

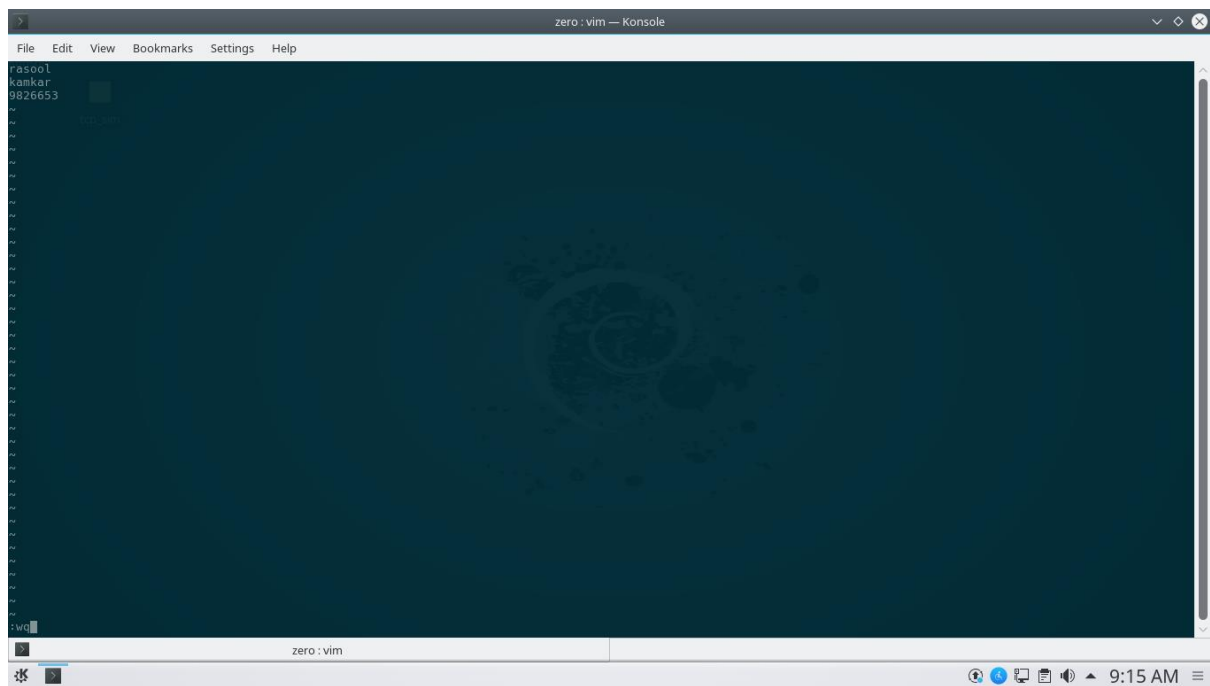
Q1)

proc, sys

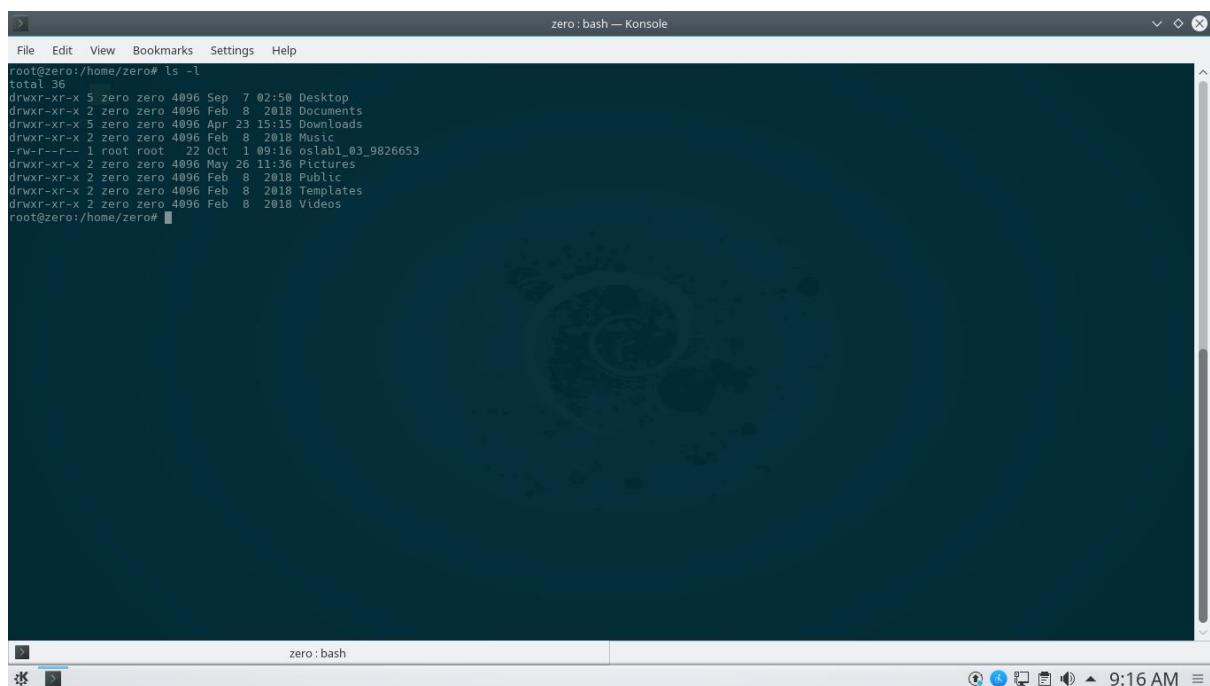
```
zero: bash — Konsole
File Edit View Bookmarks Settings Help
root@zero:/# ls -l
total 84
drwxr-xr-x  2 root root  4096 Mar 17  2020 bin
drwxr-xr-x  3 root root  4096 May 24 11:40 boot
drwxr-xr-x 17 root root 30720 Oct  1 08:50 dev
drwxr-xr-x 118 root root 12288 Oct  1 08:50 etc
drwxr-xr-x  3 root root  4096 Feb  8  2018 home
lrwxrwxrwx  1 root root    30 Nov  6  2019 initrd.img -> boot/initrd.img-4.9.0-11-amd64
lrwxrwxrwx  1 root root    29 Feb  8  2018 initrd.img.old -> boot/initrd.img-4.9.0-4-amd64
drwxr-xr-x 14 root root  4096 Nov  6  2019 lib
drwxr-xr-x  2 root root  4096 Nov  6  2019 lib64
drwx----- 2 root root 16384 Feb  8  2018 lost+found
drwxr-xr-x  5 root root  4096 May 24 11:40 media
drwxr-xr-x  2 root root  4096 Feb  8  2018 mnt
drwxr-xr-x  3 root root  4096 May 24 11:38 opt
dr-xr-xr-x 157 root root    0 Oct  1  2021 proc
drwx----- 18 root root  4096 Oct  1 08:50 root
drwxr-xr-x 20 root root  5000 Oct  1 08:50 run
drwxr-xr-x  2 root root  4096 Oct  1 08:50/sbin
drwxr-xr-x  2 root root  4096 Feb  8  2018 srv
dr-xr-xr-x 13 root root    0 Oct  1 09:00 sys
drwxrwxrwt 12 root root  4096 Oct  1 08:56 tmp
drwxr-xr-x 10 root root  4096 Feb  8  2018 usr
drwxr-xr-x 12 root root  4096 Feb 20  2020 var
lrwxrwxrwx  1 root root    27 Nov  6  2019 vmlinuz -> boot/vmlinuz-4.9.0-11-amd64
lrwxrwxrwx  1 root root    26 Feb  8  2018 vmlinuz.old -> boot/vmlinuz-4.9.0-4-amd64
root@zero:/#
```

09:14

```
zero: bash — Konsole
File Edit View Bookmarks Settings Help
root@zero:/home/zero# touch oslab1_03_9826653
root@zero:/home/zero# ls -l
total 32
drwxr-xr-x  5 zero zero 4096 Sep  7 02:50 Desktop
drwxr-xr-x  2 zero zero 4096 Feb  8  2018 Documents
drwxr-xr-x  5 zero zero 4096 Apr 23 15:15 Downloads
drwxr-xr-x  2 zero zero 4096 Feb  8  2018 Music
-rw-r--r--  1 root root    0 Oct  1 09:14 oslab1_03_9826653
drwxr-xr-x  2 zero zero 4096 May 26 11:36 Pictures
drwxr-xr-x  2 zero zero 4096 Feb  8  2018 Public
drwxr-xr-x  2 zero zero 4096 Feb  8  2018 Templates
drwxr-xr-x  2 zero zero 4096 Feb  8  2018 Videos
root@zero:/home/zero#
```



09:16



```
zero: bash — Konsole
File Edit View Bookmarks Settings Help
root@zero:/home/zero# ls
Desktop Documents Downloads Music oslab1_03_9826653 Pictures Public Templates Videos
root@zero:/home/zero# cp oslab1_03_9826653 /root/
root@zero:/home/zero# cd /root
root@zero:~# chmod -w oslab1_03_9826653
root@zero:~# ls -l
total 44
drwxr-xr-x 2 root root 4096 Feb  8 2018 Desktop
drwxr-xr-x 2 root root 4096 Feb  8 2018 Documents
drwxr-xr-x 2 root root 4096 Feb  8 2018 Downloads
-rw-r--r-- 1 root root 32 Feb  8 2018 file
drwxr-xr-x 2 root root 4096 Feb  8 2018 Music
-r--r--r-- 1 root root 22 Oct 1 09:17 oslab1_03_9826653
drwxr-xr-x 2 root root 4096 Feb  8 2018 Pictures
drwxr-xr-x 2 root root 4096 Feb  8 2018 Public
drwxr-xr-x 2 root root 4096 Feb  8 2018 Templates
drwxr-xr-x 2 root root 4096 Nov 12 2019 tmpant
drwxr-xr-x 2 root root 4096 Feb  8 2018 Videos
root@zero:~#
```

zero: bash

9:18 AM

Q2)

10.0.4.15

```
zero: bash — Konsole
File Edit View Bookmarks Settings Help
root@zero:~# ifconfig
enp0s9: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.4.15 netmask 255.255.255.0 broadcast 10.0.4.255
    inet6 fe80::808f:42b6:8855:66b7 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:61:47:73 txqueuelen 1000 (Ethernet)
    RX packets 7997 bytes 10899474 (10.3 MiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 3298 bytes 210239 (205.3 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1 (Local Loopback)
    RX packets 8 bytes 396 (396.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 8 bytes 396 (396.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@zero:~#
```

Q3)

plasmashell

kwin_x11

krunner

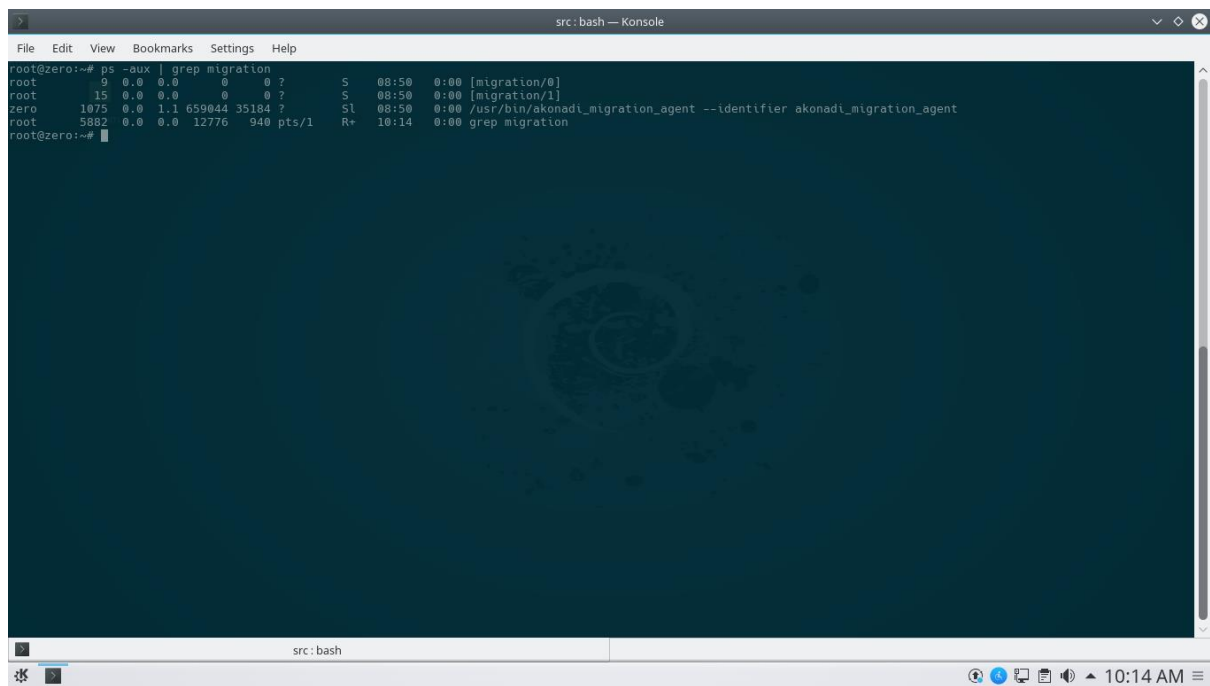
```
zero: top — Konsole
File Edit View Bookmarks Settings Help
top - 09:35:05 up 44 min, 3 users, load average: 0.16, 0.17, 0.12
Tasks: 144 total, 1 running, 143 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.0 us, 0.7 sy, 0.0 ni, 97.3 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
KiB Mem : 3084568 total, 1579204 free, 566828 used, 938556 buff/cache
KiB Swap: 0 total, 0 free, 0 used, 2342700 avail Mem

  PID USER      PR  NI   VIRT    RES    SHR   S  %CPU  %MEM     TIME+ COMMAND
 868 zero      20   0 3670420 208220 103580 S   0.0   6.0   0:14.23 plasmashell
 863 zero      20   0 3238384 133868  87536 S   4.0   4.3   4:04.28 kwin_x11
 866 zero      20   0 7940400  89096  69332 S   0.3   2.9   0:01.51 krunner
1266 zero      20   0 668872  80280  67392 S   0.7   2.6   0:07.60 konsole
 502 root       20   0 407664  75900  37876 S   1.3   2.5   0:28.88 Xorg
1074 zero      20   0 1201920 61812  53808 S   0.0   2.0   0:00.45 akonadi_mailfil
 913 zero      20   0 947164  61108  53184 S   0.0   2.0   0:00.64 korgac
1065 zero      20   0 1116012 59592  52052 S   0.0   1.9   0:00.47 akonadi_archive
1080 zero      20   0 962872  59400  51772 S   0.0   1.9   0:00.55 akonadi_sendlat
1021 zero      20   0 564276  56028  15608 S   0.0   1.8   0:01.61 mysqld
1078 zero      20   0 1062952 55936  48708 S   0.0   1.8   0:00.53 akonadi_notes_a
 752 zero      20   0 888692  52776  44412 S   0.0   1.7   0:01.64 kded5
1076 zero      20   0 785688  50720  43940 S   0.0   1.6   0:00.38 akonadi_newmail
1070 zero      39  19 693236  40704  35624 S   0.0   1.3   0:00.38 akonadi_indexin
 848 zero      20   0 619756  40092  35296 S   0.0   1.3   0:00.40 ksmserver
1069 zero      20   0 756876  39700  35568 S   0.0   1.3   0:00.50 akonadi_ical_re
1068 zero      20   0 757348  39036  35164 S   0.0   1.3   0:00.45 akonadi_followu
 875 zero      20   0 603404  38352  34152 S   0.0   1.2   0:00.35 kdeconnectd
1066 zero      20   0 752532  37736  33944 S   0.0   1.2   0:00.30 akonadi_birthda
1073 zero      20   0 892904  37524  33580 S   0.0   1.2   0:00.46 akonadi_maildis
1064 zero      20   0 668476  36032  32456 S   0.0   1.2   0:00.34 akonadi_akonote
1071 zero      20   0 668472  35984  32408 S   0.0   1.2   0:00.33 akonadi_maildir
 869 zero      20   0 676696  35632  31800 S   0.0   1.2   0:00.20 polkit-kde-auth
 892 zero      20   0 667756  35456  31544 S   0.0   1.1   0:00.31 org.kde.powerde
 934 zero      20   0 737080  35202  31428 S   0.0   1.1   0:00.26 kactivitymanage
1067 zero      20   0 658984  35232  31752 S   0.0   1.1   0:00.31 akonadi_contact
1075 zero      20   0 659044  35184  31712 S   0.0   1.1   0:00.28 akonadi_migrati
 583 zero      20   0 515004  33552  29936 S   0.0   1.1   0:00.21 kwalletd5
1253 zero      20   0 267916  33220  28296 S   0.0   1.1   0:00.43 kaccessibleapp
1017 zero      20   0 1661484 32432  26352 S   0.0   1.1   0:00.28 akonadiserver
 797 zero      20   0 500456  32256  27828 S   0.0   1.0   0:00.40 kglobalaccel5
 747 zero      20   0 497752  32032  28520 S   0.0   1.0   0:00.27 klauncher
1006 zero      20   0 501720  31656  27904 S   0.0   1.0   0:01.28 akonadi_control
 870 zero      20   0 505020  30924  27448 S   0.0   1.0   0:00.20 xembedsniproxy
 791 zero      20   0 510656  30732  26840 S   0.0   1.0   0:00.22 kaccess
1246 zero      20   0 250440  26912  23288 S   0.0   0.9   0:00.36 kuiserver
```

Q4)

```
zero : bash — Konsole
File Edit View Bookmarks Settings Help
root@zero:/usr/src/linux-source-4.9# find ./ -name syscall*.tbl
./tools/perf/arch/x86/entry/syscalls/syscall_64.tbl
./arch/x86/entry/syscalls/syscall_32.tbl
./arch/x86/entry/syscalls/syscall_64.tbl
root@zero:/usr/src/linux-source-4.9# cat ./arch/x86/entry/syscalls/syscall_64.tbl | grep "write" > 9826653_oslab1_q2
root@zero:/usr/src/linux-source-4.9# cat 9826653_oslab1_q2
1      common write      sys_write
18     common pwrite64    sys_pwrite64
28     64      writev     sys_writev
296    64      pwritev    sys_pwritev
311    64      process_vm_writev sys_process_vm_writev
328    64      pwritev2    sys_pwritev2
516    x32     writev     compat_sys_writev
535    x32     pwritev    compat_sys_pwritev64
540    x32     process_vm_writev compat_sys_process_vm_writev
547    x32     pwritev2    compat_sys_pwritev64v2
root@zero:/usr/src/linux-source-4.9#
```

Q5)

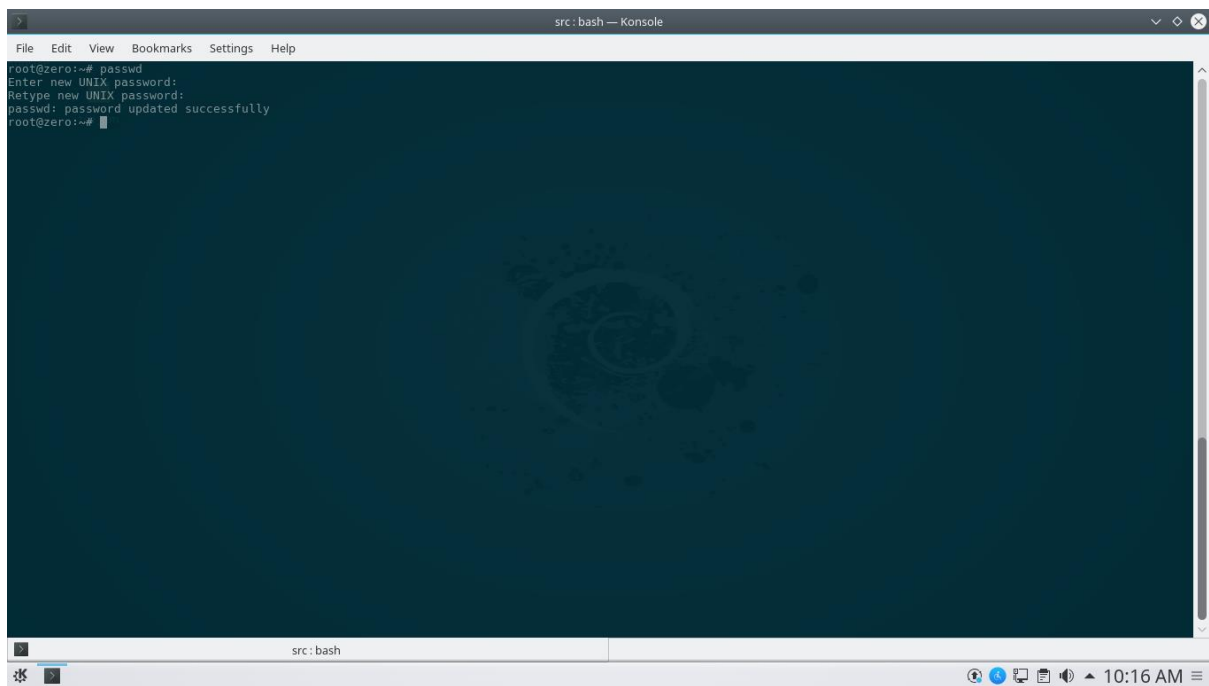


The screenshot shows a terminal window titled "src: bash — Konsole". The terminal displays the output of the command `ps -aux | grep migration`. The output lists four processes related to migration, with the first three being idle and the fourth being the `grep migration` process itself.

| USER | PID | %CPU | %MEM | VSZ | SSZ | STAT | TIME | COMMAND |
|------|------|------|------|--------|-------|------|-------|--|
| root | 9 | 0.0 | 0.0 | 0 | 0 | S | 00:50 | 0:00 [migration/0] |
| root | 15 | 0.0 | 0.0 | 0 | 0 | S | 00:50 | 0:00 [migration/1] |
| zero | 1075 | 0.0 | 1.1 | 659044 | 35184 | Sl | 00:50 | 0:00 /usr/bin/akonadi_migration_agent --identifier akonadi_migration_agent |
| root | 5882 | 0.0 | 0.0 | 12776 | 940 | R+ | 10:14 | 0:00 grep migration |

The terminal window has a menu bar with "File", "Edit", "View", "Bookmarks", "Settings", and "Help". The status bar at the bottom shows the time as 10:14 AM and includes system icons for network, volume, and battery.

Q6)

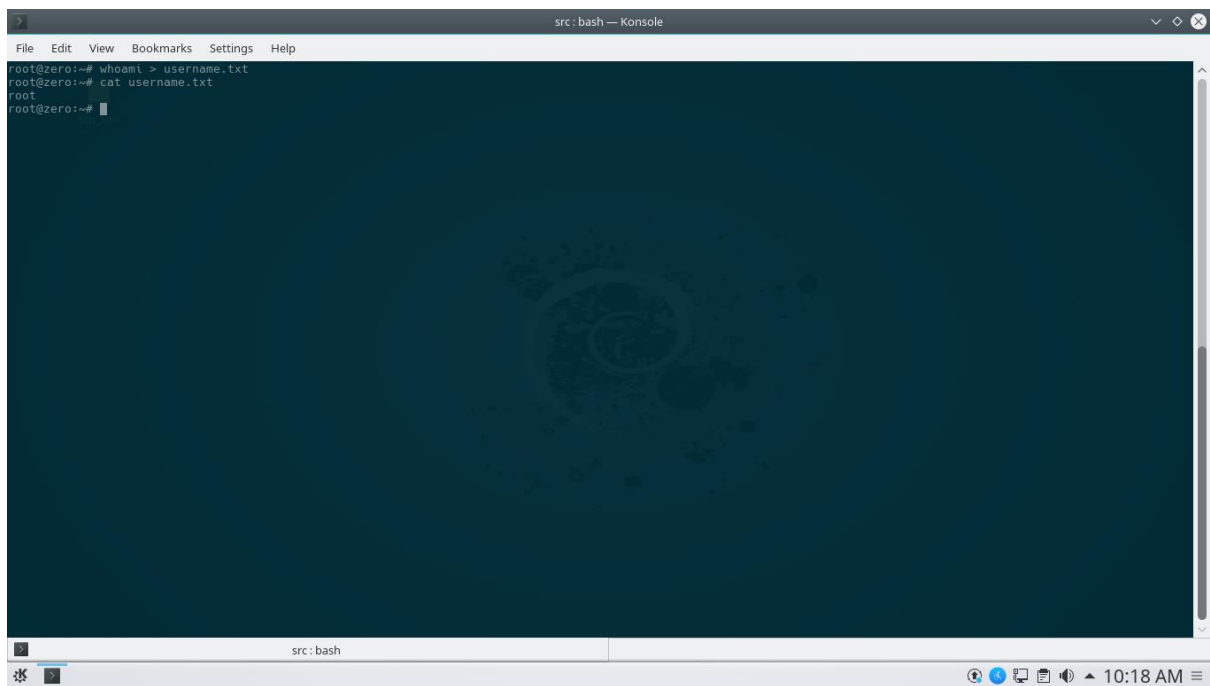


The image shows a terminal window titled "src: bash — Konsole". The terminal content is as follows:

```
root@zero:~# passwd
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
root@zero:~#
```

The terminal window has a menu bar with "File", "Edit", "View", "Bookmarks", "Settings", and "Help". The background of the terminal is dark blue with a faint, circular, abstract pattern. The window's title bar includes standard window controls (minimize, maximize, close). The bottom of the window shows a taskbar with various system icons and the time "10:16 AM".

Q7)

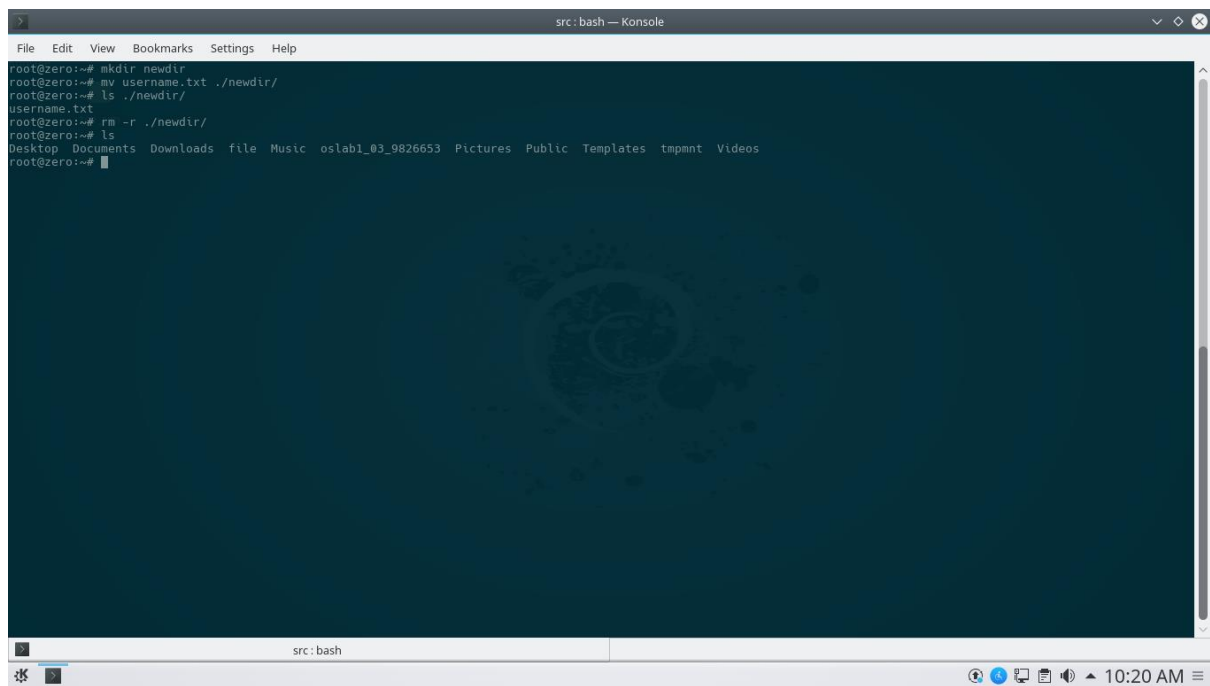


The image shows a terminal window titled "src: bash — Konsole". The terminal has a menu bar with "File", "Edit", "View", "Bookmarks", "Settings", and "Help". The command history is as follows:

```
root@zero:~# whoami > username.txt
root@zero:~# cat username.txt
root
root@zero:~#
```

The terminal background is dark blue with a faint, circular, fractal-like pattern in the center. The bottom of the window shows a taskbar with system icons and the time "10:18 AM".

Q8)



```
src: bash — Konsole
File Edit View Bookmarks Settings Help
root@zero:~# mkdir newdir
root@zero:~# mv username.txt ./newdir/
root@zero:~# ls ./newdir/
username.txt
root@zero:~# rm -r ./newdir/
root@zero:~# ls
Desktop Documents Downloads file Music oslab1_03_9826653 Pictures Public Templates tmpmnt Videos
root@zero:~#
```

The image shows a terminal window titled "src: bash — Konsole". The window has a menu bar with "File", "Edit", "View", "Bookmarks", "Settings", and "Help". The terminal content shows a series of commands and their outputs: "mkdir newdir", "mv username.txt ./newdir/", "ls ./newdir/" (output: "username.txt"), "rm -r ./newdir/", and "ls" (output: "Desktop Documents Downloads file Music oslab1_03_9826653 Pictures Public Templates tmpmnt Videos"). The terminal has a dark background with a faint, circular, fractal-like pattern in the center. The window's title bar and a system tray at the bottom are visible.