

Lab 8

Practice Exercises

Practice 1

```
student@fedora:~  
> cat /etc/passwd  
root:x:0:0:Super User:/root:/bin/bash  
bin:x:1:1:bin:/bin:/usr/sbin/nologin  
daemon:x:2:2:daemon:/sbin:/usr/sbin/nologin  
adm:x:3:4:adm:/var/adm:/usr/sbin/nologin  
lp:x:4:7:lp:/var/spool/lpd:/usr/sbin/nologin  
sync:x:5:0:sync:/sbin:/bin/sync  
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown  
halt:x:7:0:halt:/sbin:/sbin/halt  
mail:x:8:12:mail:/var/spool/mail:/usr/sbin/nologin  
operator:x:11:0:operator:/root:/usr/sbin/nologin  
games:x:12:100:games:/usr/games:/usr/sbin/nologin  
ftp:x:14:50:FTP User:/var/ftp:/usr/sbin/nologin  
nobody:x:65534:65534:Kernel Overflow User:/:/usr/sbin/nologin  
  
student@fedora:~  
> tac /etc/passwd  
user:x:1000:1000:user:/home/koishi:/usr/bin/zsh  
student:x:1001:1001::/home/student:/usr/bin/zsh  
qemu:x:107:107:qemu user:/:/usr/sbin/nologin  
gluster:x:965:965:GlusterFS daemons:/run/gluster:/usr/sbin/nologin  
lightdm:x:967:967:LightDM daemon:/var/lib/lightdm:/sbin/nologin  
sstpc:x:971:968:Secure Socket Tunneling Protocol(SSTP) Client:/var/run/sstpc:/sbin/nologin  
nm-fortisslvpn:x:972:969:Default user for running openfortivpn spawned by NetworkManager:/:/sbin/nologin  
wsdd:x:973:970:Web Services Dynamic Discovery host daemon:/:/sbin/nologin  
firebird:x:974:971:/:/sbin/nologin  
stapunpriv:x:159:159:systemtap unprivileged user:/var/lib/stapunpriv:/sbin/nologin  
akmods:x:975:974>User is used by akmods to build akmod packages:/var/cache/akmods:/:/sbin/nologin  
dnsmasq:x:976:976:Dnsmasq DHCP and DNS server:/var/lib/dnsmasq:/usr/bin/nologin  
sshd:x:74:74:Privilege-separated SSH:/usr/share/empty.sshd:/usr/bin/nologin  
passim:x:978:978:Local Caching Server:/usr/share/empty:/usr/bin/nologin  
  
student@fedora:~  
> cat -nE /etc/passwd  
1 root:x:0:0:Super User:/root:/bin/bash$  
2 bin:x:1:1:bin:/bin:/usr/sbin/nologin$  
3 daemon:x:2:2:daemon:/sbin:/usr/sbin/nologin$  
4 adm:x:3:4:adm:/var/adm:/usr/sbin/nologin$  
5 lp:x:4:7:lp:/var/spool/lpd:/usr/sbin/nologin$  
6 sync:x:5:0:sync:/sbin:/bin/sync$  
7 shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown$  
8 halt:x:7:0:halt:/sbin:/sbin/halt$  
9 mail:x:8:12:mail:/var/spool/mail:/usr/sbin/nologin$  
10 operator:x:11:0:operator:/root:/usr/sbin/nologin$  
11 games:x:12:100:games:/usr/games:/usr/sbin/nologin$  
12 ftp:x:14:50:FTP User:/var/ftp:/usr/sbin/nologin$  
13 nobody:x:65534:65534:Kernel Overflow User:/:/usr/sbin/nologin$  
14 tss:x:59:59:Account used for TPM access:/:/usr/bin/nologin$  
15 dbus:x:81:81:System Message Bus:/:/usr/bin/nologin$  
16 systemd-oom:x:999:999:systemd Userspace OOM Killer:/:/usr/bin/nologin$  
17 polkitd:x:114:114:User for polkitd:/usr/sbin/nologin$
```

```
student@fedora:~  
> head -5 /etc/passwd  
root:x:0:0:Super User:/root:/bin/bash  
bin:x:1:1:bin:/bin:/usr/sbin/nologin  
daemon:x:2:2:daemon:/sbin:/usr/sbin/nologin  
adm:x:3:4:adm:/var/adm:/usr/sbin/nologin  
lp:x:4:7:lp:/var/spool/lpd:/usr/sbin/nologin  
> tail -5 /etc/passwd  
lightdm:x:967:967:LightDM daemon:/var/lib/lightdm:/sbin/nologin  
gluster:x:965:965:GlusterFS daemons:/run/gluster:/usr/sbin/nologin  
qemu:x:107:107:qemu user:/:/usr/sbin/nologin  
student:x:1001:1001:~/home/student:/usr/bin/zsh  
user:x:1000:1000:user:/home/koishi:/usr/bin/zsh  
> tail -1 /etc/passwd  
user:x:1000:1000:user:/home/koishi:/usr/bin/zsh  
> head -1 /etc/passwd  
root:x:0:0:Super User:/root:/bin/bash  
  
~ 15:59:47  
> █  
15824  
15825 Professor Michael S. Hart was the originator of the Project  
15826 Gutenberg™ concept of a library of electronic works that could be  
15827 freely shared with anyone. For forty years, he produced and  
15828 distributed Project Gutenberg™ eBooks with only a loose network of  
15829 volunteer support.  
15830  
15831 Project Gutenberg™ eBooks are often created from several printed  
15832 editions, all of which are confirmed as not protected by copyright in  
15833 the U.S. unless a copyright notice is included. Thus, we do not  
15834 necessarily keep eBooks in compliance with any particular paper  
15835 edition.  
15836  
15837 Most people start at our website which has the main PG search  
15838 facility: www.gutenberg.org.  
15839  
15840 This website includes information about Project Gutenberg™,  
15841 including how to make donations to the Project Gutenberg Literary  
15842 Archive Foundation, how to help produce our new eBooks, and how to  
15843 subscribe to our email newsletter to hear about new eBooks.  
15844  
15845  
~ 15:54:50  
> cat -n ~/Documents/sample_files/Txt/dracula.txt █
```

Practice 2

```
student@fedora:~  
> cut -d":" -f1 /etc/passwd  
root  
bin  
daemon  
adm  
lp  
sync  
shutdown  
halt  
mail  
operator  
games  
ftp  
nobody  
tss  
dbus  
systemd-oom  
polkitd  
systemd-coredump  
systemd-timesync  
chrony  
systemd-network  
systemd-resolve  
avahi  
unbound  
geoclue  
mysql  
openvpn  
nm-openvpn  
abrt  
nm-openconnect  
rtkit
```

```
student@fedora:~/Documents/sample_files/Csv
> cut -d";" -f1,4 --output-delimiter=" calories = " cereal.csv
name calories = calories
String calories = Int
100% Bran calories = 70
100% Natural Bran calories = 120
All-Bran calories = 70
All-Bran with Extra Fiber calories = 50
Almond Delight calories = 110
Apple Cinnamon Cheerios calories = 110
Apple Jacks calories = 110
Basic 4 calories = 130
Bran Chex calories = 90
Bran Flakes calories = 90
Cap'n'Crunch calories = 120
Cheerios calories = 110
Cinnamon Toast Crunch calories = 120
Clusters calories = 110
Cocoa Puffs calories = 110
Corn Chex calories = 110
Corn Flakes calories = 100
Corn Pops calories = 110
Count Chocula calories = 110
Cracklin' Oat Bran calories = 110
Cream of Wheat (Quick) calories = 100
Crispix calories = 110
Crispy Wheat & Raisins calories = 100
Double Chex calories = 100
Froot Loops calories = 110
Frosted Flakes calories = 110
Frosted Mini-Wheats calories = 100
Fruit & Fibre Dates, Halvuts, and Oats calories = 100
```

```
student@fedora:~  
> cut -d":" -f1,6 --output-delimiter=">" /etc/passwd  
root>/root  
bin>/bin  
daemon>/sbin  
adm>/var/adm  
lp>/var/spool/lpd  
sync>/sbin  
shutdown>/sbin  
halt>/sbin  
mail>/var/spool/mail  
operator>/root  
games>/usr/games  
ftp>/var/ftp  
nobody>/  
tss>/  
dbus>/  
systemd-oom>/  
polkitd>/  
systemd-coredump>/
```

```
student@fedora:~/Documents/sample_files/Csv  
> cut -d";" -f1 cereal.csv  
name  
String  
100% Bran  
100% Natural Bran  
All-Bran  
All-Bran with Extra Fiber  
Almond Delight  
Apple Cinnamon Cheerios  
Apple Jacks  
Basic 4  
Bran Chex  
Bran Flakes  
Cap'n'Crunch  
Cheerios  
Cinnamon Toast Crunch  
Clusters  
Cocoa Puffs  
Corn Chex  
Corn Flakes  
Corn Pops  
Count Chocula  
Cracklin' Oat Bran  
Cream of Wheat (Quick)
```

```
student@fedora:~/Documents/sample_files/Csv
> cut -d";" -f1,4 --output-delimiter=" calories = " cereal.csv
name calories = calories
String calories = Int
100% Bran calories = 70
100% Natural Bran calories = 120
All-Bran calories = 70
All-Bran with Extra Fiber calories = 50
Almond Delight calories = 110
Apple Cinnamon Cheerios calories = 110
Apple Jacks calories = 110
Basic 4 calories = 130
Bran Chex calories = 90
Bran Flakes calories = 90
Cap'n'Crunch calories = 120
Cheerios calories = 110
Cinnamon Toast Crunch calories = 120
Clusters calories = 110
Cocoa Puffs calories = 110
Corn Chex calories = 110
Corn Flakes calories = 100
Corn Pops calories = 110
Count Chocula calories = 110
Cracklin' Oat Bran calories = 110
Cream of Wheat (Quick) calories = 100
Crispix calories = 110
Crispy Wheat & Raisins calories = 100
Double Chex calories = 100
Froot Loops calories = 110
Frosted Flakes calories = 110
Frosted Mini-Wheats calories = 100
```

Practice 3

```

> sort cars.csv
AMC Ambassador Brougham;13.0;8;360.0;175.0;3821.;11.0;73;US
AMC Ambassador DPL;15.0;8;390.0;190.0;3850.;8.5;70;US
AMC Ambassador SST;17.0;8;304.0;150.0;3672.;11.5;72;US
AMC Concord;19.4;6;232.0;90.00;3210.;17.2;78;US
AMC Concord;24.3;4;151.0;90.00;3003.;20.1;80;US
AMC Concord d/l;18.1;6;258.0;120.0;3410.;15.1;78;US
AMC Concord DL;23.0;4;151.0;0;3035.;20.5;82;US
AMC Concord DL 6;20.2;6;232.0;90.00;3265.;18.2;79;US
AMC Gremlin;18.0;6;232.0;100.0;2789.;15.0;73;US
AMC Gremlin;19.0;6;232.0;100.0;2634.;13.0;71;US
AMC Gremlin;20.0;6;232.0;100.0;2914.;16.0;75;US
AMC Gremlin;21.0;6;199.0;90.00;2648.;15.0;70;US
AMC Hornet;18.0;6;199.0;97.00;2774.;15.5;70;US
AMC Hornet;18.0;6;232.0;100.0;2945.;16.0;73;US
AMC Hornet;19.0;6;232.0;100.0;2901.;16.0;74;US
AMC Hornet;22.5;6;232.0;90.00;3085.;17.6;76;US
AMC Hornet Sportabout (sw);18.0;6;258.0;110.0;2962.;13.5;71;US
AMC Matador;14.0;8;304.0;150.0;3672.;11.5;73;US
AMC Matador;15.0;6;258.0;110.0;3730.;19.0;75;US
AMC Matador;15.5;8;304.0;120.0;3962.;13.9;76;US
AMC Matador;16.0;6;258.0;110.0;3632.;18.0;74;US
AMC Matador;18.0;6;232.0;100.0;3288.;15.5;71;US
AMC Matador (sw);14.0;8;304.0;150.0;4257.;15.5;74;US
AMC Matador (sw);15.0;8;304.0;150.0;3892.;12.5;72;US
AMC Pacer;19.0;6;232.0;90.00;3211.;17.0;75;US
AMC Pacer d/l;17.5;6;258.0;95.00;3193.;17.8;76;US
AMC Rebel SST;16.0;8;304.0;150.0;3433.;12.0;70;US
AMC Rebel SST (sw);0;8;360.0;175.0;3850.;11.0;70;US
AMC Spirit DL;27.4;4;121.0;80.00;2670.;15.0;79;US
Audi 100LS;20.0;4;114.0;91.00;2582.;14.0;73;Europe
Audi 100LS;23.0;4;115.0;95.00;2694.;15.0;75;Europe
Audi 100 LS;24.0;4;107.0;90.00;2430.;14.5;70;Europe

```

Challenge

Amount of logs in file

```
> wc -l access.log  
100 access.log
```

First user to interact with application

```
> head -1 access.log  
2025-08-19 22:52:50 Touka /admin DENIED
```

Last user to interact with application

```
> tail -1 access.log  
2025-10-15 18:47:18 Asimov /admin FAIL
```

First 15 events in file

```
> head -15 -v access.log  
==> access.log <==  
2025-08-19 22:52:50 Touka /admin DENIED  
2025-11-01 08:58:29 Haruka /logout FAIL  
2025-09-16 20:54:09 Julia /404 DENIED  
2025-11-24 04:19:22 Annie /upload DENIED  
2025-10-18 18:57:08 Haruka /reset SUCCESS  
2025-03-20 20:07:05 Eren /settings SUCCESS  
2025-11-08 01:38:18 Julia /download FAIL  
2025-08-03 20:18:54 Touka /download FAIL  
2025-01-07 23:37:16 Touka /login DENIED  
2025-09-08 19:04:03 Honami /upload SUCCESS  
2025-05-28 06:46:39 Seras /download DENIED  
2025-12-09 03:34:05 Touka /dashboard DENIED  
2025-05-15 03:20:18 Honami /admin FAIL  
2025-05-14 20:40:34 Eren /logout SUCCESS  
2025-06-12 18:28:41 Spike /download FAIL
```

Last 15 events in file


```
> tail -v -n15 access.log
==> access.log <==
2025-02-22 16:52:09 Jet /404 SUCCESS
2025-10-15 00:44:13 Edward /upload FAIL
2025-11-10 23:52:31 Rize /404 SUCCESS
2025-09-19 10:37:14 Ein /settings DENIED
2025-05-28 19:41:03 Eren /admin SUCCESS
2025-08-14 10:21:44 Asimov /settings SUCCESS
2025-01-15 01:40:23 Rei /admin SUCCESS
2025-03-28 05:34:17 Ken /settings FAIL
2025-02-22 01:12:20 Shinji /login DENIED
2025-01-20 03:42:01 Touka /404 DENIED
2025-08-22 06:30:13 Jet /admin FAIL
2025-09-04 02:13:08 Edward /dashboard SUCCESS
2025-10-12 21:53:26 Arisu /reset FAIL
2025-11-18 14:23:49 Ken /admin FAIL
2025-10-15 18:47:18 Asimov /admin FAIL
```

All users that logged an event

```
> cut -d' ' -f3 access.log
Touka
Haruka
Julia
Annie
Haruka
Eren
Julia
Touka
Touka
Honami
Seras
Touka
Honami
Eren
Spike
Asimov
Jet
Haruka
Spike
Eren
Jet
Annie
Seras
Touka
Annie
Rei
```

Alphabetically ordered username log, saved file

```
> sort -t" " -k3 -o sorted_access_log_by_uname.log access.log
> ls -l sorted_access_log_by_uname.log
-rw-r--r--. 1 student student 4044 Dec 13 15:32 sorted_access_log_by_uname.log
```

Alphabetically ordered endpoint log, saved file

```
> sort -t" " -k4 -o sorted_access_log_by_endpoint.log access.log
```

Logfile Checks

```
> head -4 sorted_access_log_by_*.log
==> sorted_access_log_by_endpoint.log <==
2025-01-20 03:42:01 Touka /404 DENIED
2025-03-22 01:12:07 Kei /404 DENIED
2025-07-08 10:13:20 Spike /404 DENIED
2025-09-16 20:54:09 Julia /404 DENIED

==> sorted_access_log_by_uname.log <==
2025-04-21 14:46:35 Annie /admin FAIL
2025-01-06 20:07:06 Annie /login DENIED
2025-10-06 21:19:34 Annie /reset SUCCESS
2025-11-24 04:19:22 Annie /upload DENIED
```

Access delimiter command

```
student@fedora:~/Documents/accesslog
> cut -d" " -f3,4 --output-delimiter=" accessed: " access.log
Touka accessed: /admin
Haruka accessed: /logout
Julia accessed: /404
Annie accessed: /upload
Haruka accessed: /reset
Eren accessed: /settings
Julia accessed: /download
Touka accessed: /download
Touka accessed: /login
Honami accessed: /upload
Seras accessed: /download
Touka accessed: /dashboard
Honami accessed: /admin
Eren accessed: /logout
Spike accessed: /download
Asimov accessed: /reset
Jet accessed: /logout
Haruka accessed: /admin
Spike accessed: /dashboard
Eren accessed: /404
Jet accessed: /download
Annie accessed: /admin
Seras accessed: /logout
Touka accessed: /logout
Annie accessed: /login
Rei accessed: /reset
Touka accessed: /logout
Arisu accessed: /settings
Rei accessed: /settings
Rei accessed: /404
Jet accessed: /login
```