???????

??????

- Use Bash Strict Mode

```
# quickly syntax
set -euo pipefail

# let script exit if a command fails
set -o errexit
# OR
set -e

# let script exit if an unsed variable is used
set -o nounset
# OR
set -u

# This setting prevents errors in a pipeline from being masked.
set -o pipefail

# for Debug
set -x

# setting IFS
IFS=$'\n\t'
```

How `set -o pipefail` works

```
$ grep some-string /non/existent/file | sort
grep: /non/existent/file: No such file or directory
$ echo $?
0

$ set -o pipefail
```

```
$ grep some-string /non/existent/file | sort
grep: /non/existent/file: No such file or directory
$ echo $?
2
```

How the `IFS` works

```
#!/bin/bash
names=(
  "Aaron Maxwell"
  "Wayne Gretzky"
  "David Beckham"
  "Anderson da Silva"
)

echo "With default IFS value..."
for name in ${names[@]}; do
  echo "$name"
done

echo ""
echo "With strict-mode IFS value..."
IFS=$'\n\t'
for name in ${names[@]}; do
  echo "$name"
done

############### Output #############
With default IFS value...
Aaron
Maxwell
Wayne
Gretzky
David
Beckham
Anderson
da
Silva

With strict-mode IFS value...
```

```
Aaron Maxwell
Wayne Gretzky
David Beckham
Anderson da Silva
```

???????

```
# 指定的檔案
readlink -f <file.name>

# 目前檔案
WORKDIR=$(readlink -f "$0") ;目前檔案的絕對路經
WORKDIR=$( cd $( dirname "$0" ) && pwd )
```

Script ????

```
$ echo $0
./test.sh

$ echo `basename $0`
test.sh
```

?????????

```
cat <<EOF
Welcome .....
□
Here are the messages that you want to show up
□□
EOF
```

???????????

Sample #1

```
#!/bin/sh
LOG="my.log"
(
....
) 2>&1 | tee -a $LOG
```

> ???????? python ??????????????????

Sample #2

```
temp=$(mktemp)
exec &> ${temp}

echo "All outputs will be saved into the file ${temp}."
```

Sample #3

```
#!/bin/bash
set -eu
exec 3>&1 4>&2
trap 'exec 2>&4 1>&3' 0 1 2 3
exec 1>/path/to/script.log 2>&1

# rest of the script below
dnf -y in foo bar
# firewall rules goes here
....
...
```

???????????

```
## *.old -> *.new
for fname in $(ls *.old);do echo "mv $fname ->"; echo $(echo $fname |sed 's/.old/.new/');mv
$fname $(echo $fname | sed 's/.old/.new/');done
```

????????????

```
mkdir {AAA,BBB,CCC}
```

???????

```
cp my.cfg{,.bak}
```

???????

? find

```
# 計算目前目錄底下所有檔案數
find . -type f | wc -l


# 計算第一層所有子目錄的檔案數並排序清單
find . -maxdepth 1 -type d -print0 | xargs -0 -I {} sh -c 'echo $(find {} -type f | wc -l) {}'
| sort -n
NOTE: 第一層子目錄名稱不可包含空格
```

? rsync

```
rsync --stats --dry-run -ax /usr /tmp


Number of files: 326,373 (reg: 211,698, dir: 24,284, link: 90,391)
Number of created files: 326,373 (reg: 211,698, dir: 24,284, link: 90,391)
Number of deleted files: 0
Number of regular files transferred: 211,698
Total file size: 7,180,685,730 bytes
Total transferred file size: 7,178,524,818 bytes

NOTE: 這指令實際不會作檔案複製, /tmp 只是一個假目錄, 回傳結果是 reg: 211698 就是檔案總數
```

? tree

```
tree /mydir -a | tail -n 1


5 directories, 56 files


NOTE: 當目錄底下有包含 symbolic link 也會被計算
```

???? SHELL ???

1. ?? pipe line

```
echo"md5sum $X > $X.sum "| bash
```

2. ?? eval

```
get_arch="uname -p"
if [ "`eval "$get_arch"`" = "i686" ]; then
....
```

```
fi
```

???? Shell

```
bash <(curl -fsSL https://raw.githubusercontent.com/IT-BAER/proxmorph/main/install.sh) install
```

??????????

?????

```
PROMPT_DIRTRIM=2
```

?? CSV ?

- Doing a database join with CSV files
- tvs-utils - eBay's TSV Utilities: Command line tools for large, tabular data files. Filtering, statistics, sampling, joins and more.
- How To Parse CSV Files In Bash Scripts In Linux
- How to convert JSON to CSV using Linux / Unix shell

```
#!/bin/bash
INPUT=data.cvs
OLDIFS=$IFS
IFS=','
[ ! -f $INPUT ] && { echo "$INPUT file not found"; exit 99; }
while read flname dob ssn tel status
do
echo "Name : $flname"
echo "DOB : $dob"
echo "SSN : $ssn"
echo "Telephone : $tel"
echo "Status : $status"
done < $INPUT
IFS=$OLDIFS
```

CSV and JSON

```
# JSON to CSV
cat df.json | jq -r '.[]| join(",")'
cat bingbot.json | jq -r '.prefixes[] | {cidr: .ipv4Prefix, comment: "BingBot"} | join(",")' >
```

```
bingbot.csv
```

JSON ?

- [GitHub] gron - Make JSON greppable!

?????

```
tmpfile1=$(mktemp)
tmpfile2="/tmp/$(basename $0).$$.tmp"
```

Get my public IP

```
curl ifconfig.me
curl ifconfig.me/ip
curl ifconfig.co
curl checkip.amazonaws.com
curl icanhazip.com
curl ipecho.net/plain

dig +short myip.opendns.com @resolver1.opendns.com
dig TXT +short o-o.myaddr.l.google.com @ns1.google.com
dig TXT +short o-o.myaddr.l.google.com @ns1.google.com | awk -F'"' '{print $2}'
```

?? IP

```
# On Linux
hostname -I
hostip=$(/sbin/ip a | awk '/eth[012]:|ens192:|bond0:/,/^$/' | grep -E "inet [0-9]{1,3}\.[0-9]{1,3}\.[0-9]{1,3}\.[0-9]{1,3}" | head -1 | awk -F " " '{print $2}' | cut -d"/" -f1)

# On AIX
hostip=$( ifconfig -a | grep inet | awk '{print $2}' | head -1 )
hostip=$( ifconfig -a | grep inet | awk '{print $2}' | sed -n '/\([0-9]\{1,3\}\.\)\{3\}[0-9]\{1,3\}/p' | head -1 )
```

??????????

```
# Way 1
du -a /var | sort -n -r | head -n 10
```

```
# Way 2
cd /path/to/some/where
du -hsx * | sort -rh | head -10
du -hsx -- * | sort -rh | head -10

# Way 3
find /path/to/dir/ -printf '%s %p\n'| sort -nr | head -10
find . -printf '%s %p\n'| sort -nr | head -10
## Skip directories and only display files
find /path/to/search/ -type f -printf '%s %p\n'| sort -nr | head -10

# Create a shell alias
## shell alias ##
alias ducks='du -cks * | sort -rn | head'
## deal with special files names ##
alias ducks='du -cks -- * | sort -rn | head'
```

????????

```
# With tr
for f in *; do mv "$f" `echo $f | tr ' ' '_'`; done

# With find
find . -type f -name "* *.xml" -exec bash -c 'mv "$0" "${0// /_}"' {} \;
```

read

????

```
echo -n "MySQL username: " ; read username
echo -n "MySQL password: " ; stty -echo ; read password ; stty echo ; echo
```

Yes/No

```
while true; do
echo "The Server IP is $serverip"
read -p "Are you sure that you want to continue? (y/N): " input
input=${input:-n}
    case "$input" in
```

```
        y|Y)
            echo
            break
            ;;
        n|N)
            echo "Exit"
            exit 1
            ;;
        *) echo "Please answer Y or N.";;
    esac
done
```

shuf: ????

```
curl -s https://www.imdb.com/list/ls020046354/export | cut -d ',' -f 6  | shuf
```

tree: ??????????

```
tree --dirsfirst --filelimit 10 --sort=name

# Display size of files
tree -s

# Display permissions of files
tree -p

# Display directory only
tree -d

# Display till a certain level/depth
tree -L 1

# List only those files that match pattern given
tree -P *screenshot*
```

sort : ????

```
sort -t ',' -k5,5 -k1,1 -k9,9 -k3,3 -k11,11 my.csv
```

- -t ????

- -k5,5 ??? 5 ?????????
- ?????????? 5, 1, 9, 3, 11 ?
- ???????????????? -k5,5n

timeout : ??????

```
timeout 10 tail -f /var/log/httpd/access.log
timeout 5m ping 8.8.8.8
timeout 300 tcpdump -n -w data.pcap

# Sending specific signal
# To get a list of all available signals, use the command kill -l .
timeout -s SIGKILL ping 8.8.8.8
```

variables : ??

??	??
$0	????
$1	?1???
$2	?2???
${10}	?10??? #10
$#	?????
$*	?????? (??????)
$@	?????? (?????????)
${$*}	????????????
${$@}	????????????
$?	?????????
$$	????? ID
$_	???????????
$!	????????? ID
u=${1:-root}	?? $1 ???????? root
u=${USER:-foo}	?? $USER ???????? foo
len=${#var}	?? $var ?????

?? $2 ?????????????

```
${varName?Error varName is not defined}
${varName:?Error varName is not defined or is empty}
```

- Introduction to Bash Shell Parameter Expansions

??????????

```
mkdir my-dir && cd $_
```

cut: ????

```
# AAA = BBB, 取出 BBB
cut -d= -f2

# 111 2222 33 444444 555, 取出 33 以後的所有內容
cut -d ' ' -f3-

# 檢視超長的文字
head -n 1 data.csv | wc  # 計算行的字元數
head data.csv | cut -c -30  # 列出前幾行的前 30 個字元, 如果要顯示後 30 個字元, 可以用 30-
```

tr: ??

```
# aaa bbb ccc
# 換成
# aaa
# bbb
# ccc
echo "aaa bbb ccc" | tr " " "\n"
```

xargs

??(Pipe) ??? stdin ???????

- How to Use the Powerful Xargs Command in Linux

printf: ?????

- %s ??
- %d ??

```
printf "%-40s .................%s\n" "Disable the service $1" "[$2]"

Disable the service apmd                 .................[OK]
Disable the service bluetooth            .................[OK]
Disable the service hidd                 .................[OK]
Disable the service cups                 .................[OK]
Disable the service firstboot            .................[OK]
Disable the service readahead_early      .................[OK]

printf "%40s .................%s\n" "Disable the service $1" "[$2]"

                Disable the service apmd .................[OK]
           Disable the service bluetooth .................[OK]
                Disable the service hidd .................[OK]
                Disable the service cups .................[OK]
           Disable the service firstboot .................[OK]
     Disable the service readahead_early .................[OK]
```

??????

```
printf "%.0f" 9.46666667 # output: 10

printf "%.2f" 9.46666667 # output: 9.47
```

?????

```
line="-------------------------------------------------"
printf "+-%.10s-+-%.5s-+-%.6s-+\n" "$line" "$line" "$line"
printf "| %-10s | %-5s | %-6s |\n" "DATE" "CALLS" "ASR(%)"
printf "+-%.10s-+-%.5s-+-%.6s-+\n" "$line" "$line" "$line"

printf "| %.10s | %5d | %.2f  | %s\n" "$day" $calls $asr "$flag"

+------------+-------+--------+
| DATE       | CALLS | ASR(%) |
+------------+-------+--------+
| 2025-07-10 |  1442 | 97.57  |
| 2025-07-11 |  1266 | 96.99  |
| 2025-07-12 |  1162 | 97.24  |
| 2025-07-13 |   949 | 96.62  |
```

```
| 2025-07-14 |  1178 | 98.13  |
| 2025-07-15 |  1665 | 97.05  |
| 2025-07-16 |  1163 | 87.61  |
+------------+-------+--------+
```

```
#/bin/bash
seperator=--------------------
seperator=$seperator$seperator
rows="%-15s| %.7d| %3d| %c\n"
TableWidth=37

printf "%-15s| %-7s| %.3s| %s\n" Name ID Age Grades
printf "%.${TableWidth}s\n" "$seperator"
printf "$rows" "Sherlock Holmes" 122 23 A
printf "$rows" "James Bond" 7 27 F
printf "$rows" "Hercules Poirot" 6811 59 G
printf "$rows" "Jane Marple" 1234567 71 C


Name           | ID     | Age| Grades
-------------------------------------
Sherlock Holmes| 0000122|  23| A
James Bond     | 0000007|  27| F
Hercules Poirot| 0006811|  59| G
Jane Marple    | 1234567|  71| C
```

???????

```
printf -- '-%.0s' {1..80}
printf -- '=%.0s' {1..80}
```

ping: ???? IP ??

```
{ for p in {1..254}; do ping -c1 -w1 10.22.9.$p & done } | grep "64 bytes"
```

nice: Reduce CPU and Disk load of backup scripts

```
# Reduce the I/O priority of the /usr/local/bin/backup.sh script so that it does not interfere with other processes
# The -n parameter must be between 0 and 7, where lower numbers mean higher priority
/usr/bin/ionice -c2 -n7 /usr/local/bin/backup.sh

# To reduce the CPU priority, use the command nice
# The -n parameter can range from -20 to 19, where lower numbers mean higher priority
/usr/bin/nice -n 19 /usr/local/bin/backup.sh

# Nice and ionice can also be combined, to run a script at low I/O and CPU priority
/usr/bin/nice -n 19 /usr/bin/ionice -c2 -n7 /usr/local/bin/backup.sh
```

Hex to ASCII

```
# hex = 54657374696e672031203220330
# ascii = Testing 1 2 3

# xxd
echo 54657374696e672031203220330 | xxd -r -p && echo ''

# printf
printf '\x54\x65\x73\x74\x69\x6e\x67\x20\x31\x20\x32\x20\x33\x0' && echo ''

# sed
echo -n 54657374696e67203120322033 | sed 's/\([0-9A-F]\{2\}\)/\\\\\\x\1/gI' | xargs printf && echo ''
```

??????

```
genpasswd() {
local l=$1
       [ "$l" == "" ] && l=16
      tr -dc A-Za-z0-9_ < /dev/urandom | head -c ${l} | xargs
}
```

```
tr -dc A-Za-z0-9_ < /dev/urandom | head -c 16 | xargs

# Generate more than one
tr -dc A-Za-z0-9_ < /dev/urandom | fold -16 | head -5
```

```
#
echo FooBar$RANDOM | md5sum | base64 | cut -c 1-12
```

ls: ????

```
# Find the biggest zip file
ls -lSrh ~/Downloads/*.zip
```

stat: ????

```
❯ stat --printf='Name: %n\nPermissions: %a\n' my.log
Name: my.log
Permissions: 777

❯ stat --format="%F" my.log
regular file

# Symlink
❯ stat ~/bin/FoxitReader
  File: /home/alang/bin/FoxitReader ->
/home/alang/opt/foxitsoftware/foxitreader/FoxitReader.sh
  Size: 56        □Blocks: 0          IO Block: 4096   symbolic link
Device: 10302h/66306d□Inode: 787474      Links: 1
Access: (0777/lrwxrwxrwx)  Uid: ( 1000/   alang)   Gid: ( 1000/   alang)
Access: 2023-07-16 10:26:13.412193581 +0800
Modify: 2023-02-26 12:13:50.234374171 +0800
Change: 2023-02-26 12:13:50.234374171 +0800
 Birth: 2023-02-26 12:13:50.234374171 +0800

❯ stat -L ~/bin/FoxitReader
  File: /home/alang/bin/FoxitReader
  Size: 120       □Blocks: 8          IO Block: 4096   regular file
Device: 10302h/66306d□Inode: 1457222     Links: 1
Access: (0755/-rwxr-xr-x)  Uid: ( 1000/   alang)   Gid: ( 1000/   alang)
Access: 2023-07-02 14:34:09.957428285 +0800
Modify: 2023-02-26 12:13:50.246374250 +0800
Change: 2023-02-26 12:13:50.246374250 +0800
 Birth: 2023-02-26 12:13:48.530362986 +0800
```

less: ????

??????????

```
less -r yourfile
```

Revision #94
Created 2020-06-01 06:11:50 CST by A-Lang (Admin)
Updated 2026-02-25 11:48:53 CST by A-Lang (Admin)