1. *User management*. Here we suppose there are at least two users, namely, root and guest.

(i) Create a new user *user*

groupadd user

useradd -g user -s /bin/bash -d /home/user -m user

passwd user

id user

ls -ld /home/user

```
vm1kern@vm1kern-VirtualBox:~$ id user
uid=1001(user) gid=1001(user) groups=1001(user)
vm1kern@vm1kern-VirtualBox:~$ ls -ld /home/user
drwxr-xr-x 2 user user 4096 квi 23 23:54 /home/user
```

(ii) Log in to the system as "user" (hint use **su**).

```
vm1kern@vm1kern-VirtualBox:~$ su user
Password:
user@vm1kern-VirtualBox:/home/vm1kern$
```

(ii) Edit **/etc/passwd** to prevent user *user*from logging in to the system.

```
user@vm1kern-VirtualBox:/home/vm1kern$ sudo nano /etc/passwd
[sudo] password for user:
user is not in the sudoers file.  This incident will be reported.
```

```
user:*:1001:1001::/home/user:/bin/bash
```

```
vm1kern@vm1kern-VirtualBox:~$ sudo nano /etc/passwd
vm1kern@vm1kern-VirtualBox:~$ su user
Password:
su: Authentication failure
```

2. *Content of* **/etc/passwd** and **/etc/group**.

(i) Look through **/etc/passwd** and **/etc/group** (hint: use **less** or **cat**).

```
vm1kern@vm1kern-VirtualBox:~$ cat /etc/passwd /etc/group
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
```

(ii) Get data from **/etc/passwd** and **/etc/group** about users: *root, guest, user*
(hint: filter by **grep**).

```
vm1kern@vm1kern-VirtualBox:~$ cat /etc/passwd /etc/group|grep -e "root\|
guest\|user"|cat
root:x:0:0:root:/root:/bin/bash
cups-pk-helper:x:110:116:user for cups-pk-helper service,,,:/home/cups-p
k-helper:/usr/sbin/nologin
hplip:x:118:7:HPLIP system user,,,:/var/run/hplip:/bin/false
user:*:1001:1001::/home/user:/bin/bash
root:x:0:
users:x:100:
user:x:1001:
```

(iii)Parse **/etc/passwd** and **/etc/group** with cut.
cut -f1 -d: /etc/passwd

```
vm1kern@vm1kern-VirtualBox:~$ cut -f1 -d: /etc/passwd
root
daemon
bin
```

cut -f1,2 -d: /etc/passwd

```
vm1kern@vm1kern-VirtualBox:~$ cut -f1,2 -d: /etc/passwd
root:x
daemon:x
bin:x
```

cut -f1,7 -d: /etc/passwd

```
vm1kern@vm1kern-VirtualBox:~$ cut -f1,7 -d: /etc/passwd
root:/bin/bash
daemon:/usr/sbin/nologin
bin:/usr/sbin/nologin
```

cut -f1 -d: /etc/group

```
vm1kern@vm1kern-VirtualBox:~$ cut -f1 -d: /etc/group
root
daemon
bin
```

cut -f1,2 -d: /etc/group

```
vm1kern@vm1kern-VirtualBox:~$ cut -f1,2 -d: /etc/group
root:x
daemon:x
bin:x
```

(iv) Try to call **less** on **/etc/shadow** and invoke
sudo less /etc/shadow

```
root:!:18350:0:99999:7:::
daemon:*:18295:0:99999:7:::
bin:*:18295:0:99999:7:::
sys:*:18295:0:99999:7:::
```

man -k shadow

```
vm1kern@vm1kern-VirtualBox:~$ man -k shadow
gpasswd (1)            - administer /etc/group and /etc/gshadow
grpconv (8)            - convert to and from shadow passwords and groups
grpunconv (8)          - convert to and from shadow passwords and groups
gshadow (5)            - shadowed group file
login.defs (5)         - shadow password suite configuration
ppmshadow (1)          - add simulated shadows to a portable pixmap image
pwconv (8)             - convert to and from shadow passwords and groups
pwunconv (8)           - convert to and from shadow passwords and groups
shadow (5)             - shadowed password file
shadowconfig (8)       - toggle shadow passwords on and off
update-passwd (8)      - safely update /etc/passwd, /etc/shadow and /et...
vigr (8)               - edit the password, group, shadow-password or s...
vipw (8)               - edit the password, group, shadow-password or s...
```

man 5 shadow

```
SHADOW(5)              File Formats and Conversions              SHADOW(5)

NAME
       shadow - shadowed password file

DESCRIPTION
       shadow is a file which contains the password information for
       the system's accounts and optional aging information.
```

Analyse content of **/etc/shadow** based on what you've found in **man** 5 shadow.
each line contain 9 fields.
field 1,2 - user name and password status
field 3,4,5 password settings - last change, min age, max age (number of days since Jan 1, 1970
field 6 - warning period before a password expiration.

3. Dealing with **chmod**.
(i) An executable script. Open your favorite editor and put these lines into a file
#!/bin/bash
echo "Drugs are bad MKAY?"
Give name "script.sh" to the script and call to

chmod +x script.sh

Then you are ready to execute the script:

./**script.sh**

```
vm1kern@vm1kern-VirtualBox:~$ ./script.sh
Drugs are bad MKAY?
```

(ii) Suppose, you have logged in to the system as *guest*. Create directory "testDir" in the **/tmp**; put some file into testDir and prohibit user *user* from visiting this directory (i.e. "testDir").

```
vm1kern@vm1kern-VirtualBox:/tmp$ chmod 700 ./testDir


                   [ Path './testDir' is not accessible ]
^G Get Help    ^O Write Out  ^W Where Is    ^K Cut Text    ^J Justify
^X Exit        ^R Read File  ^\ Replace     ^U Uncut Text ^T To Spell
```

(iii) Test, if it possible to forbid an owner of some file to read to or write from this file.

```
vm1kern@vm1kern-VirtualBox:/tmp$ chmod 000 ./testDir
vm1kern@vm1kern-VirtualBox:/tmp$ ls -l
total 28
-rw------- 1 vm1kern vm1kern    0 кві 23 22:37 config-err-WTZLGn
drwx------ 2 vm1kern vm1kern 4096 кві 23 22:37 ssh-cpXfdIw5mipQ
drwx------ 3 root    root    4096 кві 23 22:33 systemd-private-3a5bb4eb9
e4e4a19b99acd7895b268fc-bolt.service-3QI1xB
drwx------ 3 root    root    4096 кві 23 22:33 systemd-private-3a5bb4eb9
e4e4a19b99acd7895b268fc-colord.service-a2YD59
drwx------ 3 root    root    4096 кві 23 22:33 systemd-private-3a5bb4eb9
e4e4a19b99acd7895b268fc-ModemManager.service-kqCS9r
drwx------ 3 root    root    4096 кві 23 22:33 systemd-private-3a5bb4eb9
e4e4a19b99acd7895b268fc-rtkit-daemon.service-hlYrtX
drwx------ 3 root    root    4096 кві 23 22:33 systemd-private-3a5bb4eb9
e4e4a19b99acd7895b268fc-systemd-resolved.service-08ncOi
d--------- 2 vm1kern vm1kern 4096 кві 24 01:28 testDir
vm1kern@vm1kern-VirtualBox:/tmp$ nano ./testDir/donttouchit.txt
vm1kern@vm1kern-VirtualBox:/tmp$ less ./testDir/donttouchit.txt
./testDir/donttouchit.txt: Permission denied
```

yes, it is possible