



دانشگاه صنعتی اصفهان
دانشکده مهندسی برق و کامپیوتر

عنوان: تکلیف اول آزمایشگاه سیستم عامل

نام و نام خانوادگی: علیرضا ابره فروش

شماره دانشجویی: ۹۸۱۶۶۰۳

نیم سال تحصیلی: پاییز ۱۴۰۰

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۱.۱

```
alireza@ubuntu:~/Desktop$ cd ../../..
alireza@ubuntu:/$ pwd
/
alireza@ubuntu:/$ ls -la
total 945508
drwxr-xr-x 20 root root 4096 Sep 28 05:16 .
drwxr-xr-x 20 root root 4096 Sep 28 05:16 ..
lrwxrwxrwx 1 root root 7 Sep 28 05:11 bin -> usr/bin
drwxr-xr-x 4 root root 4096 Sep 28 06:10 boot
drwxrwxr-x 2 root root 4096 Sep 28 05:16 cdrom
drwxr-xr-x 20 root root 4200 Oct 1 12:57 dev
drwxr-xr-x 130 root root 12288 Oct 1 09:26 etc
drwxr-xr-x 3 root root 4096 Sep 28 05:18 home
lrwxrwxrwx 1 root root 7 Sep 28 05:11 lib -> usr/lib
lrwxrwxrwx 1 root root 9 Sep 28 05:11 lib32 -> usr/lib32
lrwxrwxrwx 1 root root 9 Sep 28 05:11 lib64 -> usr/lib64
lrwxrwxrwx 1 root root 10 Sep 28 05:11 libx32 -> usr/libx32
drwx----- 2 root root 16384 Sep 28 05:11 lost+found
drwxr-xr-x 3 root root 4096 Apr 23 2020 media
drwxr-xr-x 2 root root 4096 Apr 23 2020 mnt
drwxr-xr-x 2 root root 4096 Sep 28 05:40 opt
dr-xr-xr-x 379 root root 0 Oct 1 12:57 proc
drwx----- 4 root root 4096 Sep 28 23:31 root
drwxr-xr-x 31 root root 820 Oct 1 12:57 run
lrwxrwxrwx 1 root root 8 Sep 28 05:11/sbin -> usr/sbin
drwxr-xr-x 9 root root 4096 Sep 28 23:29 snap
drwxr-xr-x 2 root root 4096 Apr 23 2020 srv
-rw----- 1 root root 968110080 Sep 28 05:11 swapfile
dr-xr-xr-x 13 root root 0 Oct 1 12:57 sys
drwxrwxrwt 19 root root 4096 Oct 1 13:00 tmp
drwxr-xr-x 14 root root 4096 Apr 23 2020 usr
drwxr-xr-x 14 root root 4096 Apr 23 2020 var
alireza@ubuntu:/$
```

شکل ۱: دایرکتوری‌های *proc* و *sys* برای مالک اجازه *write* ندارند.

۲.۱

```
alireza@ubuntu:/$ pwd
/
alireza@ubuntu:/$ cd ~
alireza@ubuntu:~$ pwd
/home/alireza
alireza@ubuntu:~$ touch oslab1_groupno
alireza@ubuntu:~$ ls -l
total 32
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Desktop
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Documents
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Downloads
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Music
-rw-rw-r-- 1 alireza alireza 0 Sep 28 06:32 oslab1_groupno
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Pictures
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Public
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Templates
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Videos
alireza@ubuntu:~$
```

شکل ۲: زمان آخرین دسترسی به فایل ۰۶:۳۲ می باشد.

۳.۱

```
alireza@ubuntu:~$ vim oslab1_groupno
alireza@ubuntu:~$ ls -l
total 36
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Desktop
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Documents
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Downloads
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Music
-rw-rw-r-- 1 alireza alireza 29 Sep 28 06:35 oslab1_groupno
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Pictures
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Public
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Templates
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Videos
alireza@ubuntu:~$ cat oslab1_groupno
Alireza
Abrehforoush
9816603
alireza@ubuntu:~$ touch oslab1_groupno
alireza@ubuntu:~$ ls -l
total 36
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Desktop
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Documents
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Downloads
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Music
-rw-rw-r-- 1 alireza alireza 29 Sep 28 06:37 oslab1_groupno
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Pictures
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Public
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Templates
drwxr-xr-x 2 alireza alireza 4096 Sep 28 05:44 Videos
alireza@ubuntu:~$ vim oslab1_groupno
alireza@ubuntu:~$ cat oslab1_groupno
Alireza
Abrehforoush
9816603
```

شکل ۳: زمان آخرین دسترسی به فایل ۰۶:۳۵ می باشد.

۴.۱

```
alireza@ubuntu:~$ pwd
/home/alireza
alireza@ubuntu:~$ sudo su
[sudo] password for alireza:
root@ubuntu:/home/alireza# cd ../../root
root@ubuntu:~# ls -l
total 0
root@ubuntu:~# cd home/alireza
bash: cd: home/alireza: No such file or directory
root@ubuntu:~# cd /home/alireza
root@ubuntu:/home/alireza# cp oslab1_groupno ../../root
root@ubuntu:/home/alireza# cd ../../root
root@ubuntu:~# ls -l
total 4
-rw-r--r-- 1 root root 29 Sep 28 06:47 oslab1_groupno
root@ubuntu:~# chmod 555 oslab1_groupno
root@ubuntu:~# ls -l
total 4
-r-xr-xr-x 1 root root 29 Sep 28 06:47 oslab1_groupno
root@ubuntu:~#
```

شکل ۴

۲

```
alireza@ubuntu:~$ ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.48.129 netmask 255.255.255.0 broadcast 192.168.48.255
    inet6 fe80::f23e:4325:73b2:c59a prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:ec:a5:c9 txqueuelen 1000 (Ethernet)
    RX packets 132422 bytes 184604276 (184.6 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 42243 bytes 2680766 (2.6 MB)
    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 1000 (Local Loopback)
    RX packets 555 bytes 59870 (59.8 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 555 bytes 59870 (59.8 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

alireza@ubuntu:~$
```

شکل ۵

۳

```
top - 07:08:31 up 57 min, 1 user, load average: 0.08, 0.09, 0.08
Tasks: 277 total, 1 running, 276 sleeping, 0 stopped, 0 zombie
%Cpu(s): 2.2 us, 0.2 sy, 0.0 ni, 97.7 id, 0.0 wa, 0.0 hi, 0.0 si, 0.0 st
MiB Mem : 3901.4 total, 1639.3 free, 861.3 used, 1400.9 buff/cache
MiB Swap: 923.3 total, 923.3 free, 0.0 used, 2795.6 avail Mem
```

| PID | USER | PR | NI | VIRT | RES | SHR | S | %CPU | %MEM | TIME+ | COMMAND |
|------|---------|-----|-----|---------|--------|--------|---|------|------|---------|-----------------------------|
| 1316 | alireza | 20 | 0 | 303384 | 74492 | 39912 | S | 3.3 | 1.9 | 0:51.30 | Xorg |
| 1481 | alireza | 20 | 0 | 4017792 | 235320 | 102788 | S | 2.0 | 5.9 | 1:08.96 | gnome-shell |
| 7 | root | 20 | 0 | 0 | 0 | 0 | I | 0.3 | 0.0 | 0:04.45 | kworker/0:1-events |
| 1659 | alireza | 20 | 0 | 298596 | 48148 | 29688 | S | 0.3 | 1.2 | 0:06.45 | vmtoolsd |
| 8563 | alireza | 20 | 0 | 11992 | 3908 | 3148 | R | 0.3 | 0.1 | 0:00.31 | top |
| 1 | root | 20 | 0 | 101952 | 11436 | 8428 | S | 0.0 | 0.3 | 0:05.29 | systemd |
| 2 | root | 20 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.02 | kthreadd |
| 3 | root | 0 | -20 | 0 | 0 | 0 | I | 0.0 | 0.0 | 0:00.00 | rcu_gp |
| 4 | root | 0 | -20 | 0 | 0 | 0 | I | 0.0 | 0.0 | 0:00.00 | rcu_par_gp |
| 6 | root | 0 | -20 | 0 | 0 | 0 | I | 0.0 | 0.0 | 0:00.00 | kworker/0:0H-events_highpri |
| 9 | root | 0 | -20 | 0 | 0 | 0 | I | 0.0 | 0.0 | 0:00.00 | mm_percpu_wq |
| 10 | root | 20 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | rcu_tasks_rude_ |
| 11 | root | 20 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | rcu_tasks_trace |
| 12 | root | 20 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.25 | ksoftirqd/0 |
| 13 | root | 20 | 0 | 0 | 0 | 0 | I | 0.0 | 0.0 | 0:00.95 | rcu_sched |
| 14 | root | rt | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.02 | migration/0 |
| 15 | root | -51 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | idle_inject/0 |
| 16 | root | 20 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | cpuhp/0 |
| 17 | root | 20 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | cpuhp/1 |
| 18 | root | -51 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | idle_inject/1 |
| 19 | root | rt | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.36 | migration/1 |
| 20 | root | 20 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.41 | ksoftirqd/1 |
| 22 | root | 0 | -20 | 0 | 0 | 0 | I | 0.0 | 0.0 | 0:00.00 | kworker/1:0H-events_highpri |
| 23 | root | 20 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.01 | kdevtmpfs |
| 24 | root | 0 | -20 | 0 | 0 | 0 | I | 0.0 | 0.0 | 0:00.00 | netns |
| 25 | root | 0 | -20 | 0 | 0 | 0 | I | 0.0 | 0.0 | 0:00.00 | inet_frag_wq |
| 26 | root | 20 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | kauditd |
| 28 | root | 20 | 0 | 0 | 0 | 0 | S | 0.0 | 0.0 | 0:00.00 | khungtaskd |

شکل ۶: Xorg و *gnome-shell* و *vmtoolsd* سه برنامه در حال اجرا هستند که بیشترین مقدار حافظه اصلی را استفاده می کنند.

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۱.۴

```
alireza@ubuntu:~$ sudo apt-get install linux-source
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  linux-source
0 upgraded, 1 newly installed, 0 to remove and 9 not upgraded.
Need to get 0 B/2,444 B of archives.
After this operation, 18.4 kB of additional disk space will be used.
Selecting previously unselected package linux-source.
(Reading database ... 188702 files and directories currently installed.)
Preparing to unpack .../linux-source_5.4.0.88.92_all.deb ...
Unpacking linux-source (5.4.0.88.92) ...
Setting up linux-source (5.4.0.88.92) ...
alireza@ubuntu:~$ cd ../../usr/src/
alireza@ubuntu:/usr/src$ ls
linux-headers-5.11.0-37-generic  linux-headers-5.4.0-26-generic  linux-source-5.4.0
linux-headers-5.4.0-26         linux-hwe-5.11-headers-5.11.0-37  linux-source-5.4.0.tar.bz2
alireza@ubuntu:/usr/src$ sudo tar -xf linux-source-5.4.0.tar.bz2
alireza@ubuntu:/usr/src$ find . -name syscall.tbl
./linux-source-5.4.0/tools/perf/arch/powerpc/entry/syscalls/syscall.tbl
./linux-source-5.4.0/tools/perf/arch/s390/entry/syscalls/syscall.tbl
./linux-source-5.4.0/arch/m68k/kernel/syscalls/syscall.tbl
./linux-source-5.4.0/arch/ia64/kernel/syscalls/syscall.tbl
./linux-source-5.4.0/arch/arm/tools/syscall.tbl
./linux-source-5.4.0/arch/microblaze/kernel/syscalls/syscall.tbl
./linux-source-5.4.0/arch/xtensa/kernel/syscalls/syscall.tbl
./linux-source-5.4.0/arch/sparc/kernel/syscalls/syscall.tbl
./linux-source-5.4.0/arch/powerpc/kernel/syscalls/syscall.tbl
./linux-source-5.4.0/arch/sh/kernel/syscalls/syscall.tbl
./linux-source-5.4.0/arch/parisc/kernel/syscalls/syscall.tbl
./linux-source-5.4.0/arch/s390/kernel/syscalls/syscall.tbl
./linux-source-5.4.0/arch/alpha/kernel/syscalls/syscall.tbl
alireza@ubuntu:/usr/src$
```

شکل ۷

۲.۴

۷ تا مربوط به write است.

```
alireza@ubuntu:/usr/src/linux-source-5.4.0/tools/perf/arch/powerpc/entry/syscalls$ sudo grep -i "write" syscall.tbl > ~/9816603_oslab1_q2
alireza@ubuntu:/usr/src/linux-source-5.4.0/tools/perf/arch/powerpc/entry/syscalls$ cat ~/9816603_oslab1_q2
4      common  write          sys_write
146    common  writev         sys_writev          compat_sys_writev
180    common  pwrite64       sys_pwrite64        compat_sys_pwrite64
199    nospu   pciconfig_write sys_pciconfig_write
321    common  pwritev        sys_pwritev          compat_sys_pwritev
352    nospu   process_vm_writev sys_process_vm_writev compat_sys_process_vm_writev
381    common  pwritev2       sys_pwritev2        compat_sys_pwritev2
alireza@ubuntu:/usr/src/linux-source-5.4.0/tools/perf/arch/powerpc/entry/syscalls$
```

شکل ۸

۵

```
alireza@ubuntu:~$ ps aux | grep -i migration
root      14  0.0  0.0   0   0 ?        S   Sep28   0:00 [migration/0]
root      19  0.0  0.0   0   0 ?        S   Sep28   0:00 [migration/1]
alireza   3108 0.0  0.0  9040 2500 pts/0    S+  00:09   0:00 grep --color=auto -i migration
alireza@ubuntu:~$
```

شکل ۹

۶

```
alireza@ubuntu:~$ passwd
Changing password for alireza.
Current password:
New password:
Retype new password:
You must choose a longer password
New password:
Retype new password:
passwd: password updated successfully
alireza@ubuntu:~$
```

شکل ۱۰

۷

```
alireza@ubuntu:~$ whoami > username.txt
alireza@ubuntu:~$ cat username.txt
alireza
alireza@ubuntu:~$
```

شکل ۱۱

۸

```
alireza@ubuntu:~$ mkdir newdir
alireza@ubuntu:~$ ls
Desktop Documents Downloads Music newdir oslab1_groupno Pictures Public Templates username.txt Videos
alireza@ubuntu:~$ pwd
/home/alireza
alireza@ubuntu:~$ mv username.txt ./newdir
alireza@ubuntu:~$ cd newdir/
alireza@ubuntu:~/newdir$ ls
username.txt
alireza@ubuntu:~/newdir$ cd ..
alireza@ubuntu:~$ rm -r newdir
alireza@ubuntu:~$ ls
Desktop Documents Downloads Music oslab1_groupno Pictures Public Templates Videos
alireza@ubuntu:~$
```

شکل ۱۲

منابع

[1] <https://www.geeksforgeeks.org>