

Bash Script LAB 1

Using sed utility

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

```
nathan@nathan-G3-3500:~$ 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
_flatpak:x:129:137:Flatpak system-wide installation helper,,,:/nonexistent:/usr/sbin/nologin
nathan@nathan-G3-3500:~$
```

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

```
nathan@nathan-G3-3500:~$ head -5 /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
nathan@nathan-G3-3500:~$ sed -n "3! p" /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.

```
_flatpak:x:129:137:Flatpak system-wide installation helper,,,:/nonexistent:/usr/sbin/nologin
neso:x:1001:1002:Neso,,,:/home/neso:/bin/bash
nathan@nathan-G3-3500:~$ 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
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
tss:x:106:112:TPM software stack,,,:/var/lib/tpm:/bin/false
uidd:x:107:115:/:/run/uidd:/usr/sbin/nologin
systemd-oom:x:108:116:systemd Userspace OOM Killer,,,:/run/systemd:/usr/sbin/nologin
tcpdump:x:109:117:/:/nonexistent:/usr/sbin/nologin
avahi-autoipd:x:110:119:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:111:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin
avahi:x:114:121:Avahi mDNS daemon,,,:/run/avahi-daemon:/usr/sbin/nologin
cups-pk-helper:x:115:122:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
rtkit:x:116:123:RealtimeKit,,,:/proc:/usr/sbin/nologin
whoopsie:x:117:124:/:/nonexistent:/bin/false
sssd:x:118:125:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin
speech-dispatcher:x:119:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/false
nm-openvpn:x:120:126:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
saned:x:121:128:/:/var/lib/saned:/usr/sbin/nologin
colord:x:122:129:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:123:130:/:/var/lib/geoclue:/usr/sbin/nologin
pulse:x:124:131:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:125:65534:/:/run/gnome-initial-setup:/bin/false
hplip:x:126:7:HPLIP system user,,,:/run/hplip:/bin/false
gdm:x:127:133:Gnome Display Manager:/var/lib/gdm3:/bin/false
nathan:x:1000:1000:Nathan,,,:/home/nathan:/bin/bash
fwupd-refresh:x:128:136:fwupd-refresh user,,,:/run/systemd:/usr/sbin/nologin
_flatpak:x:129:137:Flatpak system-wide installation helper,,,:/nonexistent:/usr/sbin/nologin
nathan@nathan-G3-3500:~$
```

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

```
nathan@nathan-G3-3500:~$ 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
syslog:x:104:111:/:home/syslog:/usr/sbin/nologin
_apt:x:105:65534:/:nonexistent:/usr/sbin/nologin
tss:x:106:112:TPM software stack,,,:/var/lib/tpm:/bin/false
uidd:x:107:115:/:run/uidd:/usr/sbin/nologin
systemd-oom:x:108:116:systemd Userspace OOM Killer,,,:/run/systemd:/usr/sbin/nologin
tcpdump:x:109:117:/:nonexistent:/usr/sbin/nologin
avahi-autoipd:x:110:119:Avahi autoip daemon,,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:111:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/misc:/usr/sbin/nologin
kernoops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin
avahi:x:114:121:Avahi mDNS daemon,,,:/run/avahi-daemon:/usr/sbin/nologin
rtkit:x:116:123:RealtimeKit,,,:/proc:/usr/sbin/nologin
whoopsie:x:117:124:/:nonexistent:/bin/false
sssd:x:118:125:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin
speech-dispatcher:x:119:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/false
nm-openvpn:x:120:126:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
saned:x:121:128:/:/var/lib/saned:/usr/sbin/nologin
colord:x:122:129:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
```

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

```
nathan@nathan-G3-3500:~$ 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
```

Using awk utility

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

```
nathan@nathan-G3-3500:~/BashCommands$ vi DayOne.sh
nathan@nathan-G3-3500:~/BashCommands$ cat DayOne.sh
awk -F : '{print $5}' /etc/passwd
nathan@nathan-G3-3500:~/BashCommands$ DayOne.sh
root
daemon
bin
sys
sync
games
man
lp
mail
news
uucp
proxy
www-data
backup
Mailing List Manager
ircd
Gnats Bug-Reporting System (admin)
nobody
systemd Network Management,,,
systemd Resolver,,,
```

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

```
#02-----

awk ' BEGIN {FS=":"}
{print NR , "---" , $1 , "---" $5 , "---" , $6}
' /etc/passwd
```

```
nathan@nathan-G3-3500:~/BashCommands$ DayOne.sh
1 --- root ---root --- /root
2 --- daemon ---daemon --- /usr/sbin
3 --- bin ---bin --- /bin
4 --- sys ---sys --- /dev
5 --- sync ---sync --- /bin
6 --- games ---games --- /usr/games
7 --- man ---man --- /var/cache/man
8 --- lp ---lp --- /var/spool/lpd
9 --- mail ---mail --- /var/mail
10 --- news ---news --- /var/spool/news
11 --- uucp ---uucp --- /var/spool/uucp
12 --- proxy ---proxy --- /bin
13 --- www-data ---www-data --- /var/www
14 --- backup ---backup --- /var/backups
15 --- list ---Mailing List Manager --- /var/list
```

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

```
nathan@nathan-G3-3500:~/BashCommands$ vi DayOne.sh
nathan@nathan-G3-3500:~/BashCommands$ cat DayOne.sh
#awk -F : '{print $5}' /etc/passwd

<<Comment
awk ' BEGIN {FS=":"}
{print NR , "---" , $1 , "---" $5 , "---" , $7}
' /etc/passwd
Comment

awk ' BEGIN {FS=":"}
{
    if($3>500){print $1 , "---" , $3 , "---" , $5}
}' /etc/passwd
nathan@nathan-G3-3500:~/BashCommands$ DayOne.sh
nobody --- 65534 --- nobody
nathan --- 1000 --- Nathan,,,
neso --- 1001 --- Neso,,,
nathan@nathan-G3-3500:~/BashCommands$
```

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

```
nathan@nathan-G3-3500:~/BashCommands$ vi DayOne.sh
nathan@nathan-G3-3500:~/BashCommands$ cat DayOne.sh
#awk -F : '{print $5}' /etc/passwd

<<Comment
awk ' BEGIN {FS=":"}
{print NR , "---" , $1 , "---" $5 , "---" , $7}
' /etc/passwd
Comment

<<Comment
awk ' BEGIN {FS=":"}
{
    if($3>500){print $1 , "---" , $3 , "---" , $5}
}' /etc/passwd
Comment

awk ' BEGIN {FS=":"}
{
    if($3==500){print $1 , "---" , $3 , "---" , $5}
}' /etc/passwd
nathan@nathan-G3-3500:~/BashCommands$ DayOne.sh
nathan@nathan-G3-3500:~/BashCommands$
```


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

```
#05-----

awk ' BEGIN {FS=":"}
{
    if(NR>=5 && NR<=15){print $0}
}' /etc/passwd

nathan@nathan-G3-3500:~/BashCommands$ DayOne.sh
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
nathan@nathan-G3-3500:~/BashCommands$
```

6- Change lp to mylp

```
awk -F: '{ i=1; while (i<=NF)
{
    if($i=="lp") {$i="mylp"}
    i++;
}
print $0;
}' /etc/passwd

nathan@nathan-G3-3500:~/BashCommands$ DayOne.sh
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/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
```

7- Print all information about greatest uid.

```
#07-----

awk -F: '{print $3,$1}' /etc/passwd | sort -n | tail -n 1

nathan@nathan-G3-3500:~/BashCommands$ DayOne.sh
65534 nobody
nathan@nathan-G3-3500:~/BashCommands$
```

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

```
#08-----  
awk -F: '{sum+=$3;} END{print sum;}' /etc/passwd  
nathan@nathan-G3-3500:~/BashCommands$ DayOne.sh  
72225  
nathan@nathan-G3-3500:~/BashCommands$
```