Lab1
Ebrahim Mostafa
G1

Using sed utility

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

```
benzema@Benzema:~$ sed -n '/lp/p' /etc/passwd
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
cups-pk-helper:x:112:114:user for cups-pk-helper service,,,:/nonexistent:/usr/sbin/nologin
benzema@Benzema:~$
```

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

```
benzema@Benzema:~$ 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
```

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

```
nongood:x:125:6555 777:/nonexistent:/usr/sbin/nologin
benzema@Benzema:~$ 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
```

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

```
benzema:x:1000:1000:Benzema:/home/benzema:/bin/bash
benzema@Benzema:~$ 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
```

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

```
benzema@Benzema:~$ 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
```

Using awk utility

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

```
benzema@Benzema:~$ awk -F: '{print $5}' /etc/passwd
root
daemon
bin
sys
sync
games
man
```

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

```
Benzema

benzema@Benzema:~$ awk -F: '{print NR, $1, $5, $6}' /etc/passwd
1 root root /root
2 daemon daemon /usr/sbin
3 bin bin /bin
4 sys sys /dev
5 sync sync /bin
```

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

```
benzema@Benzema:~$ awk -F: '$3 > 500 {print $1, $3, $5}' /etc/passwd
nobody 65534 nobody
systemd-network 998 systemd Network Management
systemd-timesync 996 systemd Time Synchronization
systemd-resolve 991 systemd Resolver
systemd-oom 990 systemd Userspace OOM Killer
dnsmasq 999 dnsmasq
fwupd-refresh 989 Firmware update daemon
gnome-remote-desktop 988 GNOME Remote Desktop
polkitd 987 User for polkitd
benzema 1000 Benzema
benzema@Benzema:~$
```

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

```
benzema@Benzema:~$ awk -F: '$3 == 500 {print $1, $3, $5}' /etc/passwd
benzema@Benzema:~$ awk -F: '$3 = 500 {print $1, $3, $5}' /etc/passwd
root 500 root
daemon 500 daemon
bin 500 bin
sys 500 sys
sync 500 sync
games 500 games
man 500 man
lp 500 lp
mail 500 mail
news 500 news
uucp 500 uucp
proxy 500 proxy
www-data 500 www-data
backup 500 backup
list 500 Mailing List Manager
irc 500 ircd
_apt 500
nobody 500 nobody
systemd-network 500 systemd Network Management
systemd-timesync 500 systemd Time Synchronization
```

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

```
MongoDB 500
benzema@Benzema:~$ 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
benzema@Benzema:~$ 
```

6- Change lp to mylp

```
benzema@Benzema:~$ awk '{gsub(/lp/,"mylp"); 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
```

7- Print all information about greatest uid.

```
benzema@Benzema:~$ awk -F: '
BEGIN{max=0}
{
 if($3>max){
   max=$3
   line=$0
 }
}
END{print line}
' /etc/passwd
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
benzema@Benzema:~$ □
```

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

```
benzema@Benzema:~$ awk -F: '{sum+=$3} END{print sum}' /etc/passwd
77402
benzema@Benzema:~$ □
```

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

```
benzema@Benzema:~$ awk -F: '{sum[$4]+=$3}
END{
 for(gid in sum)
   print "GID:",gid,"Sum:",sum[gid]
}' /etc/passwd
GID: 121 Sum: 120
GID: 102 Sum: 102
GID: 34 Sum: 34
GID: 3 Sum: 3
GID: 1000 Sum: 1000
GID: 29 Sum: 111
GID: 10 Sum: 10
GID: 990 Sum: 990
GID: 109 Sum: 107
GID: 8 Sum: 8
GID: 122 Sum: 121
GID: 38 Sum: 38
GID: 46 Sum: 104
GID: 111 Sum: 108
GID: 996 Sum: 996
GID: 988 Sum: 988
```

2. Make the following report:
User-Group Report

Group1 Name:
User1
User2
Group2 Name:
User3
User4

```
GID: 112 SUM: 109
benzema@Benzema:~$ awk -F: '
{
 users[$4]=users[$4] "\n" $1
}
END{
 print "User-Group Report"
 print "-------------------"
 for(gid in users){
   print "Group ID:",gid
   print users[gid]
 }
}' /etc/passwd
User-Group Report
-----------------
Group ID: 121

gdm
Group ID: 102

syslog
Group ID: 34

backup
Group ID: 3

sys
Group ID: 1000
```