

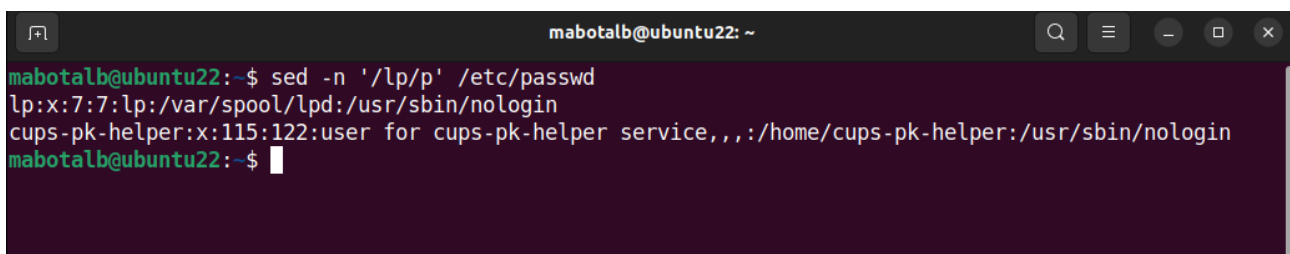
Shell Script – Day 1

Mohamed Abd Elaziz Abotalb

- Using sed utility

1- Display the lines that contain the word “lp” in /etc/passwd file.

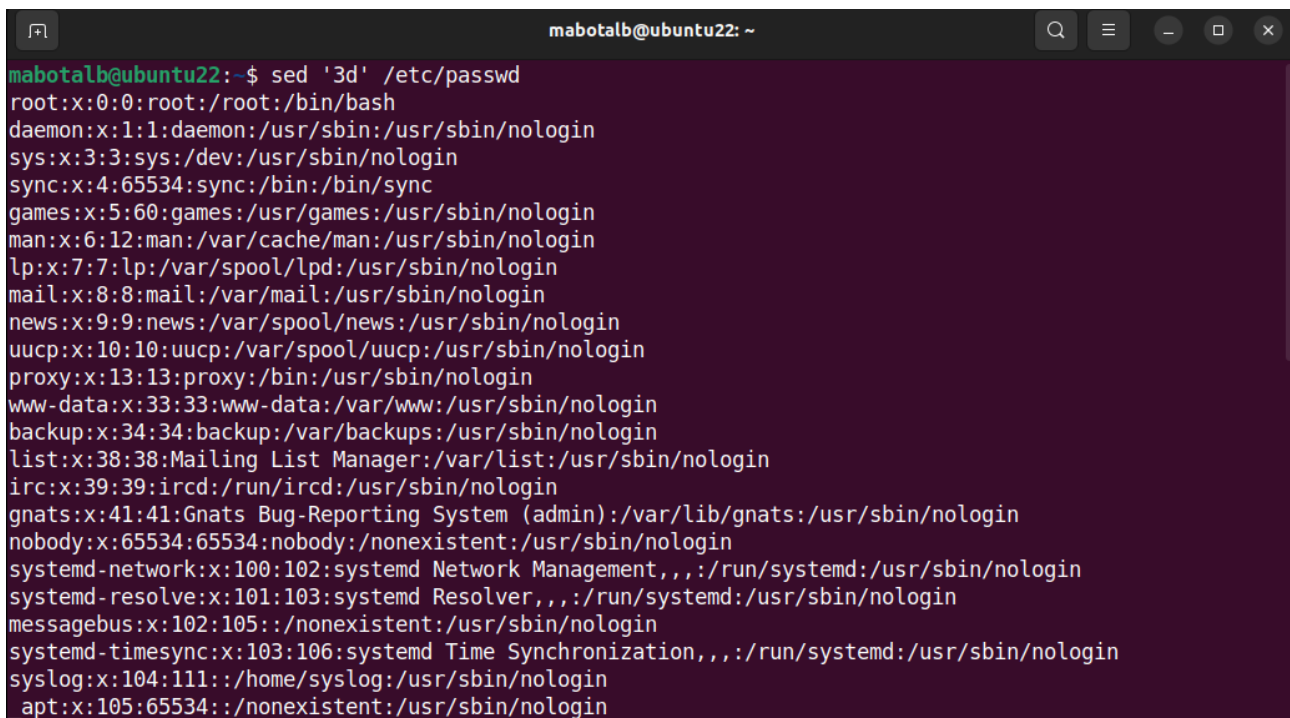
=> sed -n '/lp/p' /etc/passwd



```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ sed -n '/lp/p' /etc/passwd  
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin  
cups-pk-helper:x:115:122:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin  
mabotalb@ubuntu22:~$
```

2- Display /etc/passwd file except the third line.

=> sed -n '3d' /etc/passwd



```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ sed '3d' /etc/passwd  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin  
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin  
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin  
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin  
messagebus:x:102:105:./nonexistent:/usr/sbin/nologin  
systemd-timesync:x:103:106:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin  
syslog:x:104:111:./home/syslog:/usr/sbin/nologin  
_apt:x:105:65534:./nonexistent:/usr/sbin/nologin
```

3- Display /etc/passwd file except the last line.

=> sed '\$d' /etc/passwd

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ sed '$d' /etc/passwd  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
bin:x:2:2:bin:/bin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin  
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin  
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin  
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin  
messagebus:x:102:105:/:nonexistent:/usr/sbin/nologin
```

4- Display /etc/passwd file except the lines that contain the word “lp”.

=> sed '/lp/d' /etc/passwd

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ sed '/lp/d' /etc/passwd  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
bin:x:2:2:bin:/bin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin  
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin  
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin  
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin  
messagebus:x:102:105:/:nonexistent:/usr/sbin/nologin  
systemd-timesync:x:103:106:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
```

5- Substitute all the words that contain “lp” with “mylp” in /etc/passwd file.

=> sed 's/lp/mylp/g' /etc/passwd

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ sed 's/lp/mylp/g' /etc/passwd  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
bin:x:2:2:bin:/bin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
mylp:x:7:7:mylp:/var/spool/mylpd:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin  
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin  
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin  
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin  
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin  
messagebus:x:102:105:./nonexistent:/usr/sbin/nologin
```

• Using awk utility

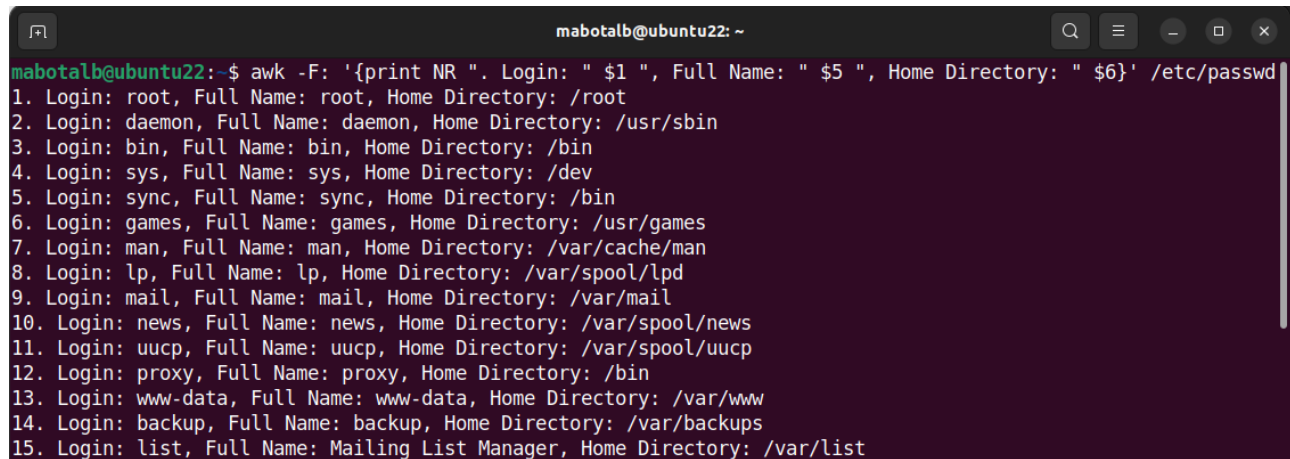
1- Print full name (comment) of all users in the system.

=> awk -F: '{print \$5}' /etc/passwd

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ awk -F: '{print $5}' /etc/passwd  
root  
daemon  
bin  
sys  
sync  
games  
man  
lp  
mail  
news
```

2- Print login, full name (comment) and home directory of all users.(Print each line preceded by a line number)

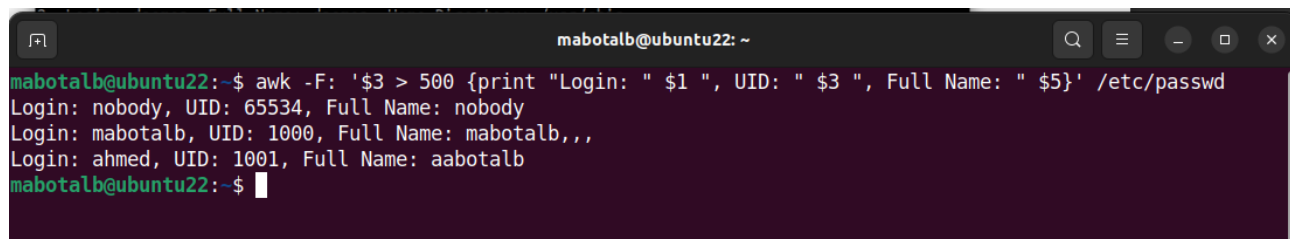
=> `awk -F: '{print NR ". Login: " $1 " , Full Name: " $5 " , Home Directory: " $6}' /etc/passwd`



```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ awk -F: '{print NR ". Login: " $1 " , Full Name: " $5 " , Home Directory: " $6}' /etc/passwd  
1. Login: root, Full Name: root, Home Directory: /root  
2. Login: daemon, Full Name: daemon, Home Directory: /usr/sbin  
3. Login: bin, Full Name: bin, Home Directory: /bin  
4. Login: sys, Full Name: sys, Home Directory: /dev  
5. Login: sync, Full Name: sync, Home Directory: /bin  
6. Login: games, Full Name: games, Home Directory: /usr/games  
7. Login: man, Full Name: man, Home Directory: /var/cache/man  
8. Login: lp, Full Name: lp, Home Directory: /var/spool/lpd  
9. Login: mail, Full Name: mail, Home Directory: /var/mail  
10. Login: news, Full Name: news, Home Directory: /var/spool/news  
11. Login: uucp, Full Name: uucp, Home Directory: /var/spool/uucp  
12. Login: proxy, Full Name: proxy, Home Directory: /bin  
13. Login: www-data, Full Name: www-data, Home Directory: /var/www  
14. Login: backup, Full Name: backup, Home Directory: /var/backups  
15. Login: list, Full Name: Mailing List Manager, Home Directory: /var/list
```

3- Print login, uid and full name (comment) of those uid is greater than 500

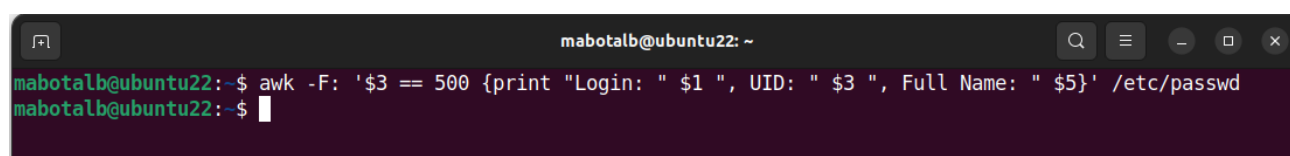
=> `awk -F: '$3 > 500 {print "Login: " $1 " , UID: " $3 " , Full Name: " $5}' /etc/passwd`



```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ awk -F: '$3 > 500 {print "Login: " $1 " , UID: " $3 " , Full Name: " $5}' /etc/passwd  
Login: nobody, UID: 65534, Full Name: nobody  
Login: mabotalb, UID: 1000, Full Name: mabotalb,,  
Login: ahmed, UID: 1001, Full Name: aabotalb  
mabotalb@ubuntu22:~$
```

4- Print login, uid and full name (comment) of those uid is exactly 500

=> `awk -F: '$3 == 500 {print "Login: " $1 " , UID: " $3 " , Full Name: " $5}' /etc/passwd`



```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ awk -F: '$3 == 500 {print "Login: " $1 " , UID: " $3 " , Full Name: " $5}' /etc/passwd  
mabotalb@ubuntu22:~$
```

5- Print line from 5 to 15 from /etc/passwd

=> `awk 'NR>=5 && NR<=15' /etc/passwd`

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ awk 'NR>=5 && NR<=15' /etc/passwd  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin  
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin  
mabotalb@ubuntu22:~$
```

6- Change lp to mylp

=> `awk -F: '{gsub(/lp/, "mylp", $0); print}' /etc/passwd`

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ awk -F: '{gsub(/lp/, "mylp", $0); print}' /etc/passwd  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
bin:x:2:2:bin:/bin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
mylp:x:7:7:mylp:/var/spool/mylpd:/usr/sbin/nologin  
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin  
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin  
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin  
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin  
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin  
mabotalb@ubuntu22:~$
```

7- Print all information about greatest uid.

=> `awk -F: '{if($3 > max) {max=$3; maxline=$0}} END {print maxline}' /etc/passwd`

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ awk -F: '{if($3 > max) {max=$3; maxline=$0}} END {print maxline}' /etc/passwd  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
mabotalb@ubuntu22:~$
```

8- Get the sum of all accounts id's.

=> `awk -F: '{sum += $3} END {print sum}' /etc/passwd`

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ awk -F: '{sum += $3} END {print sum}' /etc/passwd  
71353  
mabotalb@ubuntu22:~$
```

• Bonus

1. Get the sum of accounts id's that has the same group.

=> `awk -F: '{sum[$4] += $3} END {for (i in sum) {print "Group: " i ", Sum of Account IDs: " sum[i]}}}' /etc/passwd`

```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ awk -F: '{sum[$4] += $3} END {for (i in sum) {print "Group: " i ", Sum of Account IDs: " sum[i]}}}' /etc/passwd  
Group: 121, Sum of Account IDs: 114  
Group: 102, Sum of Account IDs: 100  
Group: 34, Sum of Account IDs: 34  
Group: 3, Sum of Account IDs: 3  
Group: 1000, Sum of Account IDs: 1000  
Group: 29, Sum of Account IDs: 119  
Group: 10, Sum of Account IDs: 10  
Group: 115, Sum of Account IDs: 107  
Group: 8, Sum of Account IDs: 8  
Group: 122, Sum of Account IDs: 115  
Group: 133, Sum of Account IDs: 127  
Group: 125, Sum of Account IDs: 118  
Group: 38, Sum of Account IDs: 38  
Group: 46, Sum of Account IDs: 111  
Group: 136, Sum of Account IDs: 128
```

2. Make the following report:

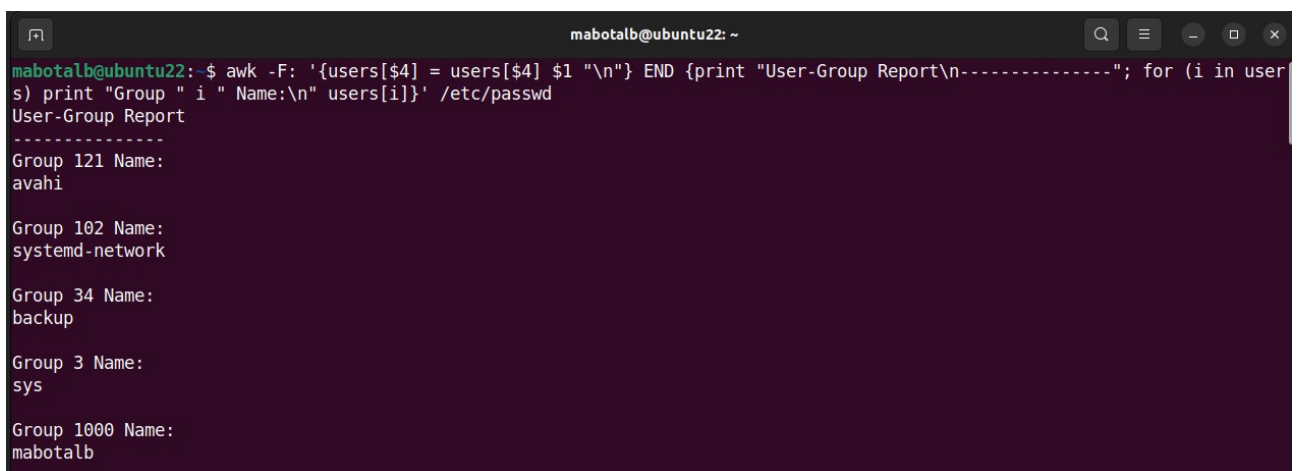
User-Group Report

Group1 Name:

User1

User2

=> `awk -F: '{users[$4] = users[$4] $1 "\n"} END {print "User-Group Report\n-----"; for (i in users) print "Group " i " Name:\n" users[i]}' /etc/passwd`



```
mabotalb@ubuntu22: ~  
mabotalb@ubuntu22:~$ awk -F: '{users[$4] = users[$4] $1 "\n"} END {print "User-Group Report\n-----"; for (i in users) print "Group " i " Name:\n" users[i]}' /etc/passwd  
User-Group Report  
-----  
Group 121 Name:  
avahi  
  
Group 102 Name:  
systemd-network  
  
Group 34 Name:  
backup  
  
Group 3 Name:  
sys  
  
Group 1000 Name:  
mabotalb
```