

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

A terminal window titled 'fadym@FadyM: ~' with standard window controls. The terminal shows the command 'sed -n '/lp/p' /etc/passwd' being executed. The output displays three lines from the /etc/passwd file: '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', and '\_flatpak:x:129:137:Flatpak system-wide installation helper,,,:/nonexistent:/usr/sbin/nologin'. The prompt 'fadym@FadyM:~\$' is visible at the bottom.

```
fadym@FadyM:~$ 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
fadym@FadyM:~$
```

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

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

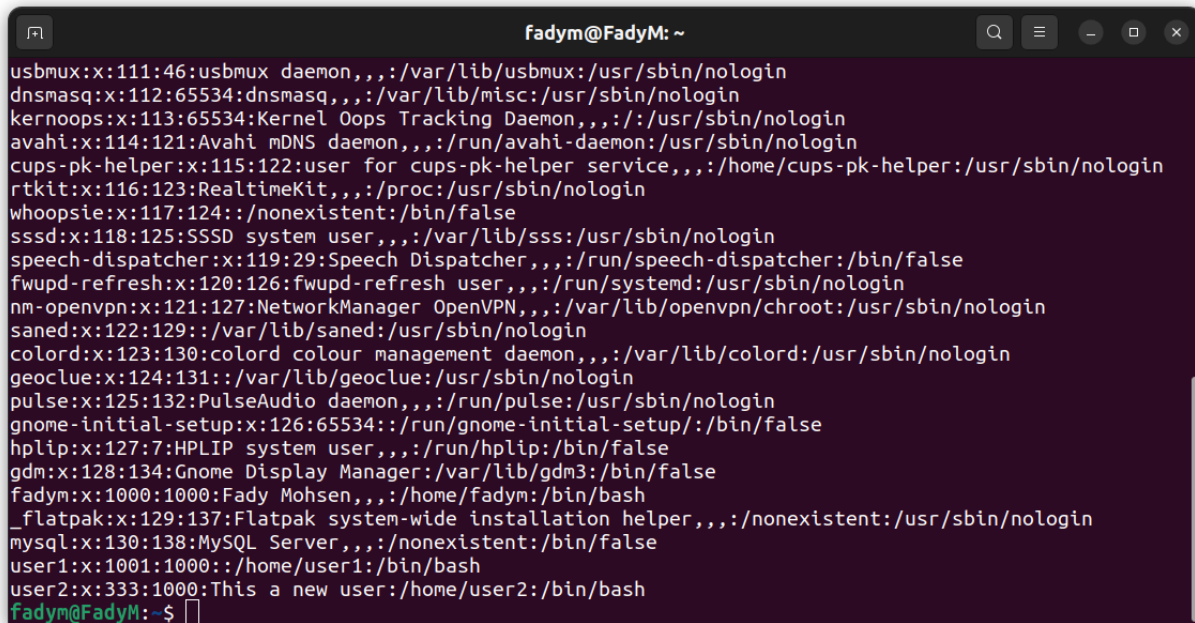
```
fadym@FadyM: ~  
fadym@FadyM:~$ sed -n '3!p' /etc/passwd  
root:x:0:0:root:/root:/bin/bash  
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin  
sys:x:3:3:sys:/dev:/usr/sbin/nologin  
sync:x:4:65534:sync:/bin:/bin/sync  
games:x:5:60:games:/usr/games:/usr/sbin/nologin  
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin  
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  
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
```

Before:

```
fadym@FadyM: ~  
fadym@FadyM:~$ head /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  
fadym@FadyM:~$
```

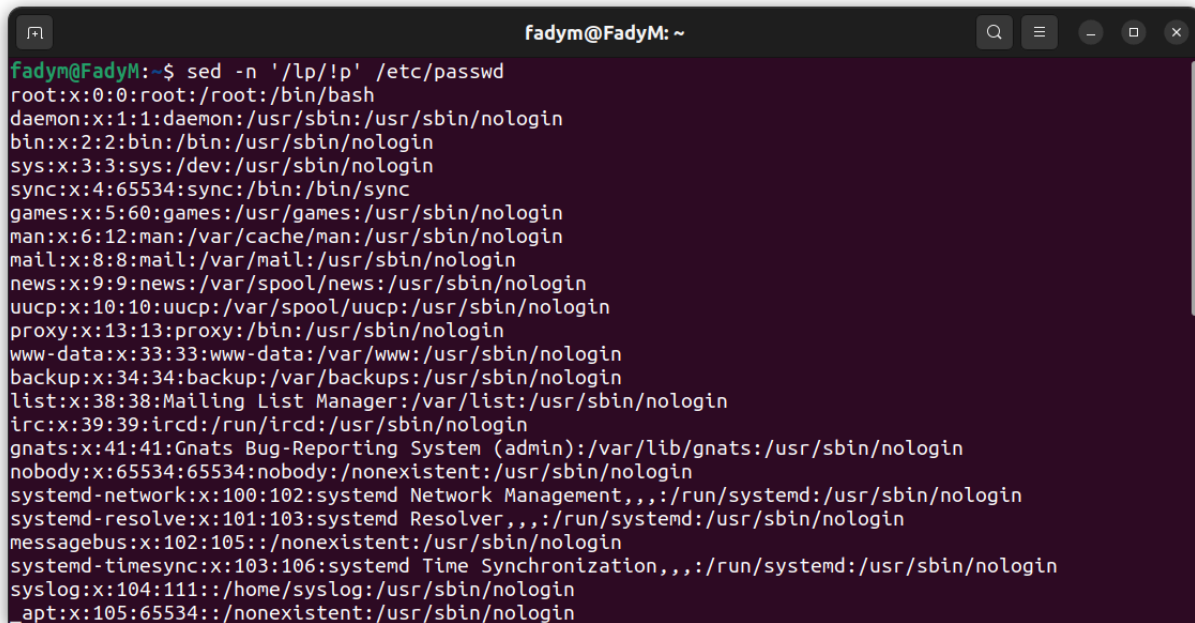
3.Display /etc/passwd file except the last line.

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




```
fadym@FadyM: ~  
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  
fwupd-refresh:x:120:126:fwupd-refresh user,,,:/run/systemd:/usr/sbin/nologin  
nm-openvpn:x:121:127:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin  
saned:x:122:129:/:var/lib/saned:/usr/sbin/nologin  
colord:x:123:130:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin  
geoclue:x:124:131:/:var/lib/geoclue:/usr/sbin/nologin  
pulse:x:125:132:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin  
gnome-initial-setup:x:126:65534:/:run/gnome-initial-setup:/bin/false  
hplip:x:127:7:HPLIP system user,,,:/run/hplip:/bin/false  
gdm:x:128:134:Gnome Display Manager:/var/lib/gdm3:/bin/false  
fadym:x:1000:1000:Fady Mohsen,,,:/home/fadym:/bin/bash  
_flatpak:x:129:137:Flatpak system-wide installation helper,,,:nonexistent:/usr/sbin/nologin  
mysql:x:130:138:MySQL Server,,,:nonexistent:/bin/false  
user1:x:1001:1000:/:home/user1:/bin/bash  
user2:x:333:1000:This a new user:/home/user2:/bin/bash  
fadym@FadyM:~$
```

- 4.Display /etc/passwd file except the lines that contain the word "lp".  
sed -n '/lp!/p' /etc/passwd



```
fadyM@FadyM: ~  
fadyM@FadyM:~$ 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  
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
```

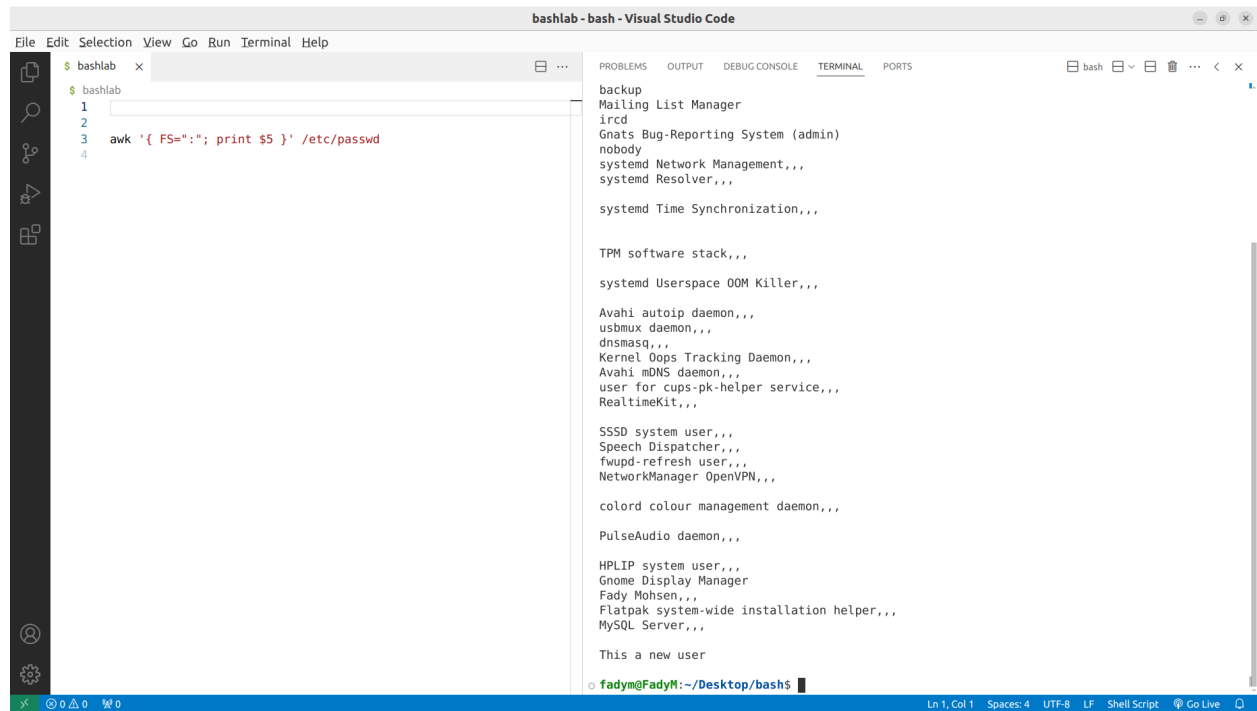
5.Substitute all the words that contain “lp” with “mylp” in /etc/passwd file.  
sed -n 's/lp/mylp/p' /etc/passwd



```
fadyM@FadyM: ~  
fadyM@FadyM:~$ sed -n 's/lp/mylp/p' /etc/passwd  
mylp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin  
cups-pk-hemylper:x:115:122:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin  
_flatpak:x:129:137:Flatpak system-wide installation hemylper,,,:/nonexistent:/usr/sbin/nologin  
fadyM@FadyM:~$
```

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

```
awk '{ FS=": "; print $5 }' /etc/passwd
```



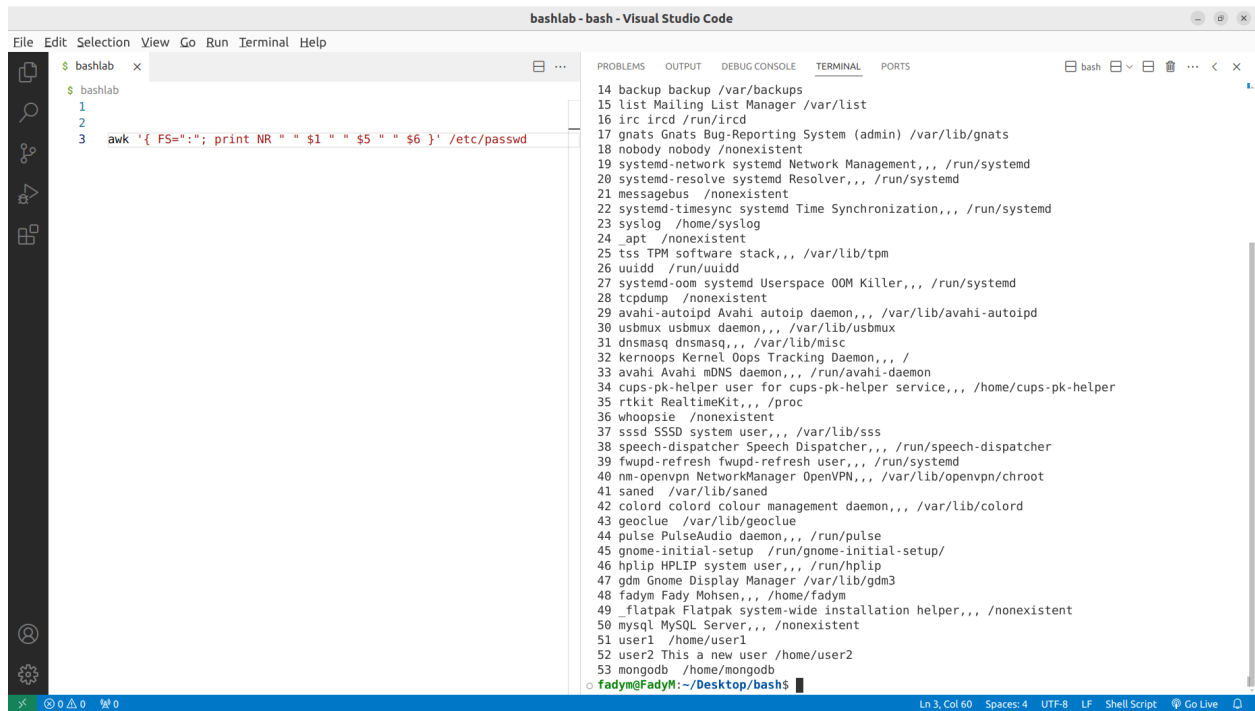
The screenshot shows a Visual Studio Code window with a terminal open. The terminal title is "bashlab - bash - Visual Studio Code". The terminal output displays the results of the command `awk '{ FS=": "; print $5 }' /etc/passwd`, which lists the full names of all users in the system. The output is as follows:

```
backup  
Mailing List Manager  
ircd  
Gnats Bug-Reporting System (admin)  
nobody  
systemd Network Management,,  
systemd Resolver,,  
  
systemd Time Synchronization,,  
  
TPM software stack,,  
  
systemd Userspace OOM Killer,,  
  
Avahi autoip daemon,,  
usbmux daemon,,  
dnsmasq,,  
Kernel Oops Tracking Daemon,,  
Avahi mDNS daemon,,  
user for cups-pk-helper service,,  
RealtimeKit,,  
  
SSSD system user,,  
Speech Dispatcher,,  
fwupd-refresh user,,  
NetworkManager OpenVPN,,  
  
colord colour management daemon,,  
  
PulseAudio daemon,,  
  
HPLIP system user,,  
Gnome Display Manager  
Fady Mohsen,,  
Flatpak system-wide installation helper,,  
MySQL Server,,  
  
This a new user
```

The terminal prompt is `fadyM@FadyM:~/Desktop/bash$`. The status bar at the bottom indicates "Ln 1, Col 1", "Spaces: 4", "UTF-8", "LF", "Shell Script", and "Go Live".

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

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



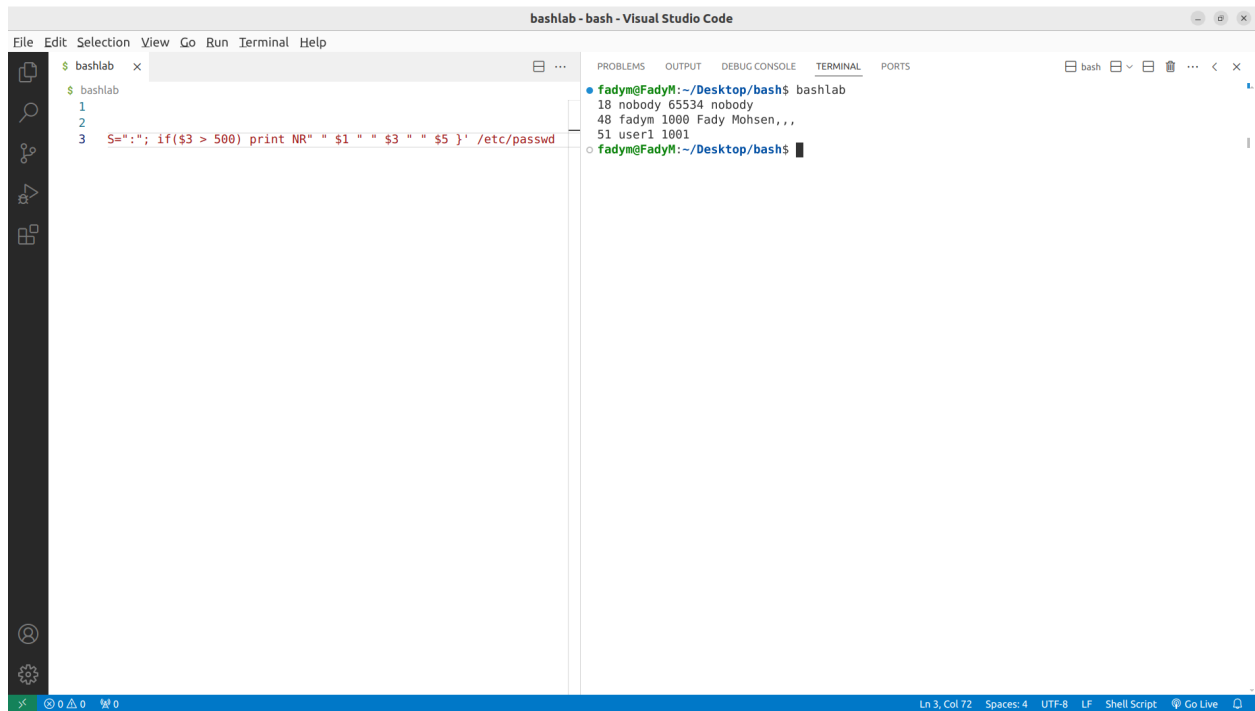
```
bashlab - bash - Visual Studio Code
File Edit Selection View Go Run Terminal Help

$ bashlab
1
2
3 awk '{ FS=":"; print NR " " $1 " " $5 " " $6 }' /etc/passwd

14 backup /var/backups
15 list Mailing List Manager /var/list
16 irc /run/ircd
17 gnats Gnats Bug-Reporting System (admin) /var/lib/gnats
18 nobody /nonexistent
19 systemd-network systemd Network Management,,, /run/systemd
20 systemd-resolve systemd Resolver,,, /run/systemd
21 messagebus /nonexistent
22 systemd-timesync systemd Time Synchronization,,, /run/systemd
23 syslog /home/syslog
24 _apt /nonexistent
25 tss TPM software stack,,, /var/lib/tpm
26 uidd /run/uidd
27 systemd-oom systemd Userspace OOM Killer,,, /run/systemd
28 tcpdump /nonexistent
29 avahi-autoipd Avahi autoip daemon,,, /var/lib/avahi-autoipd
30 usbmux usbmux daemon,,, /var/lib/usbmux
31 dnsmasq dnsmasq,,, /var/lib/misc
32 kernoops Kernel Oops Tracking Daemon,,, /
33 avahi Avahi mDNS daemon,,, /run/avahi-daemon
34 cups-pk-helper user for cups-pk-helper service,,, /home/cups-pk-helper
35 rtkit RealtimeKit,,, /proc
36 whoopsie /nonexistent
37 sssd SSSD system user,,, /var/lib/sss
38 speech-dispatcher Speech Dispatcher,,, /run/speech-dispatcher
39 fwupd-refresh fwupd-refresh user,,, /run/systemd
40 nm-openvpn NetworkManager OpenVPN,,, /var/lib/openvpn/chroot
41 saned /var/lib/saned
42 colord colord colour management daemon,,, /var/lib/colord
43 geoclue /var/lib/geoclue
44 pulse PulseAudio daemon,,, /run/pulse
45 gnome-initial-setup /run/gnome-initial-setup/
46 hplip HPLIP system user,,, /run/hplip
47 gdm Gnome Display Manager /var/lib/gdm3
48 fadym Fady Mohsen,,, /home/fadym
49 flatpak Flatpak system-wide installation helper,,, /nonexistent
50 mysql MySQL Server,,, /nonexistent
51 user1 /home/user1
52 user2 This a new user /home/user2
53 mongod /home/mongod

fady@FadyM:~/Desktop/bash$
```

3. Print login, uid and full name (comment) of those uid is greater than 500  
awk '{ FS=": "; if(\$3 > 500) print NR " " \$1 " " \$3 " " \$5 }' /etc/passwd



The screenshot shows the Visual Studio Code interface with a terminal window open. The terminal title is "bashlab - bash - Visual Studio Code". The left pane shows a file named "bashlab" with three lines of code. The right pane shows the output of the command. The command executed is `awk '{ FS=": "; if($3 > 500) print NR " " $1 " " $3 " " $5 }' /etc/passwd`. The output shows three lines of user data where the UID is greater than 500: line 48 for 'fady' (UID 1000), line 51 for 'user1' (UID 1001), and line 18 for 'nobody' (UID 65534).

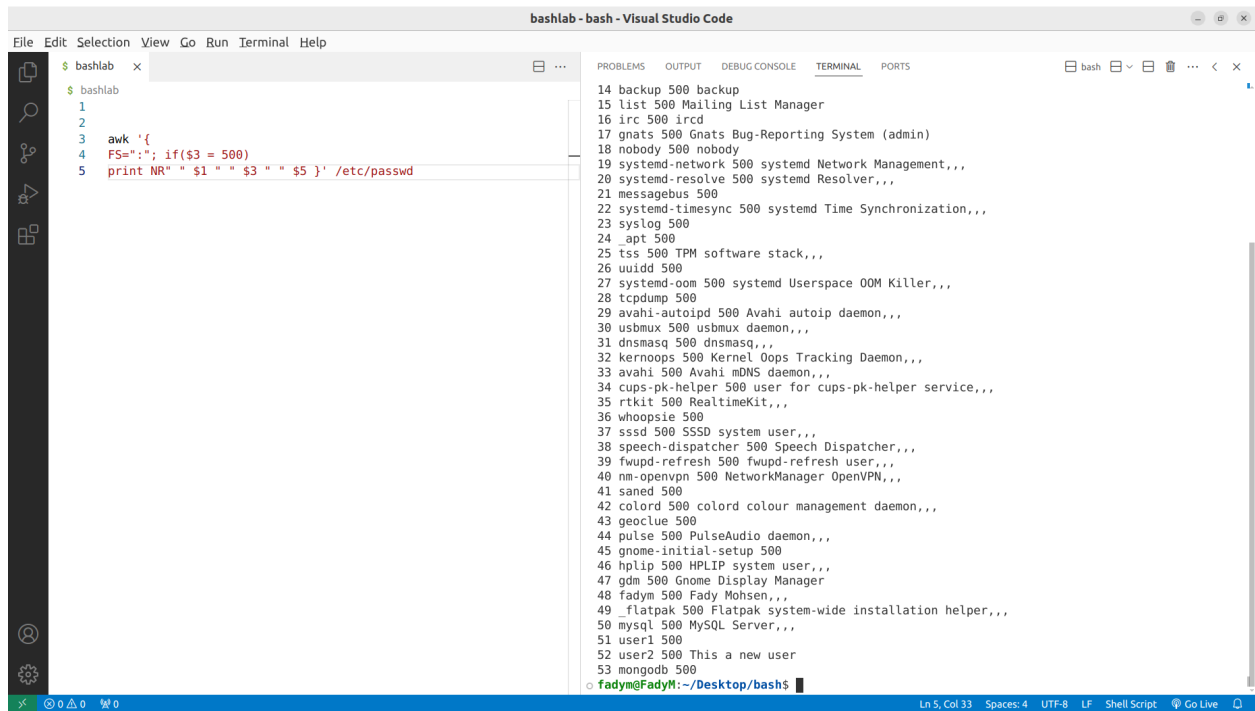
```
bashlab
1
2
3 S=": "; if($3 > 500) print NR " " $1 " " $3 " " $5 }' /etc/passwd
```

```
fady@fadyM:~/Desktop/bash$ bashlab
18 nobody 65534 nobody
48 fady 1000 Fady Mohsen,,,
51 user1 1001
fady@fadyM:~/Desktop/bash$
```



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

```
awk '{ FS=": "; if($3 = 500) print NR " " $1 " " $3 " " $5 }' /etc/passwd
```



```
bashlab - bash - Visual Studio Code
```

```
File Edit Selection View Go Run Terminal Help
```

```
$ bashlab x
```

```
1
2
3 awk '{
4   FS=": "; if($3 = 500)
5   print NR " " $1 " " $3 " " $5 }' /etc/passwd
```

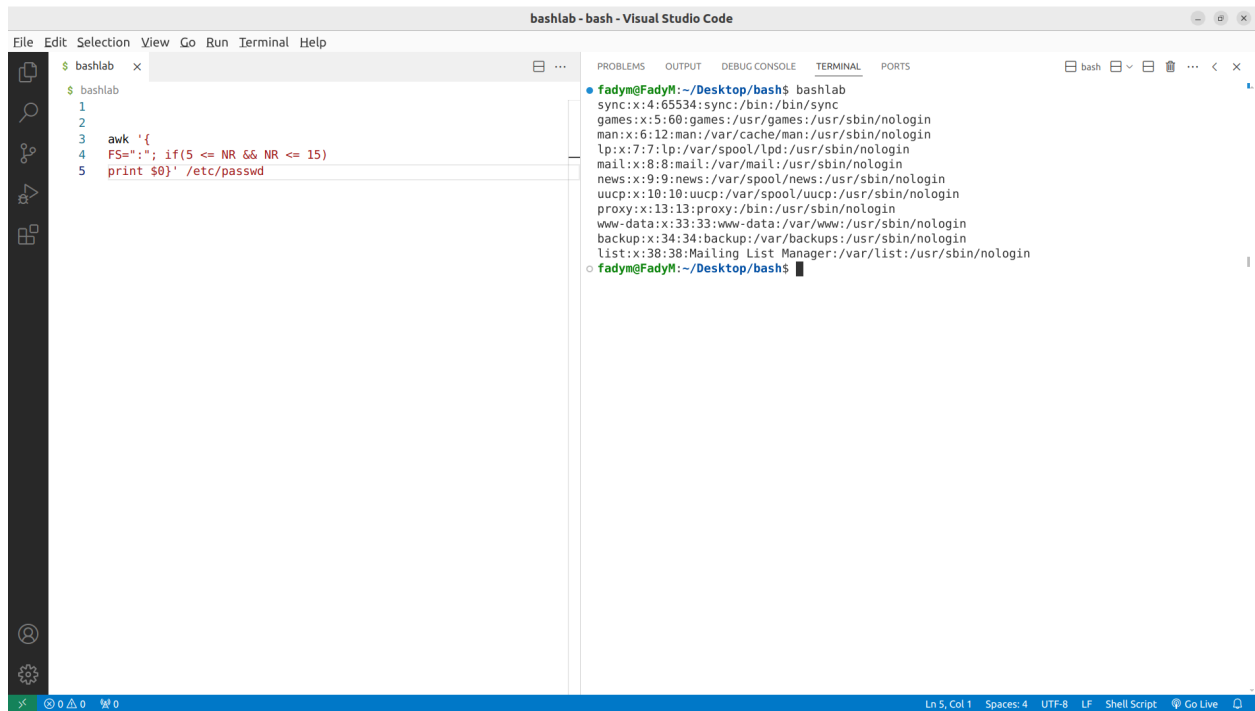
```
14 backup 500 backup
15 list 500 Mailing List Manager
16 irc 500 ircd
17 gnats 500 Gnats Bug-Reporting System (admin)
18 nobody 500 nobody
19 systemd-network 500 systemd Network Management,,,
20 systemd-resolve 500 systemd Resolver,,,
21 messagebus 500
22 systemd-timesync 500 systemd Time Synchronization,,,
23 syslog 500
24 _apt 500
25 tss 500 TPM software stack,,,
26 uidd 500
27 systemd-oom 500 systemd Userspace OOM Killer,,,
28 tcpdump 500
29 avahi-autoipd 500 Avahi autoip daemon,,,
30 usbmux 500 usbmux daemon,,,
31 dnsmasq 500 dnsmasq,,,
32 kernoops 500 Kernel Oops Tracking Daemon,,,
33 avahi 500 Avahi mDNS daemon,,,
34 cups-pk-helper 500 user for cups-pk-helper service,,,
35 rtkit 500 RealtimeKit,,,
36 whoopsie 500
37 sssd 500 SSSD system user,,,
38 speech-dispatcher 500 Speech Dispatcher,,,
39 fwupd-refresh 500 fwupd-refresh user,,,
40 nm-openvpn 500 NetworkManager OpenVPN,,,
41 saned 500
42 colord 500 colord colour management daemon,,,
43 geoclue 500
44 pulse 500 PulseAudio daemon,,,
45 gnome-initial-setup 500
46 hplip 500 HPLIP system user,,,
47 gdm 500 Gnome Display Manager
48 fadym 500 Fady Mohsen,,,
49 _flatpak 500 Flatpak system-wide installation helper,,,
50 mysql 500 MySQL Server,,,
51 user1 500
52 user2 500 This a new user
53 mongod 500
```

```
o fadym@FadyM: ~/Desktop/bash$
```

Ln 5, Col 33 Spaces: 4 UTF-8 LF Shell Script Go Live

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

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

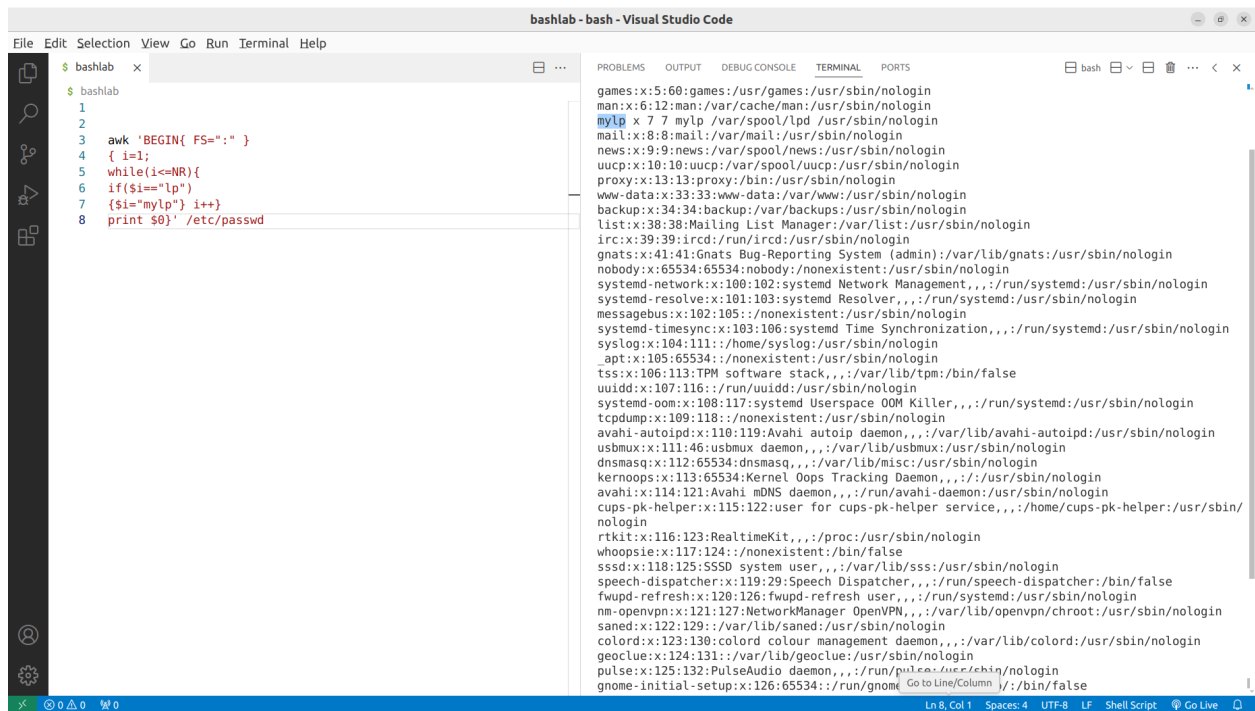


```
bashlab - bash - Visual Studio Code
File Edit Selection View Go Run Terminal Help
$ bashlab
1
2
3 awk '{
4   FS=":"; if(5 <= NR && NR <= 15)
5   print $0}' /etc/passwd
● fadyM@FadyM:~/Desktop/bash$ bashlab
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
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:Mail List Manager:/var/list:/usr/sbin/nologin
○ fadyM@FadyM:~/Desktop/bash$
```

## 6.Change lp to mylp

```
awk 'BEGIN{ FS=":" } { i=1; while(i<=NR){if($i=="lp"){i="mylp"} i++} print $0}'
```

/etc/passwd



```
bashlab - bash - Visual Studio Code

File Edit Selection View Go Run Terminal Help

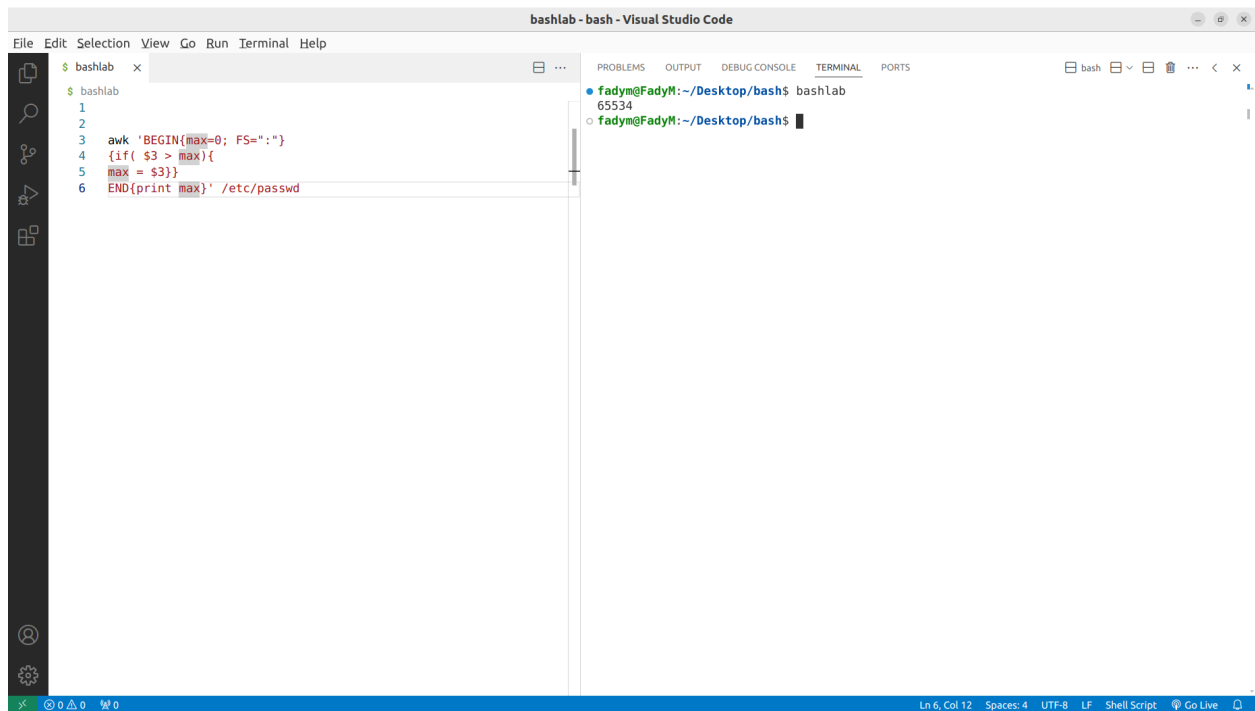
$ bashlab x
1
2
3 awk 'BEGIN{ FS=":" }
4 { i=1;
5 while(i<=NR){
6 if($i=="lp")
7 {i="mylp"} i++}
8 print $0}' /etc/passwd

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
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:106:113:TPM software stack,,:/var/lib/tpm:/bin/false
uidd:x:107:116:/:run/uidd:/usr/sbin/nologin
systemd-oom:x:108:117:systemd Userspace OOM Killer,,:/run/systemd:/usr/sbin/nologin
tcpdump:x:109:118:/: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
fwupd-refresh:x:120:126:fwupd-refresh user,,:/run/systemd:/usr/sbin/nologin
nm-openvpn:x:121:127:NetworkManager OpenVPN,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
saned:x:122:129:/:var/lib/saned:/usr/sbin/nologin
colord:x:123:130:colord colour management daemon,,:/var/lib/colord:/usr/sbin/nologin
geoclue:x:124:131:/:var/lib/geoclue:/usr/sbin/nologin
pulse:x:125:132:PulseAudio daemon,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:126:65534:/:run/gnome:/bin/false
```

7. Print all information about greatest uid.

```
awk 'BEGIN{max=0; FS=":"}{if( $3 > max){max = $3}}END{print max}'
```

/etc/passwd



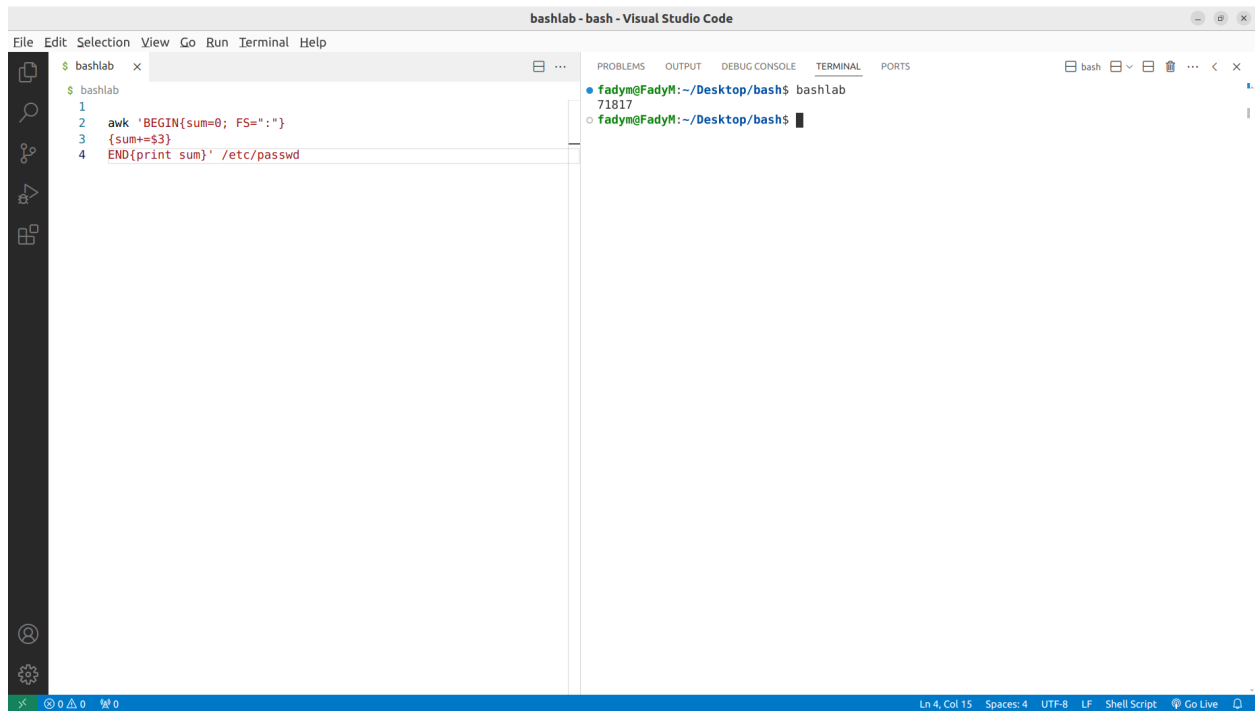
The screenshot shows the Visual Studio Code interface. The editor window displays a file named 'bashlab' with the following content:

```
1
2
3 awk 'BEGIN{max=0; FS=":"}
4 {if( $3 > max){
5 max = $3}}
6 END{print max}' /etc/passwd
```

The terminal window on the right shows the command 'bashlab' being executed, with the output '65534' displayed.

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

```
awk 'BEGIN{sum=0; FS=":"}{sum+=$3}END{print sum}' /etc/passwd
```



The screenshot shows the Visual Studio Code interface with a terminal window open. The terminal title is "bashlab - bash - Visual Studio Code". The terminal content shows the execution of the command `awk 'BEGIN{sum=0; FS=":"}{sum+=$3}END{print sum}' /etc/passwd`, which outputs the number `71817`. The editor window on the left shows the command being executed, with line numbers 1 through 4. The status bar at the bottom indicates the current line and column (Ln 4, Col 15) and other settings like Spaces: 4, UTF-8, LF, Shell Script, and Go Live.

```
bashlab - bash - Visual Studio Code
```

```
File Edit Selection View Go Run Terminal Help
```

```
$ bashlab
```

```
1
```

```
2 awk 'BEGIN{sum=0; FS=":"}{sum+=$3}END{print sum}' /etc/passwd
```

```
3 {sum+=$3}
```

```
4 END{print sum}' /etc/passwd
```

```
bashlab
```

```
71817
```

```
bashlab
```

```
Ln 4, Col 15 Spaces: 4 UTF-8 LF Shell Script Go Live
```