

1. How do you edit the current user's crontab?

```
hanaahmed@localhost:~  
[hanaahmed@localhost ~]$ crontab -e  
no crontab for hanaahmed - using an empty one  
crontab: no changes made to crontab  
[hanaahmed@localhost ~]$
```

2. How do you list scheduled cron jobs for the current user?

```
[hanaahmed@localhost ~]$ crontab -l  
no crontab for hanaahmed  
[hanaahmed@localhost ~]$
```

3. How do you delete all cron jobs for the current user?

```
[hanaahmed@localhost ~]$ crontab -r  
no crontab for hanaahmed  
[hanaahmed@localhost ~]$
```

#### 4. Cron Syntax Questions

a. Schedule a job to run every day at 3:30 AM

```
30 3 * * * /path/to/your/command
```

b. Run a script every Monday at 5:15 PM

```
15 17 * * 1 /path/to/your/command
```

c. Execute a command every 10 minutes

```
*/10 * * * * /path/to/your/command
```

d. Schedule a task to run every weekday (Mon-Fri) at 6:30 PM

```
30 18 * * 1-5 /path/to/your/command
```

e. Run a job on the 1st and 15th of each month at 8:00 AM

```
0 8 1,15 * * /path/to/your/command
```

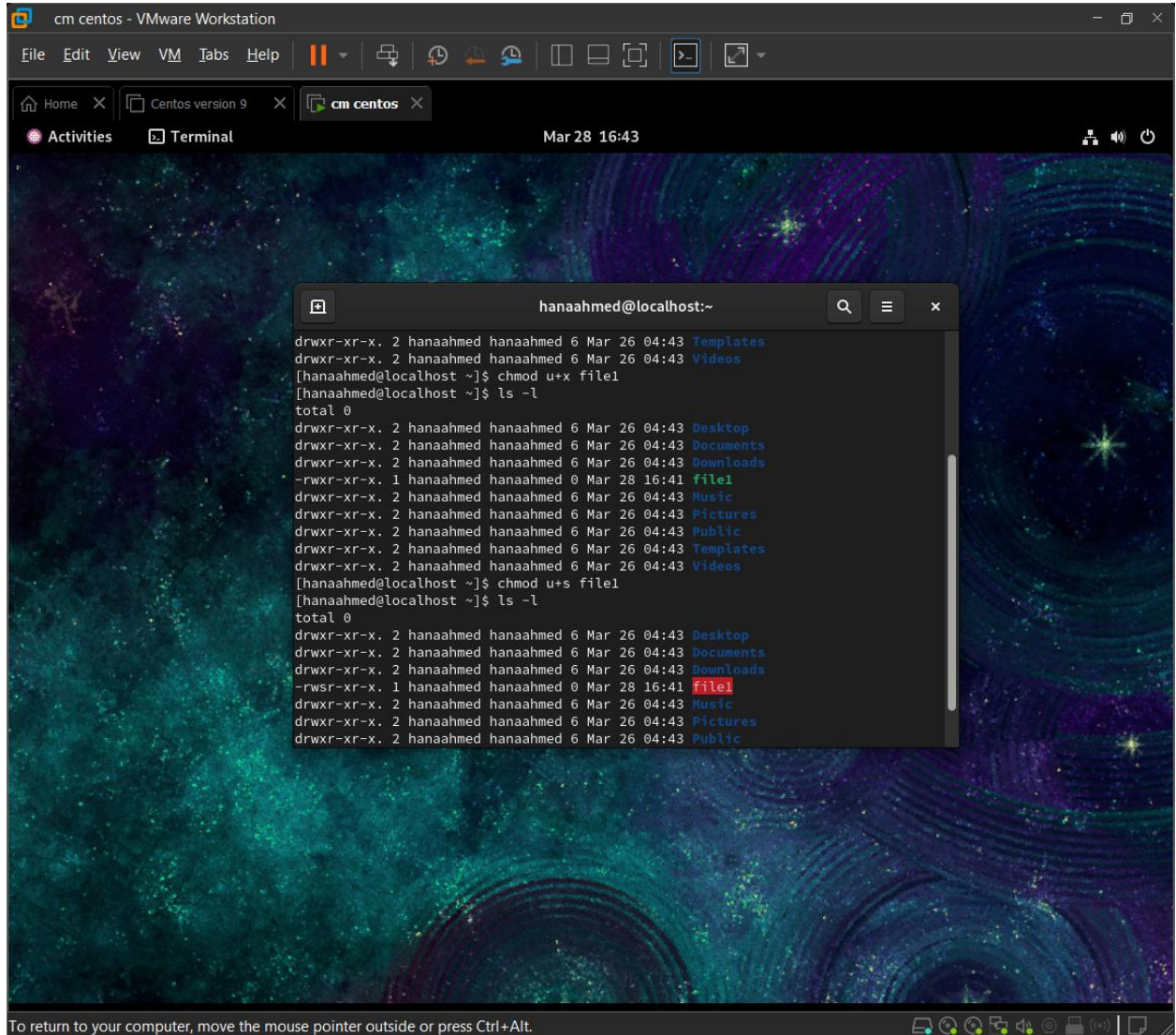
5. How do you restrict users from using cron?

/etc/cron.allow

/etc/cron.deny

## 6. Set UserID

- Create File and Set Execution and setuid permission
- Check if setuid is enabled on File



```
cm centos - VMware Workstation
File Edit View VM Tabs Help
Centos version 9
cm centos
Activities Terminal Mar 28 16:43

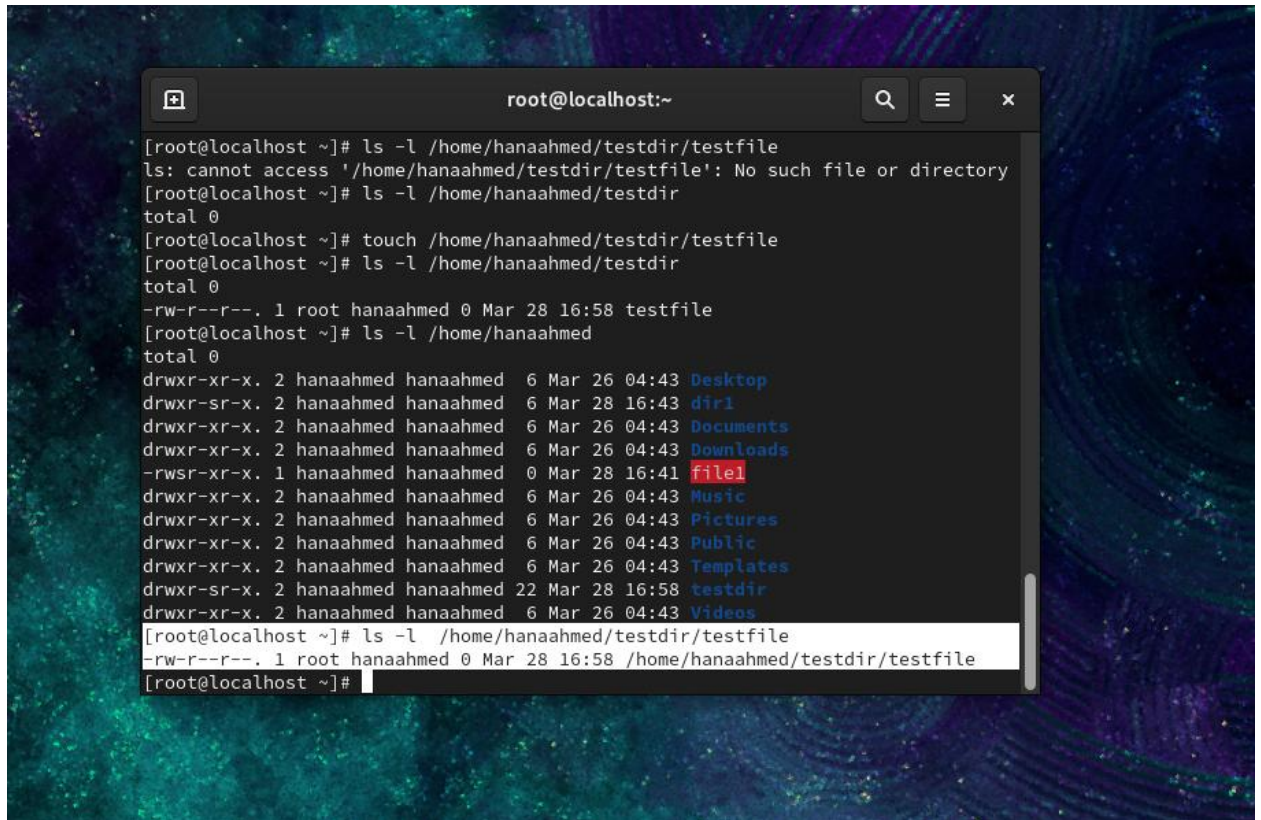
hanaahmed@localhost:~$ chmod u+x file1
hanaahmed@localhost ~$ ls -l
total 0
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Desktop
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Documents
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Downloads
-rwxr-xr-x. 1 hanaahmed hanaahmed 0 Mar 28 16:41 file1
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Music
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Pictures
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Public
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Templates
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Videos
hanaahmed@localhost ~$ chmod u+s file1
hanaahmed@localhost ~$ ls -l
total 0
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Desktop
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Documents
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Downloads
-rwsr-xr-x. 1 hanaahmed hanaahmed 0 Mar 28 16:41 file1
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Music
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Pictures
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Public
```

## 7. SetGroupID

- Create directory testdir and set setgid
- Check if setgid is enabled on directory

```
hanaahmed@localhost:~  
total 32  
drwx-----. 16 hanaahmed hanaahmed 4096 Mar 28 16:53 .  
drwxr-xr-x. 3 root root 23 Mar 26 04:32 ..  
-rw-----. 1 hanaahmed hanaahmed 186 Mar 28 16:49 .bash_history  
-rw-r--r--. 1 hanaahmed hanaahmed 18 Feb 15 2024 .bash_logout  
-rw-r--r--. 1 hanaahmed hanaahmed 141 Feb 15 2024 .bash_profile  
-rw-r--r--. 1 hanaahmed hanaahmed 492 Feb 15 2024 .bashrc  
drwx-----. 8 hanaahmed hanaahmed 4096 Mar 26 04:44 .cache  
drwx-----. 9 hanaahmed hanaahmed 4096 Mar 26 04:45 .config  
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Desktop  
drwxr-sr-x. 2 hanaahmed hanaahmed 6 Mar 28 16:43 dir1  
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Documents  
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Downloads  
-rwsr-xr-x. 1 hanaahmed hanaahmed 0 Mar 28 16:41 file1  
drwx-----. 4 hanaahmed hanaahmed 32 Mar 26 04:43 .local  
drwxr-xr-x. 4 hanaahmed hanaahmed 39 Mar 26 04:11 .mozilla  
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Music  
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Pictures  
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Public  
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Templates  
drwxr-sr-x. 2 hanaahmed hanaahmed 6 Mar 28 16:53 testdir  
drwxr-xr-x. 2 hanaahmed hanaahmed 6 Mar 26 04:43 Videos  
-rw-----. 1 hanaahmed hanaahmed 750 Mar 28 15:03 .viminfo  
[hanaahmed@localhost ~]$
```

- c. Logout and login as root
- d. Create testfile in testdir and verify ownership

A terminal window titled 'root@localhost:~' with search, menu, and close buttons. It shows a sequence of commands: 'ls -l /home/hanaahmed/testdir/testfile' (error), 'ls -l /home/hanaahmed/testdir' (empty), 'touch /home/hanaahmed/testdir/testfile', 'ls -l /home/hanaahmed/testdir' (shows 'testfile'), and 'ls -l /home/hanaahmed' (shows a list of directories including 'testdir').

```
root@localhost:~  
[root@localhost ~]# ls -l /home/hanaahmed/testdir/testfile  
ls: cannot access '/home/hanaahmed/testdir/testfile': No such file or directory  
[root@localhost ~]# ls -l /home/hanaahmed/testdir  
total 0  
[root@localhost ~]# touch /home/hanaahmed/testdir/testfile  
[root@localhost ~]# ls -l /home/hanaahmed/testdir  
total 0  
-rw-r--r--. 1 root hanaahmed 0 Mar 28 16:58 testfile  
[root@localhost ~]# ls -l /home/hanaahmed  
total 0  
drwxr-xr-x. 2 hanaahmed hanaahmed  6 Mar 26 04:43 Desktop  
drwxr-sr-x. 2 hanaahmed hanaahmed  6 Mar 28 16:43 dir1  
drwxr-xr-x. 2 hanaahmed hanaahmed  6 Mar 26 04:43 Documents  
drwxr-xr-x. 2 hanaahmed hanaahmed  6 Mar 26 04:43 Downloads  
-rwsr-xr-x. 1 hanaahmed hanaahmed  0 Mar 28 16:41 file1  
drwxr-xr-x. 2 hanaahmed hanaahmed  6 Mar 26 04:43 Music  
drwxr-xr-x. 2 hanaahmed hanaahmed  6 Mar 26 04:43 Pictures  
drwxr-xr-x. 2 hanaahmed hanaahmed  6 Mar 26 04:43 Public  
drwxr-xr-x. 2 hanaahmed hanaahmed  6 Mar 26 04:43 Templates  
drwxr-sr-x. 2 hanaahmed hanaahmed 22 Mar 28 16:58 testdir  
drwxr-xr-x. 2 hanaahmed hanaahmed  6 Mar 26 04:43 Videos  
[root@localhost ~]# ls -l /home/hanaahmed/testdir/testfile  
-rw-r--r--. 1 root hanaahmed 0 Mar 28 16:58 /home/hanaahmed/testdir/testfile  
[root@localhost ~]#
```

## 8. Stick bit

a. Create public directory dir1 with sticky bit

b. Check if sticky bit is enabled on directory

```
[hanaahmed@localhost ~]$ mkdir /tmp/dir-test
```

```
[hanaahmed@localhost ~]$ chmod o+t /tmp/dir-test
```

```
[hanaahmed@localhost ~]$ ls -l /tmp/dir-test
```

```
total 0
```

```
[hanaahmed@localhost ~]$ ls -l /tmp
```

```
total 0
```

```
drwxrwxrwt. 2 hanaahmed hanaahmed  6 Mar 28 17:09 dir-test
```

c. Logout and login as user1

d. Create userfile1 in dir1

```
[hanaahmed@localhost ~]$ su user1
```

Password:

```
[user1@localhost hanaahmed]$ touch /tmp/dir-test/userfile1
```

```
[user1@localhost hanaahmed]$ ls /tmp/dir-test
```

```
userfile1
```

```
[user1@localhost hanaahmed]$ ls -l /tmp/dir-test
```

```
total 0
```

```
-rw-r--r--. 1 user1 user1 0 Mar 28 21:47 userfile1
```

```
[user1@localhost hanaahmed]$
```

e. Login as user2 and attempt to remove userfile1

```
[user2@localhost hanaahmed]$ rm /tmp/dir-test/userfile1
```

```
rm: remove write-protected regular empty file '/tmp/dir-test/userfile1'? y
```

```
rm: cannot remove '/tmp/dir-test/userfile1': Operation not permitted
```

9. Give user john read and write permissions on myfile.txt

```
[hanaahmed@localhost ~]$ sudo setfacl -m u:john:rw- myfile.txt
```

10. How to view the ACL of a file named myfile.txt?

```
[hanaahmed@localhost ~]$ getfacl myfile.txt
```

```
# file: myfile.txt
```

```
# owner: hanaahmed
```

```
# group: hanaahmed
```

```
user::rw-
```

```
user:john:rw-
```

```
group::r--
```

```
mask::rw-
```

```
other::r--
```

11.How do you give the group developers execute permissions on the directory

/home/user/documents

```
[hanaahmed@localhost ~]$ touch /home/hanaahmed/documents
```

```
[hanaahmed@localhost ~]$ setfacl -m g:developers:x /home/hanaahmed/documents
```

12.How to remove the ACL entry for the user john on the file file1.txt?

```
[hanaahmed@localhost ~]$ setfacl -x u:john myfile.txt
```

```
[hanaahmed@localhost ~]$ getfacl myfile.txt
```

```
# file: myfile.txt
```

```
# owner: hanaahmed
```

```
# group: hanaahmed
```

```
user::rw-
```

```
group::r--
```

```
mask::r--
```

```
other::r--
```

13.How do you set a default ACL for a directory so that all new files and directories created inside it inherit the same permissions?

```
[hanaahmed@localhost ~]$ setfacl -d -m u:hanaahmed:rwX /home/hanaahmed/docs-1
```

```
[hanaahmed@localhost ~]$ touch /home/hanaahmed/docs-1/file1
```

```
[hanaahmed@localhost ~]$ ls -l /home/hanaahmed/docs-1
```

```
total 0
```

```
-rw-rw-r--+ 1 hanaahmed hanaahmed 0 Mar 28 22:29 file1
```

14.Allow group developers to read all files in ~/Music recursively

```
[hanaahmed@localhost ~]$ setfacl -R -m g:developers:r ~/Music
```

15.How to remove all ACLs from the file file1.txt and revert to the standard Unix

permissions?

```
[hanaahmed@localhost ~]$ setfacl -b myfile.txt
```

```
[hanaahmed@localhost ~]$ getfacl myfile.txt
```

```
# file: myfile.txt
```

```
# owner: hanaahmed
```

```
# group: hanaahmed
```

```
user::rw-
```

```
group::r--
```

```
other::r--
```

16.Set a mask on myfile.txt to limit all non-owners to r--.

```
[hanaahmed@localhost ~]$ setfacl -m mask:r-- myfile.txt
```

```
[hanaahmed@localhost ~]$ getfacl myfile.txt
```

```
# file: myfile.txt
```

```
# owner: hanaahmed
```

```
# group: hanaahmed
```

```
user::rw-
```

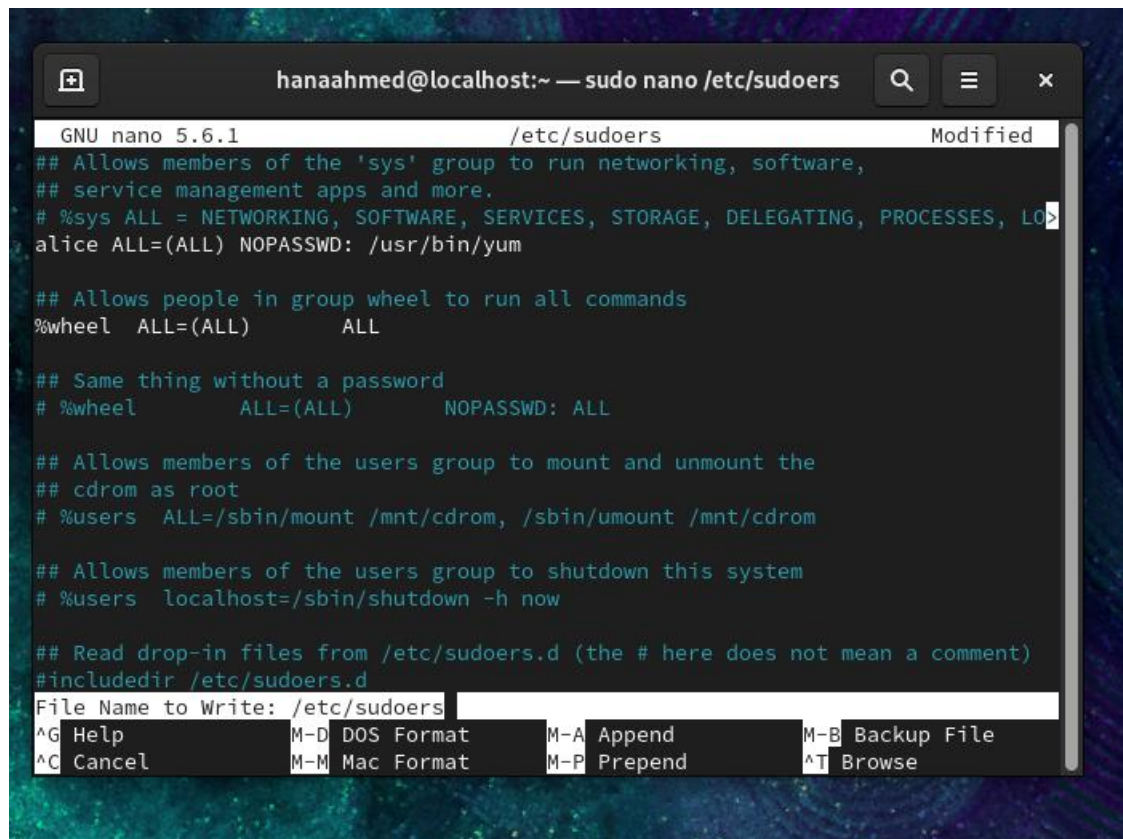
```
group::r--
```

```
mask::r--
```

```
other::r--
```

17.How would you allow user 'alice' to run only the 'yum' command as root?





```
hanaahmed@localhost:~ — sudo nano /etc/sudoers
GNU nano 5.6.1 /etc/sudoers Modified
## Allows members of the 'sys' group to run networking, software,
## service management apps and more.
# %sys ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES, LO>
alice ALL=(ALL) NOPASSWD: /usr/bin/yum

## Allows people in group wheel to run all commands
%wheel ALL=(ALL) ALL

## Same thing without a password
# %wheel ALL=(ALL) NOPASSWD: ALL

## Allows members of the users group to mount and unmount the
## cdrom as root
# %users ALL=/sbin/mount /mnt/cdrom, /sbin/umount /mnt/cdrom

## Allows members of the users group to shutdown this system
# %users localhost=/sbin/shutdown -h now

## Read drop-in files from /etc/sudoers.d (the # here does not mean a comment)
#include::/etc/sudoers.d
File Name to Write: /etc/sudoers
^G Help      M-D DOS Format  M-A Append     M-B Backup File
^C Cancel     M-M Mac Format  M-P Prepend    ^T Browse
```

18.How would you allow a group 'developers' to run any command as root without a password?



```
hanaahmed@localhost:~ — sudo nano /etc/sudoers
GNU nano 5.6.1 /etc/sudoers Modified
## service management apps and more.
# %sys ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES, LOCATIONS, REMOTEHOSTS
alice ALL=(ALL) NOPASSWD: /usr/bin/yum

## Allows people in group wheel to run all commands
%wheel ALL=(ALL) ALL
%developers ALL=(ALL) NOPASSWD: ALL

## Same thing without a password
# %wheel ALL=(ALL) NOPASSWD: ALL

## Allows members of the users group to mount and unmount the
## cdrom as root
# %users ALL=/sbin/mount /mnt/cdrom, /sbin/umount /mnt/cdrom

## Allows members of the users group to shutdown this system
# %users localhost=/sbin/shutdown -h now

## Read drop-in files from /etc/sudoers.d (the # here does not mean a comment)
#includedir /etc/sudoers.d

^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute  ^C Location
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify  ^_ Go To Line
```