



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

مدرس: دکتر محمدرضا حیدرپور

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۱.۱

```
alireza@ubuntu:~$ sudo su
[sudo] password for alireza:
root@ubuntu:/home/alireza# cd ../../root
root@ubuntu:~# ls -la
total 24
drwx----- 3 root root 4096 Sep 28 06:19 .
drwxr-xr-x 20 root root 4096 Sep 28 05:16 ..
-rw----- 1 root root 88 Sep 28 06:24 .bash_history
-rw-r--r-- 1 root root 3106 Dec 5 2019 .bashrc
drwx----- 2 root root 4096 Apr 23 2020 .cache
-rw-r--r-- 1 root root 161 Dec 5 2019 .profile
root@ubuntu:~#
```

شکل ۱: با توجه به اینکه کاراکتر سوم در همه موارد w است، هیچ دایرکتوری ای وجود ندارد که به مالک اجازه‌ی write ندهد.

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 می‌باشد.

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 tnet_frag_wq
   26 root      20   0    0     0    0 S  0.0   0.0   0:00.00 kaudtd
   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 می‌کنند.

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۵

```
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

۱.۵

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

۶

```
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

۷

```
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

۸

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

شکل ۱۱

۹

```
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/difference-between-two-tier-and-three-tier-database-architecture/>
- [2] <https://medium.com/@gacheruevans0/2-tier-vs-3-tier-architecture-26db56fe7e9c>
- [3] <https://www.softwaretestingclass.com/what-is-difference-between-two-tier-and-three-tier-architecture/>
- [4] <https://www.ibm.com/nl-en/cloud/learn/three-tier-architecture>
- [5] <https://nitrosphere.com/uncategorized/2-tier-vs-3-tier-application-architecture-could-the-winner-be-2-tier-2/>