



Subject:	Unix Lab(SE ITL402)		
Class:	SE IT / Semester – IV (CBCGS) / Academic year: 2017-18		
Name of Student:	Kazi Jawwad A Rahim		
Roll No:	28	Date of performance (DOP) :	15/03/2018
Assignment/Experiment No:	07	Date of checking (DOC) :	
Title: To implement system administrative tasks: Memory Management and User Management			
Marks:		Teacher's Signature:	

1. Aim: To implement system administrative task, memory management and user management.

2. Prerequisites:

C Programming Language and Operating System

3. Hardware Requirements:

- PC with minimum 2GB RAM

4. Software Requirements:

- Fedora installed.

5. Learning Objectives:

To learn memory user management and permission granting advanced command

6.Course Objectives Applicable: LO1, LO2, LO5

7. Program Outcomes Applicable: PO2, PO3, PO4

8. Program Education Objectives Applicable: PEO2, PEO3, PEO4

Theory:

User Management

User Management is an authentication feature that provides administrators with the ability to identify and control the state of users logged into the network. This includes, but is not limited to, the ability to query and filter users that are currently logged into the network, manually log out users, and control user login counts and login times.

Memory Management

Memory management is a form of resource management applied to computer memory. The essential requirement of memory management is to provide ways to dynamically allocate portions of memory to program at their request., and free it for reuse when no longer needed. This is critical to any advanced computer system where more than a single process might be underway at any time.

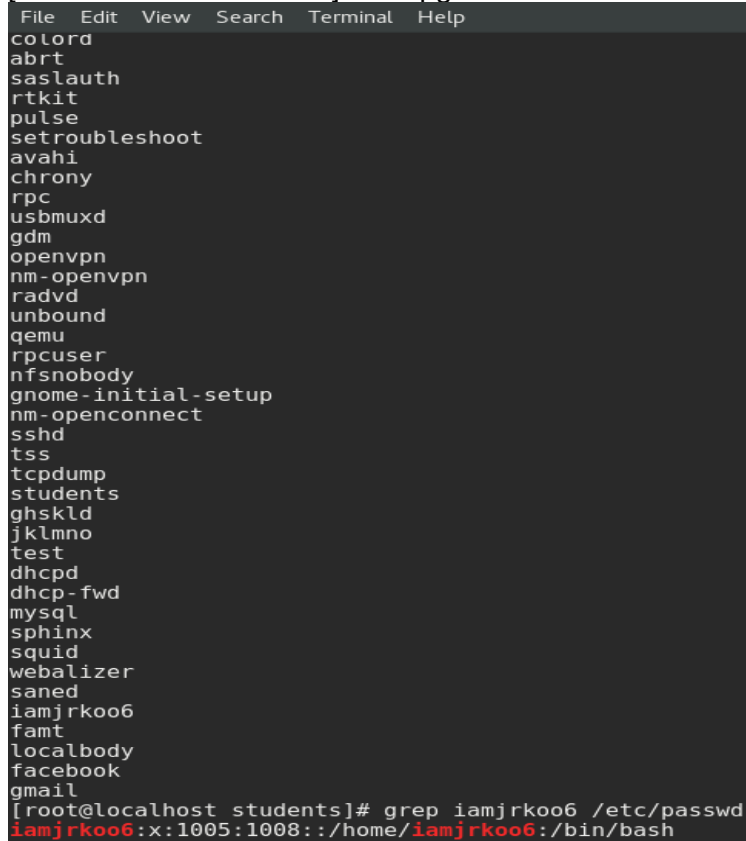
1. Creating a user

Description: It will create new user in the system.

Syntax: `useradd iamjrko06`

OUTPUT:

`[root@localhost students]# compgen -u`



```
File Edit View Search Terminal Help
color
abrt
saslauth
rtkit
pulse
setroubleshoot
avahi
chrony
rpc
usbmuxd
gdm
openvpn
nm-openvpn
radvd
unbound
qemu
rpcuser
nfsnobody
gnome-initial-setup
nm-openconnect
sshd
tss
tcpdump
students
ghskld
jklmno
test
dhcpd
dhcp-fwd
mysql
sphinx
squid
webalizer
saned
iamjrko06
famt
localbody
facebook
gmail
[root@localhost students]# grep iamjrko06 /etc/passwd
iamjrko06:x:1005:1008::/home/iamjrko06:/bin/bash
```

2.Create a group

Description: It will create new group in the system.

Syntax: `groupadd public`

OUTPUT:

`[root@localhost students]# compgen -g`



```
File Edit View Search Terminal Help
nm-openconnect
sshd
tss
slocate
tcpdump
students
TEIT
nabs
ghskld
sn
test
Gits
dhcpd
dhcp-fwd
mysql
sphinx
squid
wbpriv
webalizer
stapusr
stapsys
stapdev
saned
iamjrko06
famt
```

3. Adding user to the groups

Description: It will add specific to specific group.

Syntax: `usermod -a -G public facebook`

4.Display all users

Description: It will show all the users present on system.

Syntax: `cat /etc/passwd`

OUTPUT:

```
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin
nobody:x:99:99:Nobody:/sbin/nologin
apache:x:48:48:Apache:/usr/share/httpd:/sbin/nologin
systemd-timesync:x:999:997:systemd Time Synchronization:/sbin/nologin
systemd-network:x:998:996:systemd Network Management:/sbin/nologin
systemd-resolve:x:997:995:systemd Resolver:/sbin/nologin
systemd-bus-proxy:x:996:994:systemd Bus Proxy:/sbin/nologin
dbus:x:81:81:System message bus:/sbin/nologin
polkitd:x:995:993:User for polkitd:/sbin/nologin
geoclue:x:994:992:User for geoclue:/var/lib/geoclue:/sbin/nologin
colord:x:993:991:User for colord:/var/lib/colord:/sbin/nologin
abrt:x:173:173:/etc/abrt:/sbin/nologin
saslauth:x:992:76:Saslauthd user:/run/saslauthd:/sbin/nologin
rtkit:x:172:172:RealtimeKit:/proc:/sbin/nologin
pulse:x:171:171:PulseAudio System Daemon:/var/run/pulse:/sbin/nologin
setroubleshoot:x:991:987:/var/lib/setroubleshoot:/sbin/nologin
avahi:x:70:70:Avahi mDNS/DNS-SD Stack:/var/run/avahi-daemon:/sbin/nologin
chrony:x:990:986:/var/lib/chrony:/sbin/nologin
rpc:x:32:32:Rpcbind Daemon:/var/lib/rpcbind:/sbin/nologin
usbmuxd:x:113:113:usbmuxd user:/sbin/nologin
gdm:x:42:42:/var/lib/gdm:/sbin/nologin
openvpn:x:989:985:OpenVPN:/etc/openvpn:/sbin/nologin
nm-openvpn:x:988:984:Default user for running openvpn spawned by
NetworkManager:/sbin/nologin
radvd:x:75:75:radvd user:/sbin/nologin
unbound:x:987:983:Unbound DNS resolver:/etc/unbound:/sbin/nologin
qemu:x:107:107:qemu user:/sbin/nologin
rpcuser:x:29:29:RPC Service User:/var/lib/nfs:/sbin/nologin
nfsnobody:x:65534:65534:Anonymous NFS User:/var/lib/nfs:/sbin/nologin
gnome-initial-setup:x:986:980:/run/gnome-initial-setup:/sbin/nologin
nm-openconnect:x:985:979:NetworkManager user for OpenConnect:/sbin/nologin
sshd:x:74:74:Privilege-separated SSH:/var/empty/ssh:/sbin/nologin
tss:x:59:59:Account used by the trousers package to sandbox the tcsd
daemon:/dev/null:/sbin/nologin
tcpdump:x:72:72:/sbin/nologin
students:x:1000:1000:students:/home/students:/bin/bash
ghskld:x:1001:1003:/home/ghskld:/bin/bash
jklmno:x:1003:1005:/home/jklmno:/bin/bash
```

```
test:x:1004:1004::/home/test:/bin/bash
dhcpd:x:177:177:DHCP server:/sbin/nologin
dhcp-fwd:x:984:978:DHCP Forwarder user:/var/lib/dhcp-fwd:/sbin/nologin
mysql:x:27:27:MySQL Server:/var/lib/mysql:/sbin/nologin
sphinx:x:983:977:Sphinx Search:/usr/lib/tmpfiles.d/lib/sphinx:/bin/bash
squid:x:23:23::/var/spool/squid:/sbin/nologin
webalizer:x:67:67:Webalizer:/var/www/usage:/sbin/nologin
sane:x:982:976:SANE scanner daemon user:/usr/share/sane:/sbin/nologin
localbody:x:1007:1009::/home/localbody:/bin/bash
gmail:x:1009:1011::/home/gmail:/bin/bash
jamjrkoo6:x:1005:1008::/home/jamjrkoo6:/bin/bash
```

5. Display name of user and group.

Description: It will display all users and groups.

Syntax: 1. `compugen -u`
2. `compugen -g`

OUTPUT:

```
File Edit View Search Terminal Help
[root@localhost students]# compugen -u
root
bin
daemon
adm
lp
sync
shutdown
halt
mail
operator
games
ftp
nobody
apache
systemd-timesync
systemd-network
systemd-resolve
systemd-bus-proxy
dbus
polkitd
geoclue
colord
abrt
sasauth
rtkit
pulse
setroubleshoot
avahi
chrony
rpc
usbmuxd
gdm
openvpn
nm-openvpn
radvd
unbound
qemu
rpcuser
nfsnobody
gnome-initial-setup
```

```
File Edit View Search Terminal Help
nm-openconnect
sshd
tss
tcpdump
students
ghskld
jklmno
test
dhcpd
dhcp-fwd
mysql
sphinx
squid
webalizer
sane
jamjrkoo6
famt
localbody
facebook
gmail
[root@localhost students]# compugen -g
root
bin
daemon
sys
adm
tty
disk
lp
mem
kmem
wheel
cdrom
mail
man
dialout
floppy
games
tape
video
ftp
```

6.To check a user exist or not.

Description: It shows a particular user exist or not.

Syntax: `grep jamjrkoo6 /etc/passwd` or
`egrep -i "jamjrkoo6" /etc/passwd`

OUTPUT:

```
jamjrkoo6:x:1005:1008::/home/jamjrkoo6:/bin/bash
```

7.Assigning a password to a group

Description: It will assign a password to any group.

Syntax: `gpasswd groupname`

OUTPUT:

Changing the password for group public

New Password:

Re-enter new password:

8.Change group and username

Description: It will change group name and username.

Syntax: 1. `usermod -l newname oldname`

2. `groupmod -n newname oldname`

OUTPUT:

jawwadkazi

static

9.Delete user and group.

Description: It will delete particular user and group.

Syntax: `userdel username`

`groupdel groupname`

10.Creating a group assigning a group id

Description: It will assign a group id to a group.

Syntax: `groupadd -g groupid groupname`

11.Changing group id of group

Description: It will change group id of a group.

Syntax: `groupmod -g 122 static`

12.Remove password of group.

Description: It will remove password of any group

Syntax: `gpasswd -r groupname`

13.Change ownership of file

Description: It will change ownership of any file.

Syntax: `ls -l filename.extension`

`chown username filename.extension`

OUTPUT:

```
[root@localhost students]# ls -l new.txt
```

```
-rw-r--r--. 1 root root 78 Mar 15 12:08 new.txt
```

```
[root@localhost students]# chown iamjrkoo6 new.txt
```

```
[root@localhost students]# ls -l new.txt
```

```
-rw-r--r--. 1 iamjrkoo6 root 78 Mar 15 12:08 new.txt
```

14.Set group ownership

Description: It will set ownership of file.

Syntax: `chown username:groupname filename.extension`

OUTPUT:

```
[root@localhost students]# chown iamjrkoo6:static new.txt
```

```
[root@localhost students]# ls -l new.txt
```

```
-rw-r--r--. 1 iamjrkoo6 static 78 Mar 15 12:08 new.txt
```

15.Change groupname of file.

Description: It will change the groupname of file.

Syntax: `sudo chgrp groupname filename.extension`

OUTPUT:

```
[root@localhost students]# sudo chgrp public new.txt
[root@localhost students]# ls -l new.txt
-rw-r--r--. 1 iamjrkoo6 public 78 Mar 15 12:08 new.txt
....
```

16.Change group name of file.

Description: It will change group name of any file.

Syntax: `mkdir foldername`

`ls -l`

`sudo chgrp groupname foldername`

`ls -l`

OUTPUT:

```
[root@localhost students]# mkdir trial
[root@localhost students]# ls -l
drwxr-xr-x. 2 root root 4096 Mar 15 12:19 trial
[root@localhost students]# sudo chgrp public trial
[root@localhost students]# ls -l
drwxr-xr-x. 2 root public 4096 Mar 15 12:19 trial
```

17.Show all logged user

Description: It will show all the users who are logged in

Syntax: `who -q`

OUTPUT:

```
[root@localhost students]# who -q
students
# users=1
```

18.Show Statics

Description: It will show the statics of memory

Syntax: `vmstat`

`vmstat -s`

`cat /proc/meminfo`

OUTPUT:

```
[root@localhost students]# vmstat
procs -----memory----- ---swap-- -----io---- -system-- -----cpu-----
r b swpd free buff cache si so bi bo in cs us sy id wa st
1 0 0 1672820 46844 1047704 0 0 48 4 59 191 0 0 98 1 0
```

```
[root@localhost students]# vmstat -s
```

```
3865024 K total memory
1098344 K used memory
1236832 K active memory
741680 K inactive memory
1654468 K free memory
46852 K buffer memory
1065360 K swap cache
3932156 K total swap
0 K used swap
3932156 K free swap
6626 non-nice user cpu ticks
```

60 nice user cpu ticks
3077 system cpu ticks
1639088 idle cpu ticks
16360 IO-wait cpu ticks
849 IRQ cpu ticks
1048 softirq cpu ticks
0 stolen cpu ticks
788249 pages paged in
62740 pages paged out
0 pages swapped in
0 pages swapped out
978837 interrupts
3193121 CPU context switches
1521093455 boot time
3208 forks

[root@localhost students]# cat /proc/meminfo

MemTotal: 3865024 kB
MemFree: 1584980 kB
MemAvailable: 2265104 kB
Buffers: 46868 kB
Cached: 1032776 kB
SwapCached: 0 kB
Active: 1244940 kB
Inactive: 798840 kB
Active(anon): 969852 kB
Inactive(anon): 216316 kB
Active(file): 275088 kB
Inactive(file): 582524 kB
Unevictable: 0 kB
Mlocked: 0 kB
SwapTotal: 3932156 kB
SwapFree: 3932156 kB
Dirty: 592 kB
Writeback: 0 kB
AnonPages: 964136 kB
Mapped: 392124 kB
Shmem: 222040 kB
Slab: 101956 kB
SReclaimable: 50068 kB
SUnreclaim: 51888 kB
KernelStack: 9184 kB
PageTables: 47332 kB
NFS_Unstable: 0 kB
Bounce: 0 kB
WritebackTmp: 0 kB
CommitLimit: 5864668 kB
Committed_AS: 5257848 kB
VmallocTotal: 34359738367 kB
VmallocUsed: 0 kB
VmallocChunk: 0 kB
HardwareCorrupted: 0 kB
AnonHugePages: 2048 kB
ShmemHugePages: 0 kB
ShmemPmdMapped: 0 kB
CmaTotal: 0 kB
CmaFree: 0 kB

HugePages_Total: 0
HugePages_Free: 0
HugePages_Rsvd: 0
HugePages_Surp: 0
Hugepagesize: 2048 kB
DirectMap4k: 128620 kB
DirectMap2M: 3883008 kB
DirectMap1G: 0 kB

Learning Outcomes Achieved

Learned memory user management and permission granting advanced command

Conclusion:

Thus we have studied to implement system administrative task, memory management and user management.

13. Experiment/Assignment Evaluation

SR	Parameters	Weight	Excellent	Good	Average	Poor	Not as per requirement
		Scale Factor ->	5	4	3	2	0
1	Technical Understanding	25					
2	Performance / Execution	25					
3	Question Answers	20					
4	Punctuality	20					
5	Presentation	10					
	Total out of 100 --> #(to be converted as per term-work evaluation applicable to the subject)		$\Sigma (\text{Weight} * \text{Scale Factor})/5 = \underline{\hspace{2cm}}$				

References:

- [1] Unix, concepts and applications by Sumitabha Das, McGraw-Hill
- [2] Mastering Shell Scripting, Randal. K. Michael, Second Edition, Wiley Publication

Viva Questions

- What are the system administrative tasks?
- What are the memory management tasks?
- What are the user management tasks?