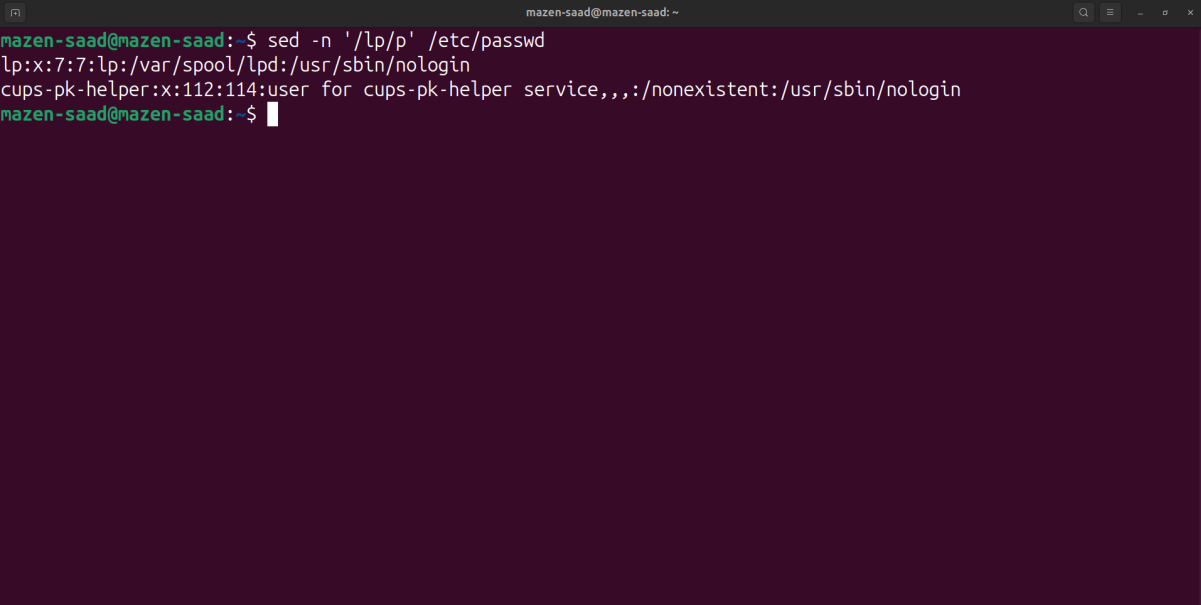


Mazen AbdelTawab Saad

BSS - Lab1

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

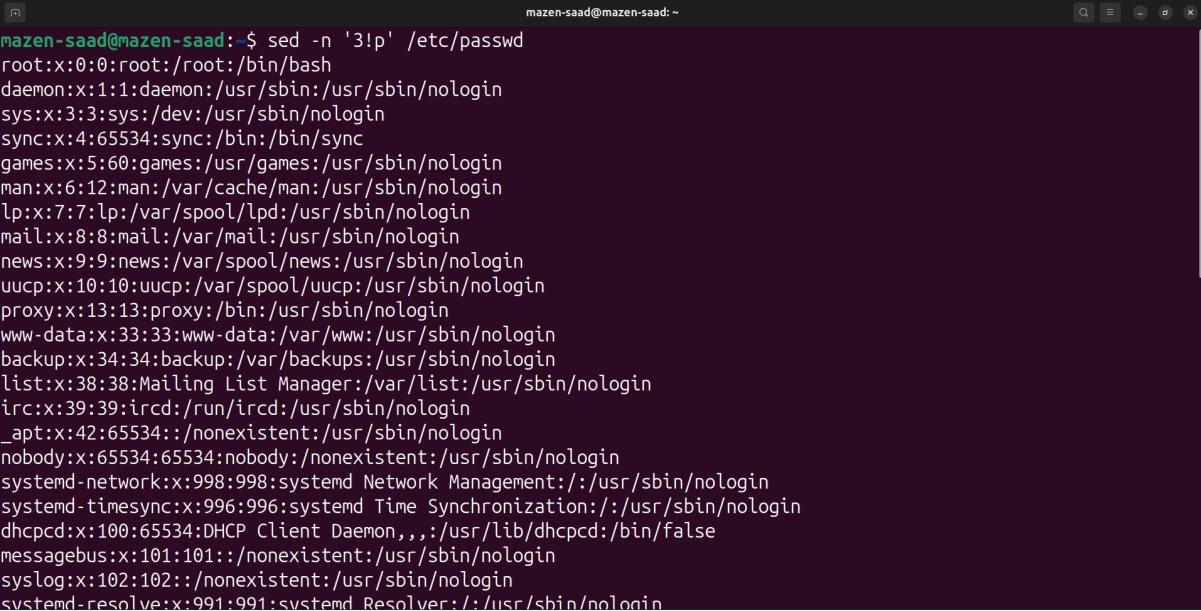
```
sed -n '/lp/p' /etc/passwd
```

A terminal window with a dark purple background. The title bar at the top reads 'mazen-saad@mazen-saad: ~'. The prompt is 'mazen-saad@mazen-saad:~\$'. The command 'sed -n '/lp/p' /etc/passwd' has been entered. The output shows two lines: 'lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin' and 'cups-pk-helper:x:112:114:user for cups-pk-helper service,,,:/nonexistent:/usr/sbin/nologin'. The prompt 'mazen-saad@mazen-saad:~\$' is visible again at the bottom.

```
mazen-saad@mazen-saad:~$ 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
mazen-saad@mazen-saad:~$
```

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

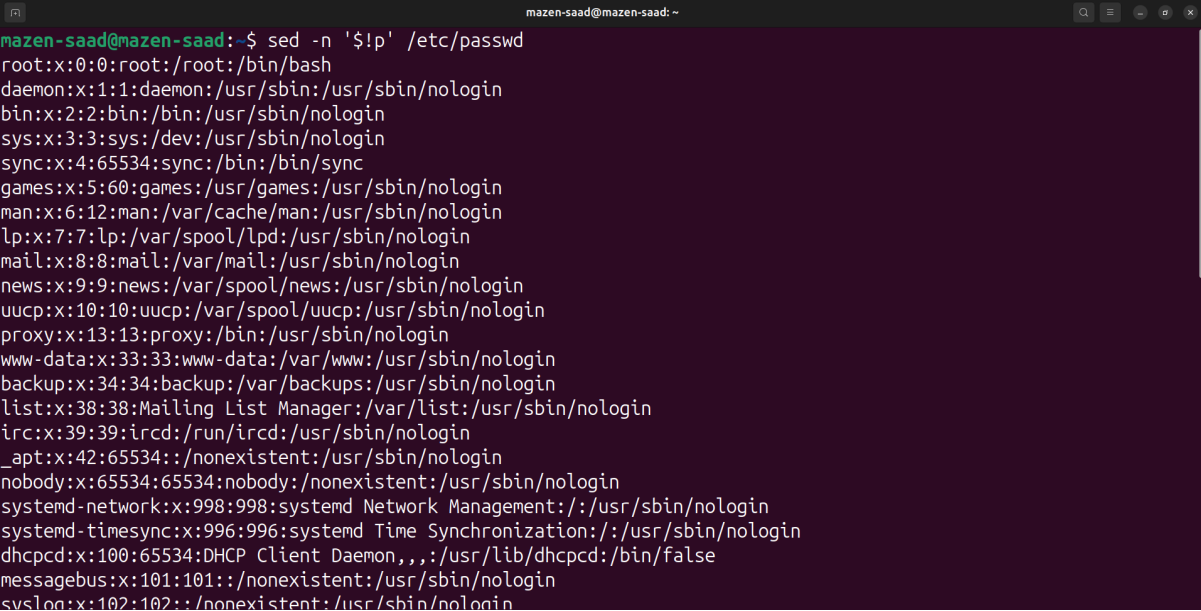
`sed -n '3!p' /etc/passwd`



```
mazen-saad@mazen-saad: ~  
mazen-saad@mazen-saad:~$ 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  
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  
_apt:x:42:65534::/nonexistent:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:998:998:systemd Network Management:/:usr/sbin/nologin  
systemd-timesync:x:996:996:systemd Time Synchronization:/:usr/sbin/nologin  
dhcpcd:x:100:65534:DHCP Client Daemon,,,:usr/lib/dhcpcd:/bin/false  
messagebus:x:101:101::/nonexistent:/usr/sbin/nologin  
syslog:x:102:102::/nonexistent:/usr/sbin/nologin  
systemd-resolve:x:991:991:systemd Resolver:/:usr/sbin/nologin
```

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

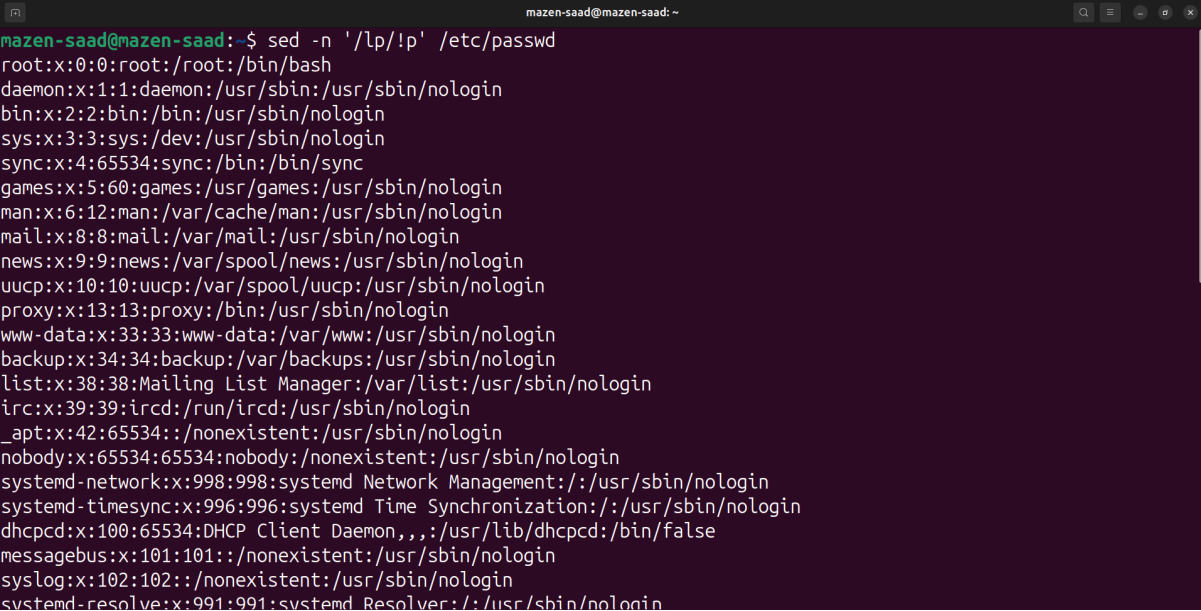
```
sed -n '$!p' /etc/passwd
```



```
mazen-saad@mazen-saad: ~  
mazen-saad@mazen-saad:~$ sed -n '$!p' /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  
_apt:x:42:65534:./nonexistent:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:998:998:systemd Network Management:./usr/sbin/nologin  
systemd-timesync:x:996:996:systemd Time Synchronization:./usr/sbin/nologin  
dhcpcd:x:100:65534:DHCP Client Daemon,,,:/usr/lib/dhcpcd:/bin/false  
messagebus:x:101:101:./nonexistent:/usr/sbin/nologin  
syslog:x:102:102:./nonexistent:/usr/sbin/nologin
```

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

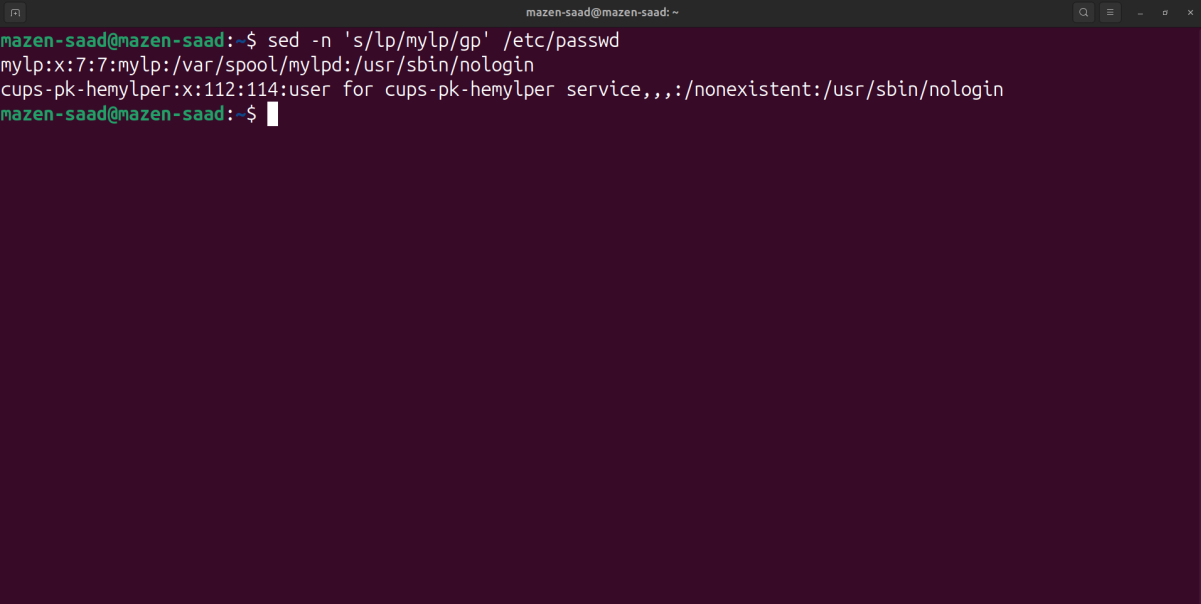
```
sed -n '/lp/!p' /etc/passwd
```



```
mazen-saad@mazen-saad: ~  
mazen-saad@mazen-saad:~$ sed -n '/lp/!p' /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  
_apt:x:42:65534::/nonexistent:/usr/sbin/nologin  
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin  
systemd-network:x:998:998:systemd Network Management:/:/usr/sbin/nologin  
systemd-timesync:x:996:996:systemd Time Synchronization:/:/usr/sbin/nologin  
dhcpcd:x:100:65534:DHCP Client Daemon,,,:/usr/lib/dhcpcd:/bin/false  
messagebus:x:101:101::/nonexistent:/usr/sbin/nologin  
syslog:x:102:102::/nonexistent:/usr/sbin/nologin  
systemd-resolve:x:991:991:systemd Resolver:/:/usr/sbin/nologin
```

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

```
sed -n 's/lp/mylp/gp' /etc/passwd
```



```
mazen-saad@mazen-saad: ~  
mazen-saad@mazen-saad:~$ sed -n 's/lp/mylp/gp' /etc/passwd  
mylp:x:7:7:mylp:/var/spool/mylpd:/usr/sbin/nologin  
cups-pk-hemylper:x:112:114:user for cups-pk-hemylper service,,,:/nonexistent:/usr/sbin/nologin  
mazen-saad@mazen-saad:~$
```

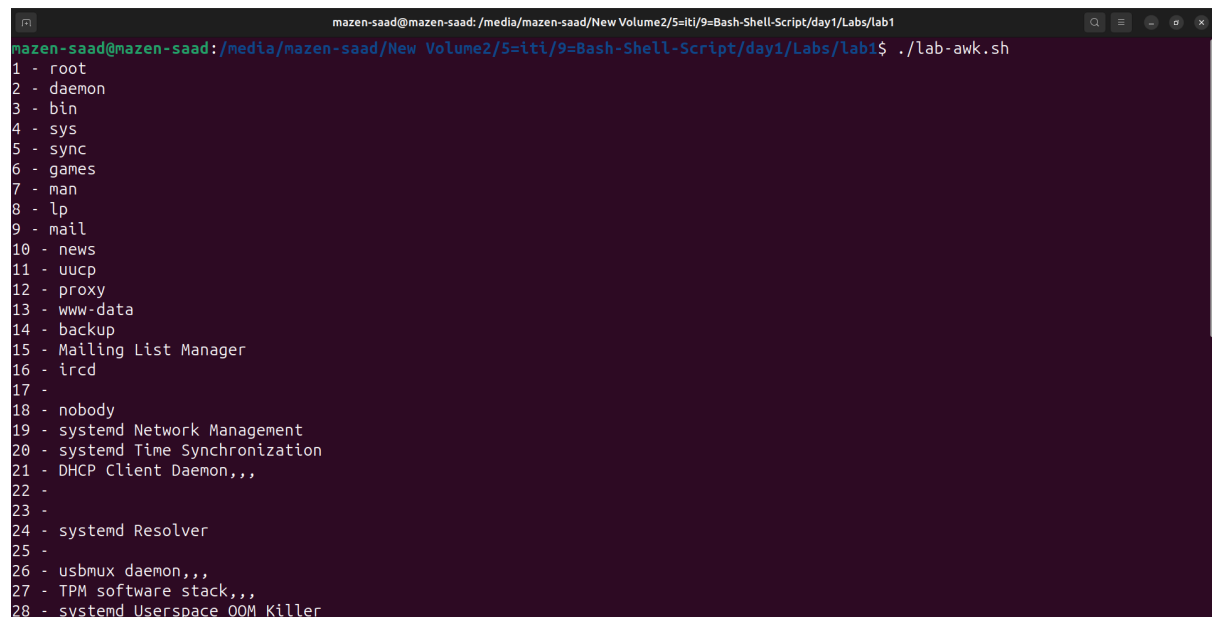
1- Print full name (comment) of all users in the system.

Q1

awk -F: '

```
{  
    print NR" - "$5  
}
```

' /etc/passwd



A terminal window titled 'mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1' shows the execution of the command `./lab-awk.sh`. The output lists 28 users from the `/etc/passwd` file, each preceded by a line number and a hyphen. The users listed are: root, daemon, bin, sys, sync, games, man, lp, mail, news, uucp, proxy, www-data, backup, Mailing List Manager, ircd, nobody, systemd Network Management, systemd Time Synchronization, DHCP Client Daemon,,, systemd Resolver, usbmux daemon,,, TPM software stack,,, and systemd Userspace OOM Killer.

```
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$ ./lab-awk.sh  
1 - root  
2 - daemon  
3 - bin  
4 - sys  
5 - sync  
6 - games  
7 - man  
8 - lp  
9 - mail  
10 - news  
11 - uucp  
12 - proxy  
13 - www-data  
14 - backup  
15 - Mailing List Manager  
16 - ircd  
17 -  
18 - nobody  
19 - systemd Network Management  
20 - systemd Time Synchronization  
21 - DHCP Client Daemon,,,  
22 -  
23 -  
24 - systemd Resolver  
25 -  
26 - usbmux daemon,,,  
27 - TPM software stack,,,  
28 - systemd Userspace OOM Killer
```

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

Q2

mazen-saad : x:1000:1000: Mazen Saad

:/home/mazen-saad:/bin/bash

awk -F: '

BEGIN{

OFS=" - "

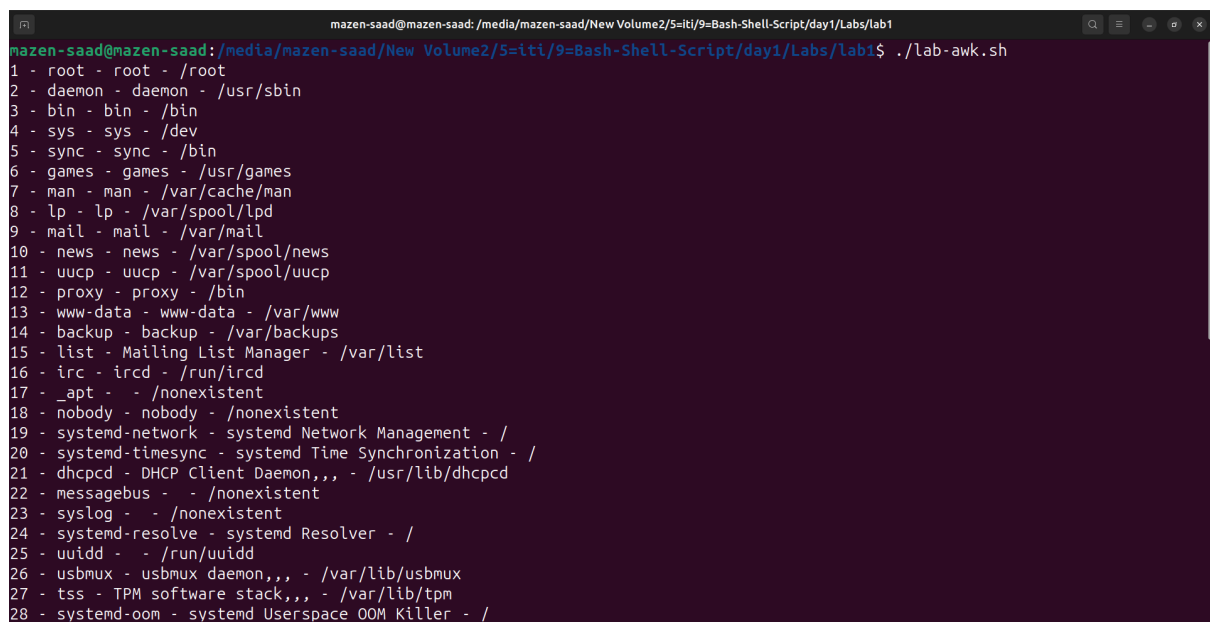
}

{

print NR, \$1, \$5, \$6

}

' /etc/passwd



The image shows a terminal window with the following content:

```
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$ ./lab-awk.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
16 - irc - ircd - /run/ircd
17 - _apt - - /nonexistent
18 - nobody - nobody - /nonexistent
19 - systemd-network - systemd Network Management - /
20 - systemd-timesync - systemd Time Synchronization - /
21 - dhcpcd - DHCP Client Daemon,,, - /usr/lib/dhcpcd
22 - messagebus - - /nonexistent
23 - syslog - - /nonexistent
24 - systemd-resolve - systemd Resolver - /
25 - uidd - - /run/uidd
26 - usbmux - usbmux daemon,,, - /var/lib/usbmux
27 - tss - TPM software stack,,, - /var/lib/tpm
28 - systemd-oom - systemd Userspace OOM Killer - /
```


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

Q3

mazen-saad : x : 1000 : 1000 : Mazen Saad

:/home/mazen-saad:/bin/bash

awk -F: '

BEGIN{

OFS=" - "

}

{

if (\$3 > 500){

print NR, \$1, \$3, \$5

}

}

' /etc/passwd

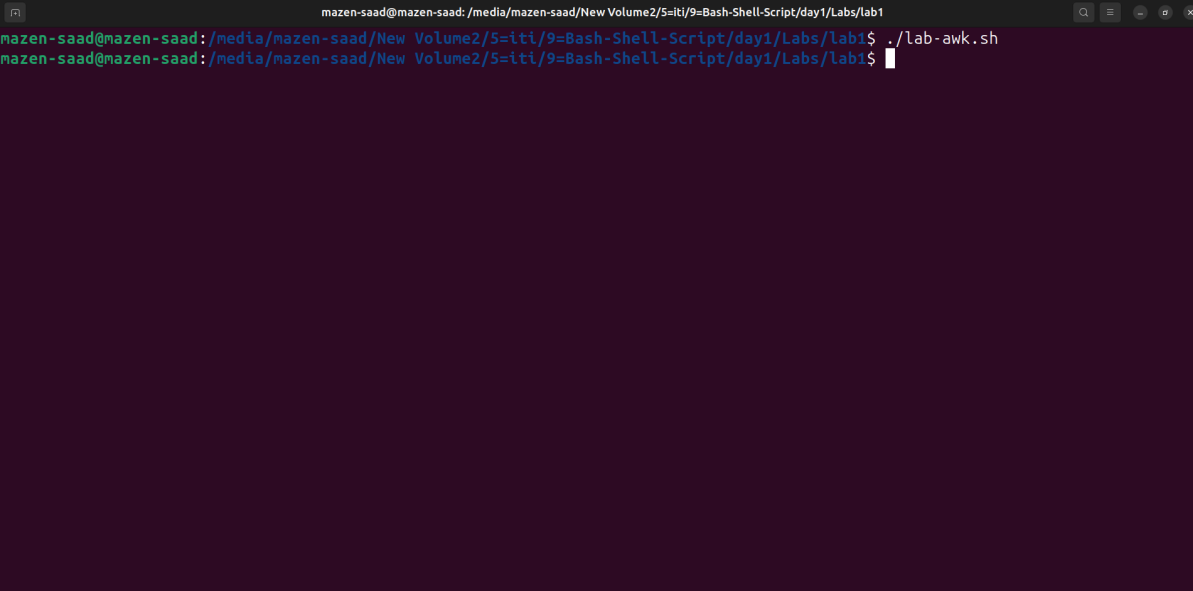
```
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$ ./lab-awk.sh
18 - nobody - 65534 - nobody
19 - systemd-network - 998 - systemd Network Management
20 - systemd-timesync - 996 - systemd Time Synchronization
24 - systemd-resolve - 991 - systemd Resolver
28 - systemd-oom - 990 - systemd Userspace OOM Killer
31 - dnsmasq - 999 - dnsmasq
37 - fwupd-refresh - 989 - Firmware update daemon
42 - polkitd - 988 - User for polkitd
49 - gnome-remote-desktop - 985 - GNOME Remote Desktop
50 - mazen-saad - 1000 - Mazen Saad
51 - islam - 1001 - Islam Askar
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$
```

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

```
# Q4
# mazen-saad : x : 1000 : 1000 : Mazen Saad
:/home/mazen-saad:/bin/bash
awk -F: '
BEGIN{
    OFS=" - "
}

{
    if ($3 == 500){
        print NR, $1, $3, $5
    }
}

' /etc/passwd
```

A terminal window with a dark purple background. The title bar shows the path "/media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1". The prompt is "mazen-saad@mazen-saad:". The user has entered the command ". /lab-awk.sh". The output of the script is not visible in the screenshot.

```
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$ ./lab-awk.sh
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$
```

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

Q5

awk -F: '

BEGIN{

OFS=" - "

}

{

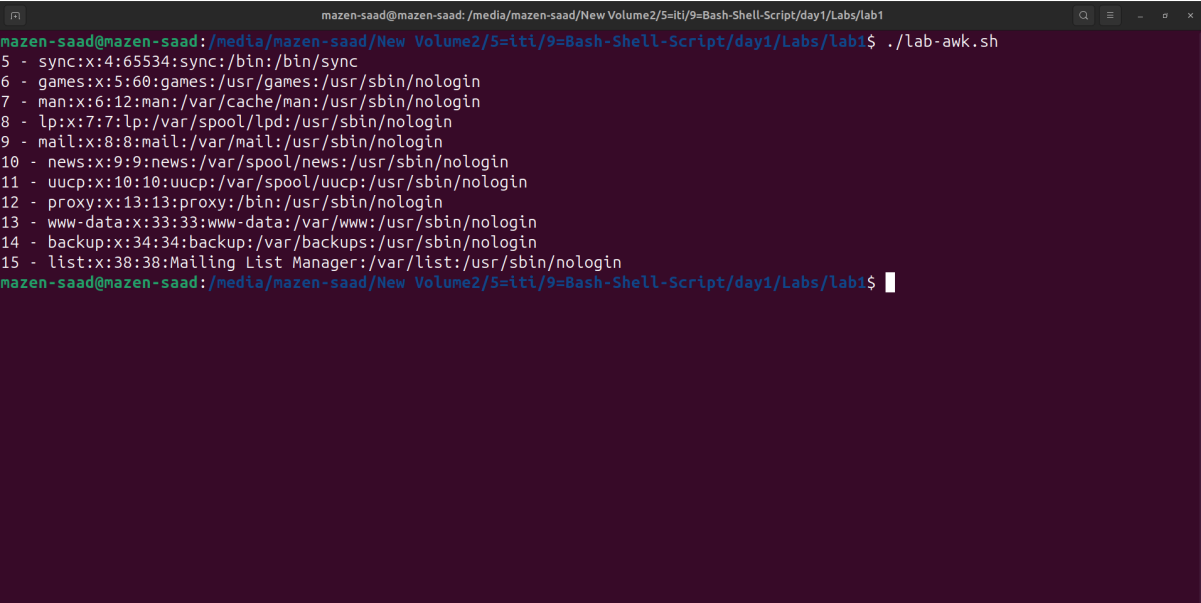
if (NR>=5 && NR<=15){

print NR, \$0

}

}

' /etc/passwd



The image shows a terminal window with a dark background. The title bar at the top reads "mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1". The prompt is "mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1\$". The user has entered the command ". /lab-awk.sh". The output of the script is a list of 11 system users, each preceded by a line number from 5 to 15, separated by a hyphen and a space. The users listed are sync, games, man, lp, mail, news, uucp, proxy, www-data, backup, and list. The prompt is now "mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1\$ " with a cursor.

```
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$ ./lab-awk.sh
5 - sync:x:4:65534:sync:/bin:/bin/sync
6 - games:x:5:60:games:/usr/games:/usr/sbin/nologin
7 - man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
8 - lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
9 - mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
10 - news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
11 - uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
12 - proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
13 - www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
14 - backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
15 - list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$
```

6- Change lp to mylp

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

```
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$ ./lab-awk.sh
mylp - x - 7 - 7 - mylp - /var/spool/lpd - /usr/sbin/nologin
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$
```

7- Print all information about greatest uid.

```
awk -F: '
BEGIN {
    max = 0
    contline = ""
}

{
    if ($3>max) {
        max=$3;
        contline=$0
    }
}

END {
    print NR" - ", contline
}
' /etc/passwd
```

A terminal window with a dark purple background. The title bar reads "mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1". The prompt is "mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1\$". The user has entered the command ". /lab-awk.sh". The output is "52 - nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin".

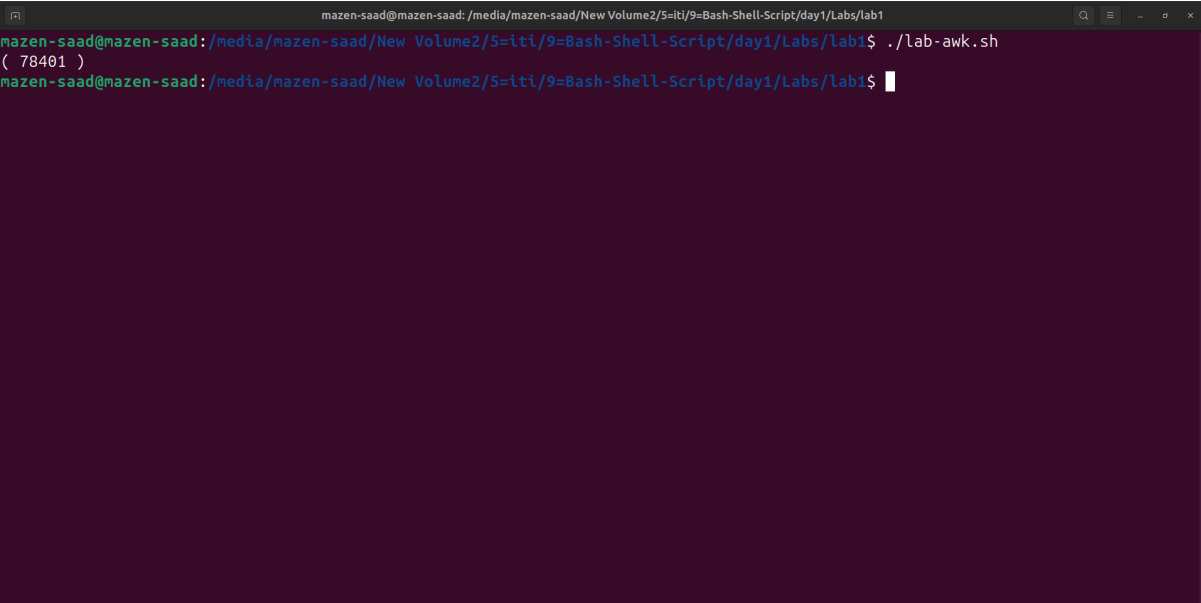
```
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$ ./lab-awk.sh
52 - nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$
```

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

```
awk -F: '{
BEGIN {
    sum=0;
}

{
    sum += $3
}

END {
    print "(", sum, ")"
}
}' /etc/passwd
```



A terminal window with a dark purple background. The title bar shows the path `mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1`. The terminal shows the command `./lab-awk.sh` being executed, which produces the output `(78401)`. The prompt `mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$` is visible at the bottom.

Bonus

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

```
# Group| 7 # =>
```

```
# User| 7    |, Group| 7 |,
```

```
# User| 116  |, Group| 7 |,
```

```
# Group| 65534 # =>
```

```
# User| 4      |, Group| 65534 |,
```

```
# User| 42     |, Group| 65534 |,
```

```
# User| 65534  |, Group| 65534 |,
```

```
# User| 106    |, Group| 65534 |,
```

```
# User| 999    |, Group| 65534 |,
```

```
# User| 119    |, Group| 65534 |,
```

```
# Group| 114 # =>
```

```
# User| 112   |, Group| 114 |,
```

```
# User| 115   |, Group| 114 |,
```

```
# B1
```

```
awk -F: '
```

```
BEGIN{
```

```
    OFS=" - "
```

```
    print "-----"
```

```
}
```

```
{
```

```
    group[$4] += $3
```

```
}
```

```
END {
```

```
    for (grp in group) {
```

```
        print "Group ID:", grp
```

```
        print "Total Sum of IDs:", group[grp]
```

```
        print "-----"
```



```
}  
}' /etc/passwd
```

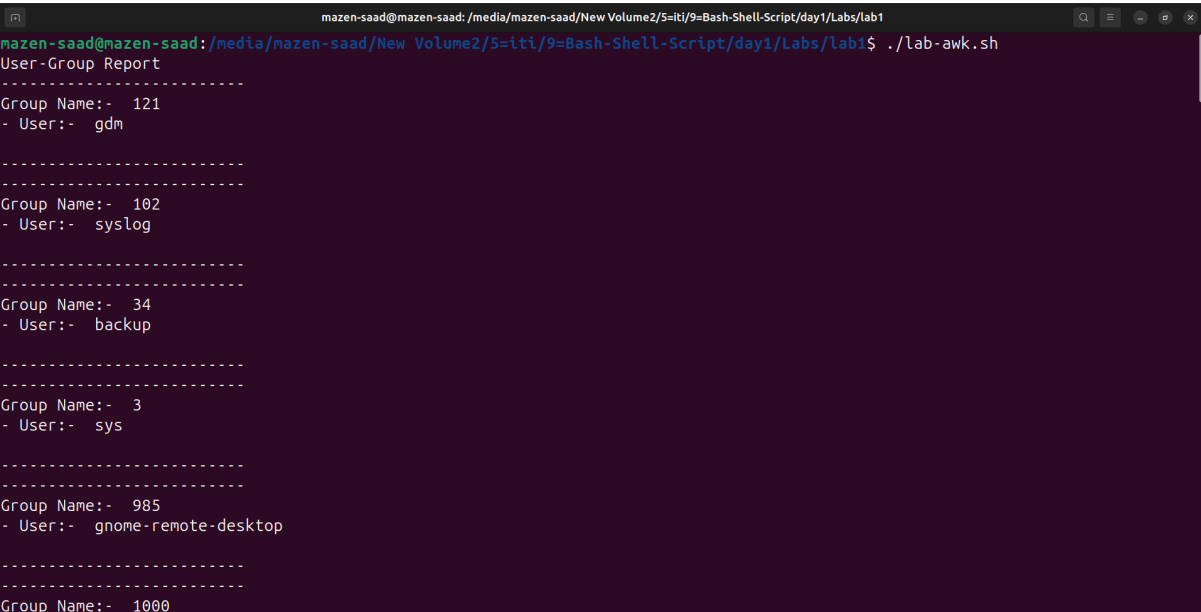
```
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1  
mazen-saad@mazen-saad:/media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$ ./lab-awk.sh  
-----  
Group ID: - 121  
Total Sum of IDs: - 120  
-----  
Group ID: - 102  
Total Sum of IDs: - 102  
-----  
Group ID: - 34  
Total Sum of IDs: - 34  
-----  
Group ID: - 3  
Total Sum of IDs: - 3  
-----  
Group ID: - 985  
Total Sum of IDs: - 985  
-----  
Group ID: - 1000  
Total Sum of IDs: - 1000  
-----  
Group ID: - 29  
Total Sum of IDs: - 111  
-----  
Group ID: - 10  
Total Sum of IDs: - 10  
-----  
Group ID: - 990  
Total Sum of IDs: - 990  
-----
```

2. Make the following report:

```
# B2
awk -F: '
BEGIN{
    print "User-Group Report"
}

{
    group[$4] = group[$4] $1 "\n";
    group_name[$4] = $1
}

END {
    for (i in group) {
        print "-----"
        print "Group Name:- ", i
        print "- User:- ", group[i];
        print "-----"
    }
}' /etc/passwd
```



```
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1
mazen-saad@mazen-saad: /media/mazen-saad/New Volume2/5=iti/9=Bash-Shell-Script/day1/Labs/lab1$ ./lab-awk.sh
User-Group Report
-----
Group Name:- 121
- User:- gdm
-----
Group Name:- 102
- User:- syslog
-----
Group Name:- 34
- User:- backup
-----
Group Name:- 3
- User:- sys
-----
Group Name:- 985
- User:- gnome-remote-desktop
-----
Group Name:- 1000
```