22041622"到附加组 "users" ...
info: 正在添加用户 "b22041622"到 "users"组...
root@pt-VMware-Virtual-Platform:/home/pt# usermod -g student b22041622
root@pt-VMware-Virtual-Platform:/home/pt# su b22041622
b22041622@pt-VMware-Virtual-Platform:/home/pt$ cd~
找不到命令 "cd~"，您的意思是:
    "cdp" 命令来自 Debian 软件包 irpas (0.10-9)
    "cdb" 命令来自 Debian 软件包 tinycdb (0.81-1)
    "cdo" 命令来自 Debian 软件包 cdo (2.3.0-1)
    "cdw" 命令来自 Debian 软件包 cdw (0.8.1-3)
    "cd5" 命令来自 Debian 软件包 cd5 (0.1-4)
    "cde" 命令来自 Debian 软件包 cde (0.1+git9-g551e54d-1.2)
    "cdi" 命令来自 Debian 软件包 cdo (2.3.0-1)
尝试 apt install <deb name>
b22041622@pt-VMware-Virtual-Platform:/home/pt$ cd ~
b22041622@pt-VMware-Virtual-Platform:~$ touch pt.txt
b22041622@pt-VMware-Virtual-Platform:~$ ls -l
pt.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.

```

b22041622@pt-VMware-Virtual-Platform:~$ touch demo
b22041622@pt-VMware-Virtual-Platform:~$ chmod 777 demo
b22041622@pt-VMware-Virtual-Platform:~$ ls -l demo
-rwxrwxrwx 1 b22041622 student 0 10月 18 08:39 demo
b22041622@pt-VMware-Virtual-Platform:~$ chmod a-x demo
b22041622@pt-VMware-Virtual-Platform:~$ ls -l demo
-rw-rw-rw- 1 b22041622 student 0 10月 18 08:39 demo
b22041622@pt-VMware-Virtual-Platform:~$ chmod go-w demo
b22041622@pt-VMware-Virtual-Platform:~$ ls -l demo
-rw-r--r-- 1 b22041622 student 0 10月 18 08:39 demo
b22041622@pt-VMware-Virtual-Platform:~$ chmod g+w demo
b22041622@pt-VMware-Virtual-Platform:~$ ls -l demo
-rw-rw-r-- 1 b22041622 student 0 10月 18 08:39 demo
b22041622@pt-VMware-Virtual-Platform:~$ chmod a= demo
b22041622@pt-VMware-Virtual-Platform:~$ ls -l demo
----- 1 b22041622 student 0 10月 18 08:39 demo
b22041622@pt-VMware-Virtual-Platform:~$ chmod +t demo
b22041622@pt-VMware-Virtual-Platform:~$ ls -l demo
-----T 1 b22041622 student 0 10月 18 08:39 demo
b22041622@pt-VMware-Virtual-Platform:~$ chmod u+s demo
b22041622@pt-VMware-Virtual-Platform:~$ ls -l demo
---S-----T 1 b22041622 student 0 10月 18 08:39 demo
b22041622@pt-VMware-Virtual-Platform:~$ chmod u+rx demo
b22041622@pt-VMware-Virtual-Platform:~$ ls -l demo
-r-s-----T 1 b22041622 student 0 10月 18 08:39 demo
b22041622@pt-VMware-Virtual-Platform:~$ chmod g+rws demo
b22041622@pt-VMware-Virtual-Platform:~$ ls -l demo
-r-srws--T 1 b22041622 student 0 10月 18 08:39 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.


```

b22041622@pt-VMware-Virtual-Platform:~/others$ cd ~
b22041622@pt-VMware-Virtual-Platform:~$ tar -czvf backup.tar.gz others
others/
others/pt2.txt
others/backup.tar.gz
others/pt1.txt
b22041622@pt-VMware-Virtual-Platform:~$ ls -l
总计 8
-rw-r--r-- 1 b22041622 student 261 10月 18 08:54 backup.tar.gz
-r-srws--T 1 b22041622 student 0 10月 18 08:39 demo
drwxr-xr-x 2 b22041622 student 4096 10月 18 08:53 others
-rw-r--r-- 1 b22041622 student 0 10月 18 08:51 pt1.txt
-rw-r--r-- 1 b22041622 student 0 10月 18 08:51 pt2.txt
-rw-r--r-- 1 b22041622 student 0 10月 18 08:32 pt.txt
b22041622@pt-VMware-Virtual-Platform:~$ tar -xzvf backup.tar.gz
others/
others/pt2.txt
others/backup.tar.gz
others/pt1.txt
b22041622@pt-VMware-Virtual-Platform:~$ ls -l
总计 8
-rw-r--r-- 1 b22041622 student 261 10月 18 08:54 backup.tar.gz
-r-srws--T 1 b22041622 student 0 10月 18 08:39 demo
drwxr-xr-x 2 b22041622 student 4096 10月 18 08:53 others
-rw-r--r-- 1 b22041622 student 0 10月 18 08:51 pt1.txt
-rw-r--r-- 1 b22041622 student 0 10月 18 08:51 pt2.txt
-rw-r--r-- 1 b22041622 student 0 10月 18 08:32 pt.txt
b22041622@pt-VMware-Virtual-Platform:~$

```

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
```

```
b22041622@pt-VMware-Virtual-Platform:~$ cat pt1.txt
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.
b22041622@pt-VMware-Virtual-Platform:~$ grep '^n' pt1.txt
no, i study in njupt.
b22041622@pt-VMware-Virtual-Platform:~$ grep '\.00' pt1.txt
this line ends with .00
he is 15. it is 16.00
b22041622@pt-VMware-Virtual-Platform:~$ grep '5\..' pt1.txt
he is 15. it is 16.00
b22041622@pt-VMware-Virtual-Platform:~$ grep '^[wy]' pt1.txt
wy is the short of my name.
b22041622@pt-VMware-Virtual-Platform:~$
```