

Task : Manage Server with Terminal

1. Perbedaan antara Shell dan BASH
2. BASH script untuk update dan upgrade server
3. BASH script untuk memberi akses ke port 22,80,443
4. Tugas text manipulation
 - contoh penggunaan cat, grep, echo & sort
 - mengganti text 'Dumbways' ke 'Bootcamp'
5. contoh penggunaan aplikasi monitoring

Challenge

- Tugas no. 4 dibuat dalam bentuk script BASH
 - Buat script instalasi node version manager menggunakan BASH
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1. Shell adalah system operasi berbasis teks (CLI) yang mana berfungsi sebagai penerjemah antara user dan system operasi sedangkan BASH adalah bahasa program scriptingnya

2. BASH script untuk update dan upgrade server :

Langkah pertama yaitu membuat file bash script dengan perintah

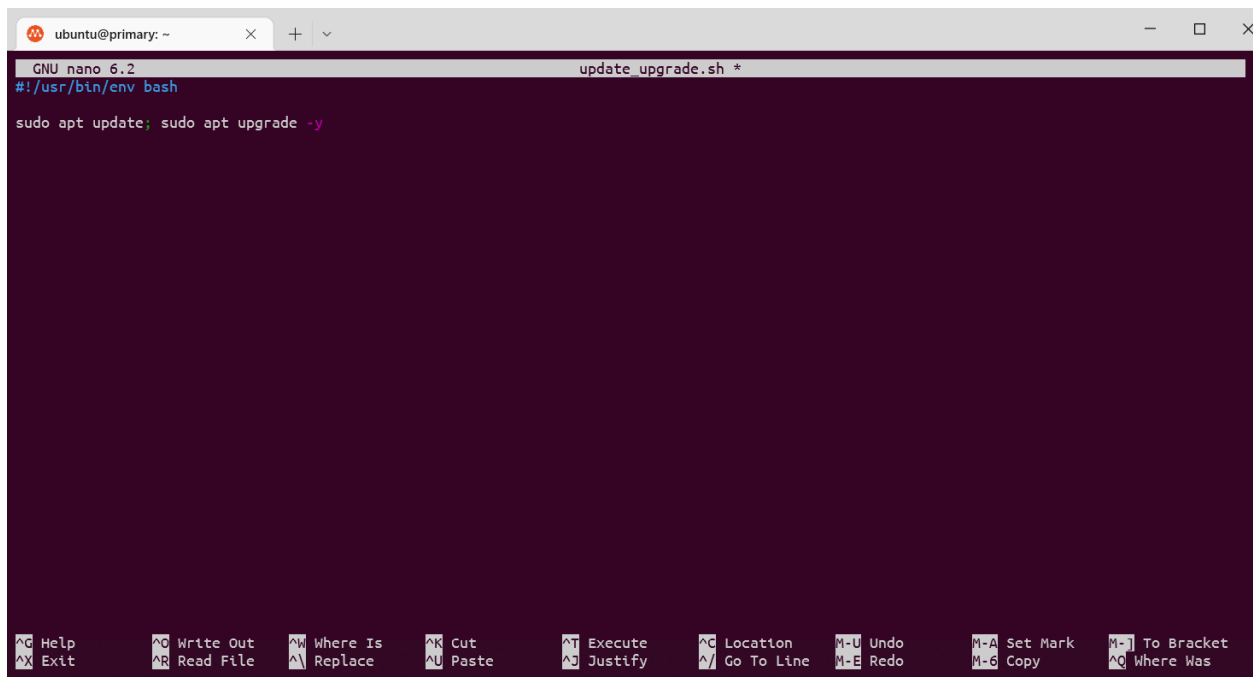
- nano update_upgrade.sh
- lalu input teks :
#!/usr/bin/env bash

sudo apt update; sudo apt upgrade -y

Setelah itu save dan execute dengan perintah :

- sh update_upgrade.sh

maka update dan upgrade atas otomatis berjalan



```
ubuntu@primary: ~  
GNU nano 6.2 update_upgrade.sh *  
#!/usr/bin/env bash  
  
sudo apt update; sudo apt upgrade -y  
  
^G Help    ^O Write Out  ^W Where Is  ^K Cut       ^T Execute   ^G Location  M-U Undo    M-A Set Mark M-J To Bracket  
^X Exit    ^R Read File  ^_ Replace   ^U Paste     ^J Justify   ^_/ Go To Line M-E Redo    M-C Copy     ^_ Where Was
```

```
ubuntu@primary: ~$ nano update_upgrade.sh
ubuntu@primary:~$ sh update_upgrade.sh
Get:1 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Hit:2 http://archive.ubuntu.com/ubuntu jammy InRelease
Get:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [114 kB]
Get:4 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [490 kB]
Get:5 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages [611 kB]
Get:6 http://archive.ubuntu.com/ubuntu jammy-backports InRelease [99.8 kB]
Get:7 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [726 kB]
Get:8 http://archive.ubuntu.com/ubuntu jammy-updates/restricted amd64 Packages [445 kB]
Get:9 http://archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [756 kB]
Fetched 3352 kB in 48s (69.7 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
1 package can be upgraded. Run 'apt list --upgradable' to see it.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
#
# News about significant security updates, features and services will
# appear here to raise awareness and perhaps tease /r/Linux ;)
# Use 'pro config set apt_news=false' to hide this and future APT news.
#
The following packages have been kept back:
rsync
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
ubuntu@primary:~$
```

3. BASH script untuk memberi akses ke port 22,80,443 :

Langkah pertama yaitu membuat file bash script dengan perintah

- nano aksesport.sh
- lalu input teks :
#!/usr/bin/env

```
sudo ufw app list
sudo ufw allow 22
sudo ufw allow 80
sudo ufw allow 443
sudo ufw status
```

Setelah itu save dan execute dengan perintah :

- sh aksesport.sh

maka port 22, 80 dan 443 otomatis sudah diberi akses

```
ubuntu@primary: ~  
GNU nano 6.2 aksesport.sh *  
#!/usr/bin/env  
  
sudo ufw app list  
sudo ufw allow 22  
sudo ufw allow 80  
sudo ufw allow 443  
sudo ufw status  
  
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute    ^G Location   M-U Undo      M-A Set Mark  M-I To Bracket  
^X Exit      ^R Read File  ^A Replace    ^U Paste      ^J Justify    ^_ Go To Line  M-E Redo      M-G Copy      ^Q Where Was
```

```
ubuntu@primary:~$ sh aksesport.sh  
Available applications:  
  OpenSSH  
Rule added  
Rule added (v6)  
Rule added  
Rule added (v6)  
Rule added  
Rule added (v6)  
Status: active  
  
To Action From  
--  
OpenSSH ALLOW Anywhere  
22 ALLOW Anywhere  
80 ALLOW Anywhere  
443 ALLOW Anywhere  
OpenSSH (v6) ALLOW Anywhere (v6)  
22 (v6) ALLOW Anywhere (v6)  
80 (v6) ALLOW Anywhere (v6)  
443 (v6) ALLOW Anywhere (v6)  
  
ubuntu@primary:~$
```

4. Tugas text manipulation

- contoh penggunaan cat, grep, echo & sort
- mengganti text 'Dumbways' :

Langkah pertama yaitu membuat file bash script dengan perintah

- nano teks.sh
- lalu input teks :
#!/usr/bin/env bash

```
cat cat  
cat file1
```

```
cat grep  
grep cacing file1
```

```
cat echo  
echo "elang" >> file1
```

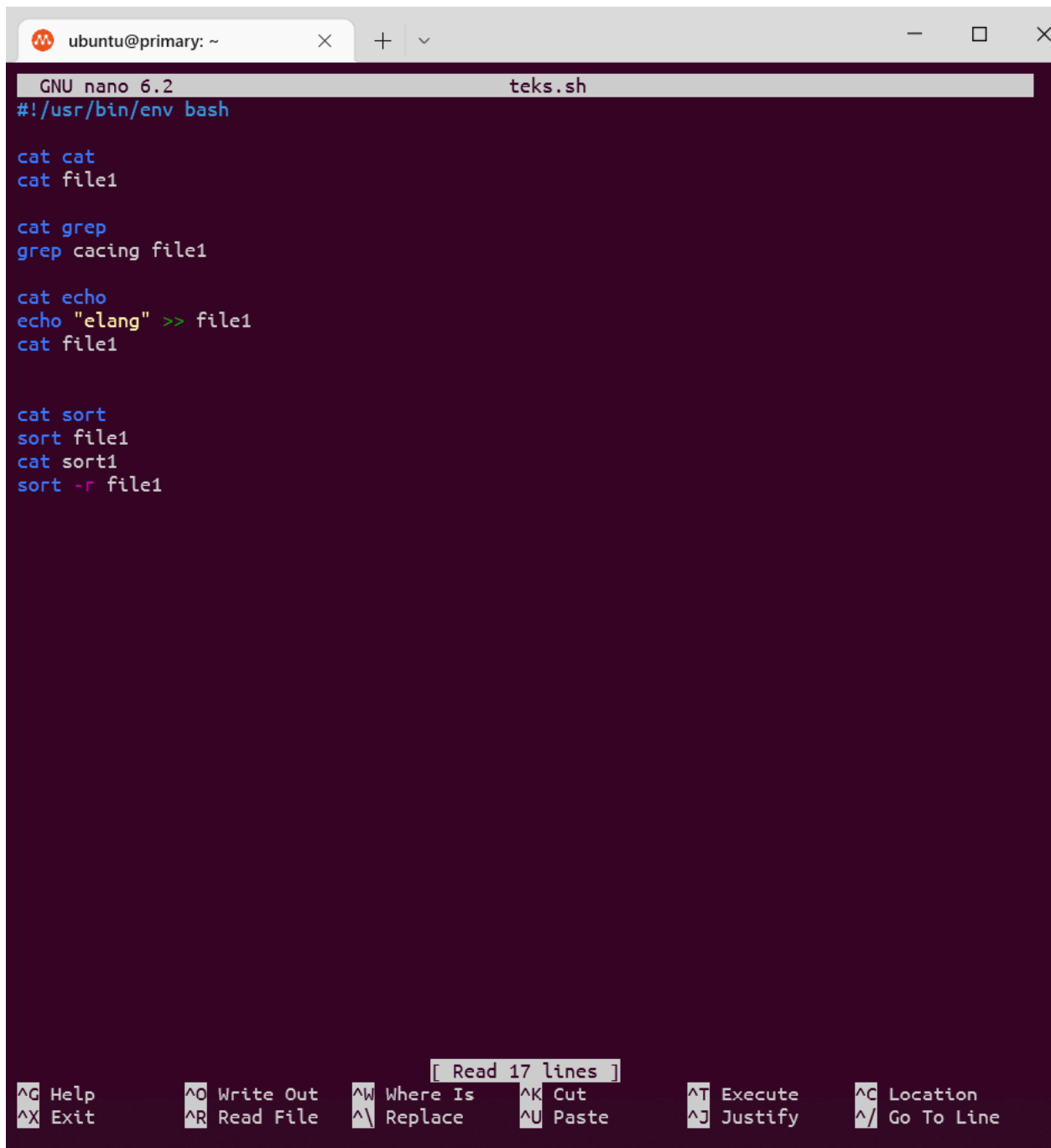
```
cat file1
```

```
cat sort  
sort file1  
cat sort1  
sort -r file1
```

Setelah itu save dan execute dengan perintah :

- teks.sh

maka teks.sh beserta teks perintah didalamnya akan berjalan otomatis



```
ubuntu@primary: ~  
GNU nano 6.2 teks.sh  
#!/usr/bin/env bash  
  
cat cat  
cat file1  
  
cat grep  
grep cacing file1  
  
cat echo  
echo "elang" >> file1  
cat file1  
  
cat sort  
sort file1  
cat sort1  
sort -r file1
```

[Read 17 lines]

^G Help	^O Write Out	^W Where Is	^K Cut	^T Execute	^C Location
^X Exit	^R Read File	^_ Replace	^U Paste	^J Justify	^/ Go To Line

```
ubuntu@primary: ~  
ubuntu@primary:~$ sh teks.sh  
Text manipulation cat  
ayam  
cacing  
burung  
domba  
Text manipulation grep  
cacing  
Text manipulation echo  
ayam  
cacing  
burung  
domba  
elang  
Text manipulation sort ascending  
  
ayam  
burung  
cacing  
domba  
elang  
teks manipulation sort descending  
elang  
domba  
cacing  
burung  
ayam  
ubuntu@primary:~$
```

5.

#htop

Langkah pertama untuk menggunakan aplikasi monitoring htop yaitu kita harus menginstallnya terlebih dahulu dengan menggunakan command “sudo apt install htop” lalu untuk menjalankannya cukup dengan mengetik “htop”. Maka akan muncul tampilan htop monitoring yang didalamnya terdapat banyak data, termasuk keterangan CPU, Memory, Swap, Tasks, Load average, Uptime dan lain2. Htop ini untuk penggunaannya lebih kepada memonitoring berapa resource yang sedang di gunakan.

```
ubuntu@primary: ~  
ubuntu@primary:~$ sudo apt install htop  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
htop is already the newest version (3.0.5-7build2).  
htop set to manually installed.  
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.  
ubuntu@primary:~$ htop
```

```
ubuntu@primary: ~  
CPU[ 0.0%] Tasks: 27, 31 thr; 1 running  
Mem[|||||174M/970M] Load average: 0.01 0.02 0.00  
Swp[ 0K/0K] Uptime: 03:02:44  


| PID | USER      | PRI | NI | VIRT  | RES   | SHR   | S | CPU% | MEM% | TIME+   | Command                    |
|-----|-----------|-----|----|-------|-------|-------|---|------|------|---------|----------------------------|
| 1   | root      | 20  | 0  | 99M   | 12868 | 8124  | S | 0.0  | 1.3  | 0:06.35 | /sbin/init                 |
| 339 | root      | 19  | -1 | 56068 | 10924 | 9804  | S | 0.0  | 1.1  | 0:00.92 | /lib/systemd/systemd-journ |
| 393 | root      | 20  | 0  | 23164 | 6812  | 4840  | S | 0.0  | 0.7  | 0:00.54 | /lib/systemd/systemd-udev  |
| 498 | systemd-t | 20  | 0  | 89352 | 6492  | 5688  | S | 0.0  | 0.7  | 0:00.23 | /lib/systemd/systemd-times |
| 501 | systemd-t | 20  | 0  | 89352 | 6492  | 5688  | S | 0.0  | 0.7  | 0:00.00 | /lib/systemd/systemd-times |
| 559 | systemd-n | 20  | 0  | 16232 | 8496  | 7460  | S | 0.0  | 0.9  | 0:00.20 | /lib/systemd/systemd-netwo |
| 561 | systemd-r | 20  | 0  | 25392 | 12340 | 8312  | S | 0.0  | 1.2  | 0:00.35 | /lib/systemd/systemd-resol |
| 668 | root      | 20  | 0  | 7284  | 2744  | 2504  | S | 0.0  | 0.3  | 0:00.04 | /usr/sbin/cron -f -P       |
| 669 | messagebu | 20  | 0  | 8760  | 5020  | 4192  | S | 0.0  | 0.5  | 0:00.93 | @dbus-daemon --system --ad |
| 676 | root      | 20  | 0  | 32992 | 18804 | 10160 | S | 0.0  | 1.9  | 0:00.38 | /usr/bin/python3 /usr/bin/ |
| 678 | root      | 20  | 0  | 228M  | 6700  | 6068  | S | 0.0  | 0.7  | 0:00.13 | /usr/libexec/polkitd --no- |
| 680 | syslog    | 20  | 0  | 217M  | 5500  | 4424  | S | 0.0  | 0.6  | 0:00.11 | /usr/sbin/rsyslogd -n -iNO |
| 681 | root      | 20  | 0  | 1303M | 28752 | 18820 | S | 0.0  | 2.9  | 0:02.97 | /usr/lib/snapd/snapd       |
| 682 | root      | 20  | 0  | 23916 | 7964  | 6712  | S | 0.0  | 0.8  | 0:00.58 | /lib/systemd/systemd-login |
| 684 | root      | 20  | 0  | 383M  | 12844 | 10720 | S | 0.0  | 1.3  | 0:00.34 | /usr/libexec/udisks2/udisk |
| 685 | root      | 20  | 0  | 228M  | 6700  | 6068  | S | 0.0  | 0.7  | 0:00.00 | /usr/libexec/polkitd --no- |
| 708 | root      | 20  | 0  | 383M  | 12844 | 10720 | S | 0.0  | 1.3  | 0:00.00 | /usr/libexec/udisks2/udisk |
| 709 | root      | 20  | 0  | 1303M | 28752 | 18820 | S | 0.0  | 2.9  | 0:00.50 | /usr/lib/snapd/snapd       |
| 710 | syslog    | 20  | 0  | 217M  | 5500  | 4424  | S | 0.0  | 0.6  | 0:00.04 | /usr/sbin/rsyslogd -n -iNO |
| 711 | syslog    | 20  | 0  | 217M  | 5500  | 4424  | S | 0.0  | 0.6  | 0:00.00 | /usr/sbin/rsyslogd -n -iNO |
| 712 | syslog    | 20  | 0  | 217M  | 5500  | 4424  | S | 0.0  | 0.6  | 0:00.03 | /usr/sbin/rsyslogd -n -iNO |
| 714 | root      | 20  | 0  | 228M  | 6700  | 6068  | S | 0.0  | 0.7  | 0:00.06 | /usr/libexec/polkitd --no- |
| 715 | root      | 20  | 0  | 383M  | 12844 | 10720 | S | 0.0  | 1.3  | 0:00.04 | /usr/libexec/udisks2/udisk |


```

#nmon

Langkah pertama untuk menggunakan aplikasi monitoring nmon yaitu kita harus menginstallnya terlebih dahulu dengan menggunakan command “sudo apt install nmon” lalu untuk menjalankannya cukup dengan mengetik “nmon”. Maka akan muncul tampilan nmon monitoring yang didalamnya terdapat banyak data, termasuk keterangan CPU Utilisation, Memory and Swap dan Disk I/O. Nmon ini untuk penggunaannya lebih kepada memonitoring berapa memory yang sedang di gunakan.

```
ubuntu@primary: ~  
ubuntu@primary:~$ sudo apt install nmon  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following NEW packages will be installed:  
  nmon  
0 upgraded, 1 newly installed, 0 to remove and 1 not upgraded.  
Need to get 69.3 kB of archives.  
After this operation, 177 kB of additional disk space will be used.  
Get:1 http://archive.ubuntu.com/ubuntu jammy/universe amd64 nmon amd64 16n+debian-1 [69.3 k  
B]  
Fetched 69.3 kB in 2s (41.1 kB/s)  
Selecting previously unselected package nmon.  
(Reading database ... 64442 files and directories currently installed.)  
Preparing to unpack .../nmon_16n+debian-1_amd64.deb ...  
Unpacking nmon (16n+debian-1) ...  
Setting up nmon (16n+debian-1) ...  
Processing triggers for man-db (2.10.2-1) ...  
Scanning processes...  
Scanning candidates...  
Scanning linux images...  
  
Running kernel seems to be up-to-date.  
  
Restarting services...  
Service restarts being deferred:  
  /etc/needrestart/restart.d/dbus.service  
  systemctl restart networkd-dispatcher.service  
  systemctl restart polkit.service  
  systemctl restart unattended-upgrades.service  
  
No containers need to be restarted.  
  
No user sessions are running outdated binaries.  
  
No VM guests are running outdated hypervisor (qemu) binaries on this host.  
ubuntu@primary:~$ nmon
```

```
ubuntu@primary: ~  
nmon-16n Hostname=primary Refresh= 2secs 13:42.58  
CPU Utilisation  
-----+-----+-----+-----+-----+  
CPU User% Sys% Wait% Idle|0 |25 |50 |75 |100|  
1 0.0 0.5 0.0 99.5|>  
-----+-----+-----+-----+-----+  
Memory and Swap  
-----+-----+-----+-----+-----+  
PageSize:4KB RAM-Memory Swap-Space High-Memory Low-Memory  
Total (MB) 969.5 0.0 - not in use - not in use  
Free (MB) 279.5 0.0  
Free Percent 28.8% 0.0%  
Linux Kernel Internal Memory (MB)  
Cached= 443.9 Active= 339.6  
Buffers= 24.4 Swapcached= 0.0 Inactive = 185.3  
Dirty = 0.0 Writeback = 0.0 Mapped = 70.1  
Slab = 71.4 Commit AS = 446.8 PageTables= 2.0  
Disk I/O /proc/diskstats mostly in KB/s Warning:contains duplicates  
-----+-----+-----+-----+-----+  
DiskName Busy Read WriteKB|0 |25 |50 |75 |100|  
loop0 0% 0.0 0.0|>  
loop1 0% 0.0 0.0|>  
loop2 0% 0.0 0.0|>  
loop3 0% 0.0 0.0|>  
sda 0% 0.0 0.0|>  
sda1 0% 0.0 0.0|>  
sda14 0% 0.0 0.0|>  
sda15 0% 0.0 0.0|>  
sr0 0% 0.0 0.0|>  
Totals Read-MB/s=0.0 Writes-MB/s=0.0 Transfers/sec=0.0
```

#lsof

Langkah pertama untuk menggunakan aplikasi monitoring lsof yaitu cukup mudah, hanya dengan mengetik "lsof". Maka akan muncul tampilan lsof monitoring yang didalamnya terdapat banyak data, termasuk keterangan CPU, Memory, Swap, Tasks, Load average, Uptime dan lain2. Lsof ini untuk penggunaannya lebih kepada memonitoring seluruh log aktifitas didalamnya.


```
ubuntu@primary: ~  
ubuntu@primary:~$ lsof  
COMMAND  PID  TID TASKCMD  USER  FD  TYPE  DEVICE SIZE/OFF  
NODE NAME  
systemd  1    1    /proc/1/cwd (readlink: Permission denied)  root  cwd  unknown  
systemd  1    1    /proc/1/root (readlink: Permission denied)  root  rtd  unknown  
systemd  1    1    /proc/1/exe (readlink: Permission denied)  root  txt  unknown  
systemd  1    1    /proc/1/fd (opendir: Permission denied)  root  NOFD  
kthreadd 2    2    /proc/2/cwd (readlink: Permission denied)  root  cwd  unknown  
kthreadd 2    2    /proc/2/root (readlink: Permission denied)  root  rtd  unknown  
kthreadd 2    2    /proc/2/exe (readlink: Permission denied)  root  txt  unknown  
kthreadd 2    2    /proc/2/fd (opendir: Permission denied)  root  NOFD  
rcu_gp    3    3    /proc/3/cwd (readlink: Permission denied)  root  cwd  unknown  
rcu_gp    3    3    /proc/3/root (readlink: Permission denied)  root  rtd  unknown  
rcu_gp    3    3    /proc/3/exe (readlink: Permission denied)  root  txt  unknown  
rcu_gp    3    3    /proc/3/fd (opendir: Permission denied)  root  NOFD  
rcu_par_g 4    4    /proc/4/cwd (readlink: Permission denied)  root  cwd  unknown  
rcu_par_g 4    4    /proc/4/root (readlink: Permission denied)  root  rtd  unknown  
rcu_par_g 4    4    /proc/4/exe (readlink: Permission denied)  root  txt  unknown  
rcu_par_g 4    4    /proc/4/fd (opendir: Permission denied)  root  NOFD  
netns     5    5    /proc/5/cwd (readlink: Permission denied)  root  cwd  unknown  
netns     5    5    /proc/5/root (readlink: Permission denied)  root  rtd  unknown  
netns     5    5    /proc/5/exe (readlink: Permission denied)  root  txt  unknown  
netns     5    5    /proc/5/fd (opendir: Permission denied)  root  NOFD  
kworker/0 7    7    /proc/7/cwd (readlink: Permission denied)  root  cwd  unknown  
kworker/0 7    7    /proc/7/exe (readlink: Permission denied)  root  txt  unknown
```

Challenge

Buat script instalasi node version manager menggunakan BASH

Langkah pertama yaitu membuat file bash script dengan perintah

- nano install_node.sh
- lalu input teks :
#!/bin/bash

```
curl -o- https://raw.githubusercontent.com/nvm-sh/nvm/v0.38.0/install.sh | bash  
eval "$(cat ~/.bashrc | tail -n +10)"  
nvm install 16  
nvm use 16  
node -v  
exec bash
```

```
ubuntu@primary: ~  
GNU nano 6.2 install_node.sh *  
#!/bin/bash  
  
curl -o- https://raw.githubusercontent.com/nvm-sh/nvm/v0.38.0/install.sh | bash  
eval "$(cat ~/.bashrc | tail -n +10)"  
nvm install 16  
nvm use 16  
node -v  
exec bash
```

Setelah itu save, lalu sebelum eksekusi script BASH, terlebih dahulu kita harus memberikan izin execute untuk file `install_node.sh` itu sendiri agar file bisa dieksekusi, karena sudah di berikan ijin Langkah selanjutnya yaitu ketik "`ls -la`" untuk melihat semua isi file ataupun directory yang ada pada user ubuntu
Lalu cari file dengan nama `install_node.sh`, setelah itu bisa di berikan ijin akses dengan menjalankan perintah "`sudo chmod u+x install_node.sh`" atau "`sudo chmod 777 install_node.sh`" (memberikan seluruh akses)

```
-rwxrwxrwx 1 ubuntu ubuntu 174 Nov 23 08:40 install_node.sh
```

Selanjutnya eksekusi dengan perintah "`./install_node.sh`"
Maka instalasi node akan berjalan otomatis dan menampilkan versi node, yaitu versinya adalah "`v16.18.1`"

```
ubuntu@primary: ~$ ./install_node.sh  
% Total % Received % Xferd Average Speed Time Time Time Current  
Dload Upload Total Spent Left Speed  
100 14926 100 14926 0 0 16653 0 --:--:-- --:--:-- --:--:-- 16658  
=> nvm is already installed in /home/ubuntu/.nvm, trying to update using git  
=> => Compressing and cleaning up git repository  
  
=> nvm source string already in /home/ubuntu/.bashrc  
=> bash_completion source string already in /home/ubuntu/.bashrc  
=> Close and reopen your terminal to start using nvm or run the following to use it now:  
  
export NVM_DIR="$HOME/.nvm"  
[ -s "$NVM_DIR/nvm.sh" ] && \. "$NVM_DIR/nvm.sh" # This loads nvm  
[ -s "$NVM_DIR/bash_completion" ] && \. "$NVM_DIR/bash_completion" # This loads nvm bash_completion  
v16.18.1 is already installed.  
Now using node v16.18.1 (npm v8.19.2)  
Now using node v16.18.1 (npm v8.19.2)  
v16.18.1  
ubuntu@primary:~$
```