

# Lab 7 - Handling Files

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## Question 1: cat, tac, head, tail

```
alfonzo@CIS106: ~  
alfonzo@CIS106:~$ cat /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
```

```
alfonzo@CIS106: ~  
alfonzo@CIS106:~$ tac /etc/passwd  
mpd:x:128:29::/var/lib/mpd:/usr/sbin/nologin  
_flatpak:x:127:137:Flatpak system-wide installation helper,,,:/nonexistent  
sbin/nologin  
systemd-coredump:x:999:999:systemd Core Dumper:/usr/sbin/nologin  
alfonzo:x:1000:1000:Alfonzo,,,:/home/alfonzo:/bin/bash  
sssd:x:126:131:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin  
gdm:x:125:130:Gnome Display Manager:/var/lib/gdm3:/bin/false
```

```
alfonzo@CIS106: ~  
alfonzo@CIS106:~$ cat -ne /etc/passwd  
1 root:x:0:0:root:/root:/bin/bash$  
2 daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin$  
3 bin:x:2:2:bin:/bin:/usr/sbin/nologin$  
4 sys:x:3:3:sys:/dev:/usr/sbin/nologin$  
5 sync:x:4:65534:sync:/bin:/bin/sync$  
6 games:x:5:60:games:/usr/games:/usr/sbin/nologin$  
7 man:x:6:12:man:/var/cache/man:/usr/sbin/nologin$  
8 lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin$  
9 mail:x:8:8:mail:/var/mail:/usr/sbin/nologin$
```

```
alfonzo@CIS106: ~  
alfonzo@CIS106:~$ head -5 /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  
alfonzo@CIS106:~$
```

```
alfonzo@CIS106: ~  
alfonzo@CIS106:~$ tail -5 /etc/passwd  
sssd:x:126:131:SSSD system user,,,:/var/lib/sss:/usr/sbin/nologin  
alfonzo:x:1000:1000:Alfonzo,,,:/home/alfonzo:/bin/bash  
systemd-coredump:x:999:999:systemd Core Dumper:/:/usr/sbin/nologin  
_flatpak:x:127:137:Flatpak system-wide installation helper,,,:/nonex  
sbin/nologin  
mpd:x:128:29::/var/lib/mpd:/usr/sbin/nologin  
alfonzo@CIS106:~$
```

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## Question 2: cut

```
alfonzo@CIS106: ~  
alfonzo@CIS106:~$ cut -d ":" -f1 /etc/passwd  
root  
daemon  
bin  
sys  
sync  
games  
man
```

```
alfonzo@CIS106: ~  
alfonzo@CIS106:~$ cut -d ":" -f1,7 /etc/passwd  
root:/bin/bash  
daemon:/usr/sbin/nologin  
bin:/usr/sbin/nologin  
sys:/usr/sbin/nologin  
sync:/bin/sync  
games:/usr/sbin/nologin  
man:/usr/sbin/nologin  
lp:/usr/sbin/nologin  
mail:/usr/sbin/nologin  
sys:/usr/sbin/nologin
```

```
alfonzo@CIS106: ~
alfonzo@CIS106:~$ cut -d ":" --output-delimiter="=" -f1,7 /etc/passwd
root=/bin/bash
daemon=/usr/sbin/nologin
bin=/usr/sbin/nologin
sys=/usr/sbin/nologin
sync=/bin/sync
games=/usr/sbin/nologin
man=/usr/sbin/nologin
lp=/usr/sbin/nologin

alfonzo@CIS106: ~
alfonzo@CIS106:~$ cut -d ',' --complement -s -f3 /etc/passwd
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
systemd-timesync:x:102:104:systemd Time Synchronization,,:/run/systemd:/usr/sbin/nologin
tss:x:106:111:TPM software stack,,:/var/lib/tpm:/bin/false
avahi-autoipd:x:109:116:Avahi autoip daemon,,:/var/lib/avahi-autoipd:/usr/sbin/nologin
usbmux:x:110:46:usbmux daemon,,:/var/lib/usbmux:/usr/sbin/nologin
```

### Question 3 Paste, wc

```
alfonzo@CIS106: ~
alfonzo@CIS106:~$ curl -s https://cis106.com/assets/shopping.md -o shopping.md
alfonzo@CIS106:~$ curl -s https://cis106.com/assets/tasks.md -o tasks.md
alfonzo@CIS106:~$ paste shopping.md tasks.md
## Shopping      ## Tasks
1. Apples:       1. Do Laundry:
2. Meat:         2. Cook lunch:
3. Bread:        3. Clean room:
alfonzo@CIS106:~$ wc -l Documents/Books/dracula.txt
15860 Documents/Books/dracula.txt
alfonzo@CIS106:~$ wc -w Documents/Books/pride-and-prejudice.txt
124749 Documents/Books/pride-and-prejudice.txt
alfonzo@CIS106:~$ sort /etc/passwd
alfonzo:x:1000:1000:Alfonzo,,,:/home/alfonzo:/bin/bash
_apt:x:105:65534::/nonexistent:/usr/sbin/nologin
```

### Question 4 tr, grep

```
alfonzo@CIS106: ~  
alfonzo@CIS106:~$ ls Documents/Csv/  
cars.csv cereal.csv contacts.csv country.csv film.csv  
alfonzo@CIS106:~$ cat Documents/Csv/cereal.csv | tr ';' ' ', '  
name,mfr,type,calories,protein,fat,sodium,fiber,carbo,sugars,potass,vitamins,shelf,weight,cups,rating  
String,Categorical,Categorical,Int,Int,Int,Int,Float,Float,Int,Int,Int,Int,Float,Float,Float  
100% Bran,N,C,70,4,1,130,10,5,6,280,25,3,1,0.33,68.402973  
100% Natural Bran,Q,C,120,3,5,15,2,8,8,135,0,3,1,1,33.983679  
All-Bran,K,C,70,4,1,260,9,7,5,320,25,3,1,0.33,59.425505  
All-Bran with Extra Fiber,K,C,50,4,0,140,14,8,0,330,25,3,1,0.5,83.704912
```

```
alfonzo@CIS106: ~/Documents/Books  
alfonzo@CIS106:~/Documents/Books$ grep -i "love" pride-and-prejudice.txt  
that he _may_ fall in love with one of them, and therefore you  
persuade you at last. I was sure you loved your girls too well to  
anything. Lydia, my love, though you _are_ the youngest, I dare  
be fond of dancing was a certain step towards falling in love;  
first, and was in a way to be very much in love; but she  
who have heart enough to be really in love without encouragement.  
secure of him, there will be leisure for falling in love as  
love, from love to matrimony, in a moment. I knew you would be  
Well, Jane, make haste and tell us; make haste, my love."  
a gentleman at my brother Gardiner's in town so much in love with her,  
love!"
```

```
alfonzo@CIS106: ~/Documents/Books  
alfonzo@CIS106:~/Documents/Books$ grep -Ew "love|hate" pride-and-prejudice.txt  
that he _may_ fall in love with one of them, and therefore you  
anything. Lydia, my love, though you _are_ the youngest, I dare  
be fond of dancing was a certain step towards falling in love;  
"Come, Darcy," said he, "I must have you dance. I hate to see you  
first, and was in a way to be very much in love; but she  
who have heart enough to be really in love without encouragement.  
secure of him, there will be leisure for falling in love as  
love, from love to matrimony, in a moment. I knew you would be  
Well, Jane, make haste and tell us; make haste, my love."  
a gentleman at my brother Gardiner's in town so much in love with her,
```

```
alfonzo@CIS106: ~/Documents/Books  
alfonzo@CIS106:~/Documents/Books$ grep -on "love" dracula.txt  
845:love  
990:love  
997:love  
1459:love  
1500:love  
1581:love  
1581:love  
1587:love
```

Question 5 awk and sed

alfonzo@CIS106: ~/Documents/Csv

```
alfonzo@CIS106:~/Documents/Csv$ awk -F ";" '{print $1,$NF}' cars.csv
Car Origin
STRING CAT
Chevrolet Chevelle Malibu US
Buick Skylark 320 US
Plymouth Satellite US
AMC Rebel SST US
Ford Torino US
Ford Galaxie 500 US
Chevrolet Impala US
Plymouth Fury iii US
Pontiac Catalina US
AMC Ambassador DPL US
Citroen DS-21 Pallas Europe
Chevrolet Chevelle Concours (sw) US
Ford Torino (sw) US
Plymouth Satellite (sw) US
AMC Rebel SST (sw) US
```

alfonzo@CIS106: ~/Documents/Csv

```
alfonzo@CIS106:~/Documents/Csv$ awk -F ";" '{OFS=" made on "}{print $1,$NF}' cars.csv
Car made on Origin
STRING made on CAT
Chevrolet Chevelle Malibu made on US
Buick Skylark 320 made on US
Plymouth Satellite made on US
AMC Rebel SST made on US
Ford Torino made on US
Ford Galaxie 500 made on US
Chevrolet Impala made on US
Plymouth Fury iii made on US
Pontiac Catalina made on US
AMC Ambassador DPL made on US
```

```
the Ford Mustang GL has 4 cilinders and is made on US
the Volkswagen Pickup has 4 cilinders and is made on Europe
the Dodge Rampage has 4 cilinders and is made on US
the Ford Ranger has 4 cilinders and is made on US
the Chevy S-10 has 4 cilinders and is made on US
```

```
alfonzo@CIS106:~/Documents/Csv$ awk -F ";" '{print "the", $1,"has",$3,"cilinders","and is made on",$NF}' cars.csv
```

alfonzo@CIS106: ~/Documents/Csv

```
alfonzo@CIS106:~/Documents/Csv$ awk -F ";" '{print $3,$4,$5,$6,$7,$8,$NF}' cars.csv
Cylinders Displacement Horsepower Weight Acceleration Model Origin
INT DOUBLE DOUBLE DOUBLE DOUBLE INT CAT
8 307.0 130.0 3504. 12.0 70 US
8 350.0 165.0 3693. 11.5 70 US
8 318.0 150.0 3436. 11.0 70 US
8 304.0 150.0 3433. 12.0 70 US
8 302.0 140.0 3449. 10.5 70 US
8 429.0 198.0 4341. 10.0 70 US
8 454.0 220.0 4354. 9.0 70 US
8 440.0 215.0 4312. 8.5 70 US
8 455.0 225.0 4425. 10.0 70 US
8 390.0 190.0 3850. 8.5 70 US
```

alfonzo@CIS106: ~/Documents/Csv

```
alfonzo@CIS106:~/Documents/Csv$ awk -F ";" '{print toupper($1)}' cars.csv
CAR
STRING
CHEVROLET CHEVELLE MALIBU
BUICK SKYLARK 320
PLYMOUTH SATELLITE
AMC REBEL SST
FORD TORINO
FORD GALAXIE 500
CHEVROLET IMPALA
```

```
_Ground of inquiry._--Count Alucard's problem is to get back to his own
close to Alucard's castle as can be got by water.
over the Borgo, and find our way to the Castle of Alucard. Here, Madam
awful work, I laid in Alucard's tomb some of the Wafer, and so banished
clear line of Alucard's castle cut the sky; for we were so deep under
The Castle of Alucard now stood out against the red sky, and every stone
alfonzo@CIS106:~/Documents/Books$ sed 's/Dracula/Alucard/' dracula.txt
```

alfonzo@CIS106: ~

```
alfonzo@CIS106:~$ sed G /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
```

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subscribe to our email newsletter to hear about new eBooks.

```
alfonzo@CIS106:~/Documents/Books$ sed '/^$/d;G' pride-and-prejudice.txt
```

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## Question 6 I/O Redirection



```
alfonzo@CIS106: ~  
alfonzo@CIS106:~$ grep -n "/bin/bash" /etc/passwd  
1:root:x:0:0:root:/root:/bin/bash  
46:alfonzo:x:1000:1000:Alfonzo,,,:/home/alfonzo:/bin/bash  
alfonzo@CIS106:~$
```

```
alfonzo@CIS106: ~  
alfonzo@CIS106:~$ grep -n "/sbin/nologin" /etc/passwd | wc -l  
40  
alfonzo@CIS106:~$
```

```
alfonzo@CIS106: ~/Documents/Csv  
alfonzo@CIS106:~/Documents/Csv$ grep -in "ford" cars.csv | wc -l  
53  
alfonzo@CIS106:~/Documents/Csv$
```

```
alfonzo@CIS106: ~/Documents/Csv  
alfonzo@CIS106:~/Documents/Csv$ grep -cwo '^....' ~/Documents/Books/bible.txt  
4441  
alfonzo@CIS106:~/Documents/Csv$
```

## Challenge Question

```
alfonzo@CIS106:~/Documents/Csv$ cut -d ";" -f1 -s --output-delimiter="," cereal.csv | awk 'NR > 2 {print}'  
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  
...  
alfonzo@CIS106:~/Documents/Csv$  
alfonzo@CIS106:~/Documents/Csv$ cut -d ";" -f1 -s --output-delimiter="," cereal.csv | awk 'NR > 2 {print}' | sort -o cereal-sorted.csv  
alfonzo@CIS106:~/Documents/Csv$
```

```
alfonzo@CIS106:~/Documents/Csv$ awk -F ";" '{print $1,$4}' cereal.csv
name calories
String Int
100% Bran 70
100% Natural Bran 120
All-Bran 70
All-Bran with Extra Fiber 50
Almond Delight 110
Apple Cinnamon Cheerios 110
Apple Jacks 110
Basic 4 130
Bran Chex 90
Bran Flakes 90
Cap'n'Crunch 120
Cheerios 110
Cinnamon Toast Crunch 120
Clusters 110
Cocoa Puffs 110
Corn Chex 110
Corn Flakes 100
Corn Pops 110
```

```
alfonzo@CIS106: ~/Documents/Csv
```

```
alfonzo@CIS106:~/Documents/Csv$ cut -d ";" -f1,4 --output-delimiter="," cereal.csv
name,calories
String,Int
100% Bran,70
100% Natural Bran,120
All-Bran,70
All-Bran with Extra Fiber,50
Almond Delight,110
Apple Cinnamon Cheerios,110
Apple Jacks,110
Basic 4,130
Bran Chex,90
Bran Flakes,90
Cap'n'Crunch,120
Cheerios,110
Cinnamon Toast Crunch,120
Clusters,110
Cocoa Puffs,110
```