

Final Exam Group B

NOTICE:

Please rename filename to “Student ID_finalB”. For Example: 4109056026_finalB

Please remember to export to PDF before uploading it on iLearning.

If you do the following, you will get 0:

1. Leave the class room before the end time
2. Use cell phone or any other devices
3. Open course slides, webpages, or previous homework
4. Take the exam paper
5. Cheating

If you do the following, you will lose 10 points:

1. Upload your answer file to the wrong group in iLearning 3.0
2. Filename is not correct
3. Forget to convert docx to pdf

WARNING:

Don't use semicolon (;) or && if the question requires only one-line command.

Don't use the error message returned by the command as the answer to the question.

1. Create the following content, and complete the below questions. (The field Separator is Tab, and the word separator is space in Kind.txt)

Kind.txt

SunScreen	Anessa
SunScreen	Elixir
Cosmetic	Pair
Snack	White_Almond_Chocolate
Snack	Pocky_Strawberry
Snack	Pocky_Matcha

Price.txt

Anessa	1680
Elixir	6100
Pair	1280
White_Almond_Chocolate	220
Pocky_Strawberry	180
Pocky_Matcha	195

Number.txt

Anessa	1
Elixir	1
Pair	1
White_Almond_Chocolate	3
Pocky_Strawberry	2
Pocky_Matcha	2

- a) Use **one-line command** to merge the files into the files named “JapanExcel.txt” LIKE the below image. Then, show the content of “JapnaExcel.txt”

Anessa	SunScreen	1680	1
Elixir	SunScreen	6100	1
Pair	Cosmetic	1280	1
White_Almond_Chocolate	Snack	220	3
Pocky_Strawberry	Snack	180	2
Pocky_Matcha	Snack	195	2

ANS:

(You should type command and screenshot the result)

paste Kind.txt Kind.txt Price.txt Number.txt | cut -f2,3,6,8 > JapanExcel.txt

```
s109056026@s109056026-Apple-Virtualization-Generic-Platform:~$ paste Kind.txt Kind.txt Price.txt Number.txt | cut -f2,3,6,8 > JapanExcel.txt
s109056026@s109056026-Apple-Virtualization-Generic-Platform:~$ cat JapanExcel.txt
Anessa SunScreen 1680 1
Elixir SunScreen 6100 1
Pair Cosmetic 1280 1
White_Almond_Chocolate Snack 220 3
Pocky_Strawberry Snack 180 2
Pocky Matcha Snack 195 2
```

- b) Use **one-line command** to show the number of types I bought from Japan (based on the first line of Kind.txt.) **NOTICE: If types are duplicated, they can only be counted once.**

ANS:

(You should type command and screenshot the result)

cut -f1,1 Kind.txt | uniq | wc -l

```
s109056026@s109056026-Apple-Virtualization-Generic-Platform:~$ cut -f1,1 Kind.txt | uniq | wc -l
3
```

- c) Sort the contents of "JapanExcel.txt" in descending order by price (which is the third column), and display the top three lines. (You can just consider using character to compare, not real number.)

ANS:

(You should type command and screenshot the result)

sort +2 -3 -r JapanExcel.txt | head -3

```
s109056026@s109056026-Apple-Virtualization-Generic-Platform:~$ sort +2 -3 -r JapanExcel.txt |head -3
Elixir SunScreen 6100 1
White_Almond_Chocolate Snack 220 3
Pocky Matcha Snack 195 2
```

2. Regular expressions (regex or re) are powerful tools for pattern matching in text processing and data retrieval, using special characters and symbols to define search patterns. Please explain the following commands which include regular expressions.

a)

```
ls -a | egrep '.+\..*'
```

ANS:

(You should type explanation)

列出所有檔案和資料夾（包含隱藏檔案）名字中包含“(任意一個字元) + .” , 如：
etc.log, a.

b)

```
:s/.\\.\\.\\...\\/.g\\//g
```

(in the command mode of the vi editor)

ANS:

(You should type explanation)

在此行中所有符合字串“(任意一個字元) + . + (任意一個字元) + . + (任意兩個字元)” 改成 /g
c)

```
egrep "[^0-9SNsn]$" info.log
```

ANS:

(You should type explanation)

查找 info.log 中所有不符合以 0-9 或 S 或 N 或 s 或 n 做為結尾的那幾行

3. I have created my own website where people can fill in their personal information to join my upcoming graduation party. Besides classmates and friends from the same year, you have also invited some juniors and even some students from different departments. It will be the last crazy night of eating, drinking, playing board games, and chatting until dawn before facing life as a graduate student at NTHU. The collected information is stored in a CSV file called “partySheet.csv”, as shown below. It uses the comma (,) to separate every field, and the next line symbol to separate everyone’s information. Please complete the following questions.

SHIH-YU,4109056026,edmondyang1104@icloud.com
YUAN-LIN,4109056043,yuanlin@yahoo.com.tw

- a) I want to ensure how many people have written their student ID correctly according to the following rules :
1. The student ID starts with 41.
 2. Followed by 8 digits (0-9).
 3. The entire student ID must not contain any other symbols.
 4. You should consider that email may meet the above rules.
 5. You can consider that every field wouldn’t contain the comma (,).

Use **one-line command** to show the number of correct student ID in “partySheet.csv”.

ANS:

(You should type command only)

egrep „41[0-9]{8},“ partySheet.csv

egrep „41[0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9],“ partySheet.csv

- b) I want to know who does not share my good taste in using Yahoo as their email address. The rules for an Yahoo email address are as follows:

1. The email address must end with “@yahoo.com.tw”.
2. You need to consider carefully about some specific characters have another meaning.

Use **one-line command** to show the number of people who doesn't use Yahoo address in “partySheet.csv”.

ANS:

(You should type command only)

egrep -v “@yahoo\.com\.tw\$” partySheet.csv

- c) Show the contents of "partySheet.csv" sorted in reverse order from the 5th line.

ANS:

(You should type command only)

sort -r partySheet.csv | tail +5

4. File sharing in Unix systems involves the distribution and access of files across different users and systems. It allows multiple users to collaborate and share resources efficiently. Now, complete the following questions.

- a) How to establish a hard link and a soft link to the file named “Letter of Invitation”? (You need to create a hard link named "letter.hard" and a soft link named "letter.soft".)

ANS:

(You should type command only)

In “Letter of Invitation” “letter.hard”

In -s “Letter of Invitation” “letter.soft”

- b) If I removed the file “Letter of Invitation”, What happens with the hard link and the soft link?

ANS:

(You should type answer only)

Hard Link 還能正常使用，因為link count 不等於0，該檔案還沒消失
但soft link因為指向路徑中的檔案，而現在該路徑的檔案已經不見，所以已經失效

- c) Show the number of soft link file in the folder “/etc”.

ANS:

(You should type command and screenshot the result)

ls -l /etc | grep “^l” | wc -l

```
s109056026@s109056026-Apple-Virtualization-Generic-Platform:~$ ls -l /etc | grep "^\l" | wc -l
6
```

5. Use **one-line command** to show the last 12 lines of all current terminal sessions and background processes (including those executed by root).

ANS:

(You should type command and screenshot the result)

ps -aux | tail -12

```
s109056026@s109056026-Apple-Virtualization-Generic-Platform:~$ ps -aux | tail -12
root    7262  0.0  0.0      0   0 ?          I   10:35  0:00 [kworker/7:0-cgroup_destroy]
root    7263  0.0  0.0      0   0 ?          I   10:35  0:00 [kworker/4:0-cgroup_destroy]
root    7698  0.0  0.0      0   0 ?          I   10:35  0:00 [kworker/1:0-events]
root    8190  0.0  0.0      0   0 ?          I   10:35  0:00 [kworker/5:0-events]
root    8195  0.0  0.7 407644 29516 ?        Ssl  10:35  0:00 /usr/libexec/fwupd/fwupd
systemd+  8206  0.1  0.1 14992  6272 ?        Ss  10:35  0:04 /lib/systemd/systemd-oomd
root    11059  0.0  0.0      0   0 ?          I   10:55  0:00 [kworker/u16:0-events_power_efficient]
s109056+ 11095  0.0  1.9 3156580 76804 ?      Sl  11:09  0:00 gjs /usr/share/gnome-shell/extensions/ding@rastersoft.com/ding.js -E -P /usr/share/gnome-shell/extensions/ding@rastersoft.com -M 0 -D 0:0:2896:1812:2:54:0:0:0:0
root    11158  0.0  0.0      0   0 ?          I   11:10  0:00 [kworker/5:1]
root    11161  0.0  0.0      0   0 ?          I   11:10  0:00 [kworker/u16:1-events_unbound]
s109056+ 11168  0.0  0.0 13252  3456 pts/0     R+  11:15  0:00 ps -aux
s109056+ 11169  0.0  0.0  8124  1792 pts/0     R+  11:15  0:00 tail -12
```

6. Show the top 17 filenames and directory names that do not contain a dot (.) or a hyphen/dash (-) under the “/usr” folder, including all subdirectories at all levels.

ANS:

(You should type command and screenshot the result)

sudo find /usr !\(-name “*.*” -o -name “*\-*”\) -print | head -17
sudo find /usr \(! -name “*.*” -a ! -name “*\-*”\) -print | head -1

```
s109056026@s109056026-Apple-Virtualization-Generic-Platform:~$ find /usr !\(-name “*.*” -o -name “*\-*”\) -print | head -17
/usr
/usr/src
/usr/src/linux-hwe-6.5-headers-6.5.0-35/Kbuild
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/btrfs
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/btrfs/Kconfig
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/btrfs/Makefile
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/nfsd
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/nfsd/Kconfig
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/nfsd/Makefile
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/omfs
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/omfs/Kconfig
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/omfs/Makefile
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/hfsplus
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/hfsplus/Kconfig
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/hfsplus/Makefile
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/smb
s109056026@s109056026-Apple-Virtualization-Generic-Platform:~$ find /usr \(! -name “*.*” -a ! -name “*\-*”\) -print | head -17
/usr
/usr/src
/usr/src/linux-hwe-6.5-headers-6.5.0-35/Kbuild
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/btrfs
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/btrfs/Kconfig
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/btrfs/Makefile
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/nfsd
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/nfsd/Kconfig
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/nfsd/Makefile
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/omfs
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/omfs/Kconfig
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/omfs/Makefile
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/hfsplus
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/hfsplus/Kconfig
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/hfsplus/Makefile
/usr/src/linux-hwe-6.5-headers-6.5.0-35/fs/smb
```

7. Gzip (GNU zip) is a popular file compression utility in Unix and Unix-like operating systems. It is used to reduce the size of files for efficient storage and faster transmission over networks. Now, please tell me two different ways to uncompress the file named “secret.gz”.

ANS:

(You should type command only)

gunzip secret.gz

gzip -d secret.gz

uncompress secret.gz