

lab 10

Lab10.1 : การจัดการ Process และ Service

Part 1 (Remote Access ด้วย ssh)

1. ให้จับคู่กับเพื่อน สร้าง User และกำหนด Password สำหรับให้เพื่อน Login เข้ามาได้

ใช้คำสั่ง : `sudo adduser best`

`sudo passwd best`

`sudo apt update`

`sudo apt install openssh-server`

`sudo systemctl enable ssh`

2. ให้ใช้ ssh ทำการ Remote Acess เข้าเครื่องเพื่อนโดยใช้ User/Password ที่เพื่อนสร้างให้

ใช้คำสั่ง : `ssh chat@192.168.93.129`

3. ให้ใช้ ssh ทำการ Remote Acess เข้าเครื่องเพื่อนโดยใช้ User/Password ที่เพื่อนสร้างให้

```
chat@test:~$ ssh chat@192.168.93.129
chat@192.168.93.129's password:
Permission denied, please try again.
chat@192.168.93.129's password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-52-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Fri Feb  7 12:03:28 PM UTC 2025

 System load:  0.42           Processes:      221
 Usage of /:   43.4% of  9.75GB  Users logged in:     1
 Memory usage: 10%            IPv4 address for ens33: 192.168.93.129
 Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

131 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Fri Feb  7 11:49:42 2025 from 192.168.93.128
chat@best:~$
```

Part 2 (Kill Shell Process ของเพื่อน)

1. ใช้คำสั่ง w เพื่อดูว่ามีใคร Login เข้ามาบ้าง และใช้ ps -eufa เพื่อมองหา Shell เพื่อน

```
valio_ift forever preferred_ift forever
chat@test:~$ w
12:13:53 up 1:29, 2 users, load average: 0.00, 0.03, 0.01
USER   TTY      FROM             LOGIN@   IDLE    JCPU   PCPU WHAT
chat   tty1     -          10:45   1.00s  0.19s  0.01s w
best   192.168.93.129 12:13   1:28m  0.00s  0.30s sshd: best [priv]
chat@test:~$ ps -eufa
USER   PID %CPU %MEM   VSZ RSS TTY      STAT START  TIME COMMAND
best   1671  0.1  0.1   8652 5376 pts/0    Ss+ 12:13  0:00 -bash
root   925  0.0  0.1   6976 4608 tty1     Ss  10:45  0:00 /bin/login -p --
chat   1382  0.0  0.1   8652 5376 tty1     S  10:45  0:00 \_ -bash USER=chat INVOCATION_ID=d72d8477b81547be8491056dcc423c90 TERM=linux CREDENTIALS_DIR
chat   1603  100  0.1  12316 5376 tty1     R+ 12:14  0:00 \_ ps -eufa SHELL=/bin/bash CREDENTIALS_DIRECTORY=/run/credentials/getty@tty1.service ME
chat@test:~$
```

2. ใช้คำสั่ง kill ทำลาย Shell เพื่อน

ใช้คำสั่ง : **ps aux | grep bash**
sudo kill -9 1671
ps aux | grep bash (ตรวจสอบอีกครั้ง)

3.บันทึกคำสั่งและผลการทดลอง

```
chat@test:~$ ps aux | grep bash
chat   1382  0.0  0.1   8652 5376 tty1     S  10:45  0:00 -bash
best   1671  0.0  0.1   8652 5376 pts/0    Ss+ 12:13  0:00 -bash
chat   1692  0.0  0.0   6544 2304 tty1     S+ 12:16  0:00 grep bash
chat@test:~$ sudo kill -9 1671
[sudo] password for chat:
chat@test:~$ ps aux | grep bash
chat   1382  0.0  0.1   8652 5376 tty1     S  10:45  0:00 -bash
chat   1710  0.0  0.0   6544 2304 tty1     S+ 12:18  0:00 grep bash
chat@test:~$ S_
```

Part 3 (ปิด Service)

1. ใช้คำสั่ง systemctl หรือ service เพื่อตู้ Service sshd ว่าอยู่ในสถานะ active หรือ inactive

```
To show all installed unit files use 'systemctl list-unit-files'.
```

```
chat@test:~$ sudo systemctl status sshd
● ssh.service - OpenBSD Secure Shell server
  Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
  Active: active (running) since Fri 2025-02-07 10:45:00 UTC; 1h 36min ago
  TriggeredBy: ● ssh.socket
    Docs: man:sshd(8)
           man:sshd_config(5)
  Process: 878 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
 Main PID: 893 (sshd)
   Tasks: 1 (limit: 4556)
  Memory: 2.3M (peak: 19.0M)
    CPU: 46ms
 CGroup: /system.slice/sshd.service
         └─893 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Feb 07 10:44:59 test systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Feb 07 10:45:00 test sshd[893]: Server listening on :: port 22.
Feb 07 10:45:00 test systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
Feb 07 12:13:10 test sshd[1557]: Accepted password for best from 192.168.93.129 port 52524 ssh2
Feb 07 12:13:10 test sshd[1557]: pam_unix(sshd:session): session opened for user best(uid=1011) by best(uid=0)
chat@test:~$ ss
```

2. สั่งปิด Service sshd และตรวจสอบสถานะช้าๆ จนแน่ใจว่า inactive แล้ว

```
Feb 07 12:13:10 test sshd[1557]: pam_unix(sshd:session): session opened for user best(uid=1011) by best(uid=0)
chat@test:~$ sudo systemctl stop ssh
Stopping 'ssh.service', but its triggering units are still active:
ssh.socket
chat@test:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
  Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
  Active: inactive (dead) since Fri 2025-02-07 12:23:23 UTC; 22s ago
  Duration: 1h 38min 22.598s
  TriggeredBy: ● ssh.socket
    Docs: man:sshd(8)
           man:sshd_config(5)
  Process: 878 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
  Process: 893 ExecStart=/usr/sbin/sshd -D $SSHD_OPTS (code=exited, status=0/SUCCESS)
 Main PID: 893 (code=exited, status=0/SUCCESS)
    CPU: 46ms

Feb 07 10:44:59 test systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Feb 07 10:45:00 test sshd[893]: Server listening on :: port 22.
Feb 07 10:45:00 test systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
Feb 07 12:13:10 test sshd[1557]: Accepted password for best from 192.168.93.129 port 52524 ssh2
Feb 07 12:13:10 test sshd[1557]: pam_unix(sshd:session): session opened for user best(uid=1011) by best(uid=0)
Feb 07 12:23:23 test systemd[1]: Stopping ssh.service - OpenBSD Secure Shell server...
Feb 07 12:23:23 test systemd[1]: ssh.service: deactivated successfully.
Feb 07 12:23:23 test systemd[1]: Stopped ssh.service - OpenBSD Secure Shell server.
chat@test:~$ _
```

3. ให้เพื่อนลอง Remote Access เข้ามาอีกครั้ง

4. บันทึกคำสั่งและผลการทดลอง

```
best@test:~$ Connection to 192.168.93.128 closed.
best@best:~$ ssh best@192.168.93.128
best@192.168.93.128's password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.0.0-52-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Fri Feb  7 12:26:10 PM UTC 2025

 System load:  0.00      Processes:          218
 Usage of /:   48.7% of 9.75GB   Users logged in:        1
 Memory usage: 8%           IPv4 address for ens3: 192.168.93.128
 Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

74 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Fri Feb  7 12:13:13 2025 from 192.168.93.129
best@test:~$ S
```

5. อย่าลืมลบหรือ Lock User ที่สร้างให้เพื่อน และอย่าลืมเปิด Service sshd คืนแบบเดิม

```
chat@test:~$ sudo userdel best
userdel: user best is currently used by process 1798
chat@test:~$ 
chat@test:~$ sudo systemctl start ssh
[...]
chat@test:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
  Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
  Active: active (running) since Fri 2025-02-07 12:26:07 UTC; 5min ago
  TriggeredBy: ● ssh.socket
    Docs: man:sshd(8)
           man:sshd_config(5)
  Main PID: 1792 (sshd)
    Tasks: 1 (limit: 4556)
   Memory: 2.2M (peak: 10.7M)
     CPU: 280ms
    CGroup: /system.slice/sshd.service
             └─1792 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

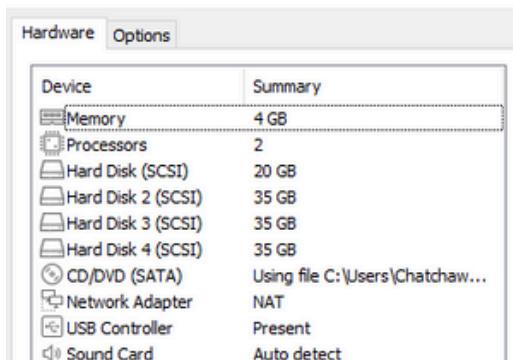
Feb 07 12:26:07 test systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Feb 07 12:26:07 test sshd[1792]: Server listening on :: port 22.
Feb 07 12:26:07 test systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
Feb 07 12:26:10 test sshd[1794]: Accepted password for best from 192.168.93.129 port 47302 ssh2
Feb 07 12:26:10 test sshd[1794]: pam_unix(sshd:session): session opened for user best(uid=1011) by best(uid=0)
chat@test:~$ S
```

Lab10.2 : การจัดการ File System

Part 1 (เพิ่ม HDD สร้าง Volume)

1. เพิ่ม HDD ขนาด 35 GB จำนวน 3 ลูก

Virtual Machine Settings



2. HDD#1 – กำหนด Partition และ Format เป็น ext4 สำหรับ /home2

```
chat@test:~$ lsblk
NAME      MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda        8:0    0   20G  0 disk
└─sda1     8:1    0   1M  0 part
  └─sda2     8:2    0  1.8G 0 part /boot
  └─sda3     8:3    0 18.2G 0 part
    └─ubuntu--vg-ubuntu--lv 252:0  0 100 0 lvm /
sdb        8:16   0   35G  0 disk
sdc        8:32   0   35G  0 disk
sdd        8:48   0   35G  0 disk
sr0       11:0   1   2.6G 0 rom
chat@test:~$ sudo fdisk /dev/sdb
[sudo] password for chat:

Welcome to fdisk (util-linux 2.39.3).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS (MBR) disklabel with disk identifier 0x689b6620.

Command (m for help): n
Partition type
  p  primary (0 primary, 0 extended, 4 free)
  e  extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-73400319, default 2048):
Last sector, +/sectors or +/-size{K,M,G,T,P} (2048-73400319, default 73400319):
Created a new partition 1 of type 'Linux' and of size 35 GiB.

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.

chat@test:~$ lsblk
NAME      MAJ:MIN RM  SIZE RO TYPE MOUNTPOINTS
sda        8:0    0   20G  0 disk
└─sda1     8:1    0   1M  0 part
  └─sda2     8:2    0  1.8G 0 part /boot
  └─sda3     8:3    0 18.2G 0 part
    └─ubuntu--vg-ubuntu--lv 252:0  0 100 0 lvm /
sdb        8:16   0   35G  0 disk
└─sdb1     8:17   0   35G 0 part
  └─sdc     8:32   0   35G 0 disk
  └─sdd     8:48   0   35G 0 disk
sr0       11:0   1   2.6G 0 rom
chat@test:~$ ss
```

```
chat@test:~$ sudo mkfs.ext4 /dev/sdb1
mke2fs 1.47.0 (5-Feb-2023)
Creating filesystem with 9174784 4k blocks and 2293760 inodes
Filesystem UUID: 786405b9-0ba1-4530-a5af-c13ec00bc902
Superblock backups stored on blocks:
            32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
            4096000, 7962624

Allocating group tables: done
Writing inode tables: done
Creating journal (65536 blocks): done
Writing superblocks and filesystem accounting information: done

chat@test:~$ df -h
Filesystem           Size  Used Avail Use% Mounted on
tmpfs                 387M  1.5M  386M  1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv  9.8G  4.8G  4.5G  52% /
tmpfs                 1.9G    0  1.9G  0% /dev/shm
tmpfs                 5.0M    0  5.0M  0% /run/lock
/dev/sda2              1.8G 182M  1.5G  12% /boot
tmpfs                 387M   12K  387M  1% /run/user/1000
chat@test:~$
```

ใช้คำสั่ง : sudo mkdir -p /home2

sudo mount /dev/sdb1 /home2

sudo nano /etc/fstab

เพิ่ม /dev/sdb1 /home2 ext4 defaults 0 2

```
GNU nano 7.2                               /etc/fstab *
# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/ubuntu-vg/ubuntu-lv during curtin installation
/dev/disk/by-id/dm-uuid-LVM-c291xanppgrfYTSkhEdPcfEfhhDwVsfqBuoPSnP1dJohhvkPMbeQVqldkruQLia / ext4 defaults 0 1
# /boot was on /dev/sda2 during curtin installation
/dev/disk/by-uuid/300cfb4e-c346-4a57-ab7c-d38452567bb8 /boot ext4 defaults 0 1
/swapp.img    none swap sw 0 0
/dev/sdb1     /home2 ext4 defaults 0 2
```

3. HDD#2 - จัดการแบบ HDD#1 แต่ใช้ Logical Volume Management (LVM) และใช้สำหรับ /home3

```
chat@test:~$ sudo fdisk /dev/sdc
Welcome to fdisk (util-linux 2.39.3).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS (MBR) disklabel with disk identifier 0x92987b4d.

Command (m for help): n
Partition type:
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-73400319, default 2048):
Last sector, +/sectors or +/-size{K,M,G,T,P} (2048-73400319, default 73400319):

Created a new partition 1 of type 'Linux' and of size 35 GiB.

Command (m for help): t
Selected partition 1
Hex code or alias (type L to list all): 8e
Changed type of partition 'Linux' to 'Linux LVM'.

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
```

```
chat@test:~$ sudo pvcreate /dev/sdc1
  Physical volume "/dev/sdc1" successfully created.
chat@test:~$ sudo vgcreate vg_home3 /dev/sdc1
  Volume group "vg_home3" successfully created
chat@test:~$ sudo lvcreate -l 100%FREE -n lv_home3 vg_home3
  Logical volume "lv_home3" created.
chat@test:~$ sudo mkfs.ext4 /dev/vg_home3/lv_home3
mke2fs 1.47.0 (5-Feb-2023)
Creating filesystem with 9174016 4k blocks and 2293760 inodes
Filesystem UUID: 6cd18915-116a-4257-88e2-175bb9e8c60c
Superblock backups stored on blocks:
      32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
      4096000, 7952624

Allocating group tables: done
Writing inode tables: done
Creating journal (65536 blocks): done
Writing superblocks and filesystem accounting information: done

chat@test:~$ sudo mkdir -p /home3
chat@test:~$ sudo mount /dev/vg_home3/lv_home3 /home3
mount: (hint) your fstab has been modified, but systemd still uses
      the old version; use 'systemctl daemon-reload' to reload.
chat@test:~$ df -h
Filesystem           Size  Used Avail Use% Mounted on
tmpfs                 387M   1.5M  386M  1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv  9.8G  4.8G  5.0M  52% /
tmpfs                 1.9G    0  1.9G  0% /dev/shm
tmpfs                 5.0M    0  5.0M  0% /run/lock
/dev/sda2              1.8G  182M  1.5G  12% /boot
tmpfs                 387M   12K  387M  1% /run/user/1000
/dev/mapper/vg_home3-lv_home3       35G   24K   33G  1% /home3
chat@test:~$
```

ใช้คำสั่ง : sudo nano /etc/fstab

เพิ่ม /dev/vg_home3/lv-home3 /home3 ext4 defaults 0 2

```
GNU nano 7.2                               /etc/fstab *
# /etc/fstab: static file system information.
#
# Use 'blkid' to print the universally unique identifier for a
# device; this may be used with UUID= as a more robust way to name devices
# that works even if disks are added and removed. See fstab(5).
#
# <file system> <mount point> <type> <options> <dump> <pass>
# / was on /dev/ubuntu-vg/ubuntu-lv during curtin installation
/dev/disk/by-id/dm-uuid-LVM-c291xanppgrfYTSkhEdPcfEfhhDwVsfqBuoPSnP1dJohhvkPMbeQVqldkruQLia / ext4 defaults 0 1
# /boot was on /dev/sda2 during curtin installation
/dev/disk/by-uuid/300cfb4e-c346-4a57-ab7c-d38452567bb8 /boot ext4 defaults 0 1
/swapp.img    none swap sw 0 0
/dev/sdb1     /home2 ext4 defaults 0 2
/dev/vg_home3/lv_home3 /home3 ext4 defaults 0 2
```

4. ทำไฟล์ Archive ของ /etc มาเก็บใน /home2 และของ /var มาเก็บใน /home3

ใช้คำสั่ง : `sudo tar -cvzf /home2/etc_backup.tar.gz /etc`
`sudo tar -cvzf /home3/var_backup.tar.gz /var`

```
/var/lib/cloud/instances/lid-datasource-none/boot-finished
/var/lib/cloud/instances/lid-datasource-none/scripts/
/var/lib/cloud/instances/lid-datasource-none/handlers/
/var/lib/cloud/instances/lid-datasource-none/datasource
/var/lib/cloud/instances/lid-datasource-none/obj.pkl
/var/lib/cloud/instances/lid-datasource-none/vendor-data.txt.l
/var/lib/cloud/instances/lid-datasource-none/sem/
/var/lib/cloud/instances/lid-datasource-none/config_mounts
/var/lib/cloud/instances/lid-datasource-none/sem/config_seed_random
/var/lib/cloud/instances/lid-datasource-none/sem/config_sh_import_id
/var/lib/cloud/instances/lid-datasource-none/sem/config_opt_configure
/var/lib/cloud/instances/lid-datasource-none/sem/config_buddy
/var/lib/cloud/instances/lid-datasource-none/sem/config_write_files
/var/lib/cloud/instances/lid-datasource-none/sem/config_scripts_user
/var/lib/cloud/instances/lid-datasource-none/sem/config_grub_dpkg
/var/lib/cloud/instances/lid-datasource-none/sem/config_set_passwords
/var/lib/cloud/instances/lid-datasource-none/sem/config_scripts_per_instance
/var/lib/cloud/instances/lid-datasource-none/sem/config_ssh
/var/lib/cloud/instances/lid-datasource-none/sem/config_install_hotplug
/var/lib/cloud/instances/lid-datasource-none/sem/config_fuse_lmc
/var/lib/cloud/instances/lid-datasource-none/sem/config_keys_to_console
/var/lib/cloud/instances/lid-datasource-none/sem/config_users_groups
/var/lib/cloud/instances/lid-datasource-none/sem/config_write_files_deferred
/var/lib/cloud/instances/lid-datasource-none/sem/config_locale
/var/lib/cloud/instances/lid-datasource-none/sem/config_scripts_vendor
/var/lib/cloud/instances/lid-datasource-none/sem/config_ssh_authkey_fingerprints
/var/lib/cloud/instances/lid-datasource-none/sem/config_set_hostname
/var/lib/cloud/instances/lid-datasource-none/user-data.txt
/var/lib/cloud/instances/lid-datasource-none/vendor-data2.txt.l
/var/lib/cloud/seed/
/var/lib/cloud/scripts/
/var/lib/cloud/scripts/per-instance/
/var/lib/cloud/scripts/per-boot/
/var/lib/cloud/scripts/per-once/
/var/lib/cloud/scripts/vendor/
/var/lib/cloud/handlers/
/var/lib/cloud/data/
/var/lib/cloud/data/instance-id
/var/lib/cloud/data/python-version
/var/lib/cloud/data/previous-datasource
/var/lib/cloud/data/status.json
/var/lib/cloud/data/result.json
/var/lib/cloud/data/previous-instance-id
/var/lib/cloud/instance
/var/lib/cloud/seam/
/var/lib/cloud/sem/config_scripts_per_once.once
/var/snap/
chat@test:~$ _
```

5. สั่ง ls -la /home2 /home3 แล้วบันทึกผล และสั่ง df -hT แล้วบันทึกผล

```
chat@test:~$ ls -la /home2 /home3
ls: cannot access '/home2': No such file or directory
/home3:
total 104880
drwxr-xr-x  3 root root   4096 Feb  7 12:55 .
drwxr-xr-x 27 root root   4096 Feb  7 12:49 ..
drwx-----  2 root root  16384 Feb  7 12:48 lost+found
-rw-r--r--  1 root root 107372530 Feb  7 12:56 var_backup.tar.gz
chat@test:~$ df -hT
Filesystem      Type  Size  Used Avail Use% Mounted on
tmpfs          tmpfs  387M  1.5M  386M  1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv ext4  9.8G  4.8G  4.5G  52% /
tmpfs          tmpfs  1.9G    0  1.9G  0% /dev/shm
tmpfs          tmpfs  5.0M    0  5.0M  0% /run/lock
/dev/sda2        ext4  1.8G  182M  1.5G  12% /boot
tmpfs          tmpfs  387M  12K  387M  1% /run/user/1000
/dev/mapper/vg_home3-lv_home3    ext4  35G  103M  33G  1% /home3
chat@test:~$ _
```

Part 2 (ขยาย Volume ที่มีอยู่)

1. นำ HDD#3 มาเพิ่มให้ /home3

```
/dev/mapper/vg_home3-lv_home3  ext4  35G  103M  33G  1% /home3
chat@test:~$ sudo fdisk /dev/sdd

Welcome to fdisk (util-linux 2.39.3).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS (MBR) disklabel with disk identifier 0x5bdbdaaf.

Command (m for help): n
Partition type
  p  primary (0 primary, 0 extended, 4 free)
  e  extended (container for logical partitions)
Select (default p): p
Partition number (1-4, default 1): 1
First sector (2048-73400319, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-73400319, default 73400319):

Created a new partition 1 of type 'Linux' and of size 35 GiB.

Command (m for help): t
Selected partition 1
Hex code or alias (type L to list all): 8e
Changed type of partition 'Linux' to 'Linux LVM'.

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.

chat@test:~$
```

```
chat@test:~$ sudo pvcreate /dev/sdd1
Physical volume "/dev/sdd1" successfully created.
chat@test:~$ sudo lvextend -l +100%FREE /dev/vg_home3/lv_home3
  New size (8959 extents) matches existing size (8959 extents).
chat@test:~$ sudo resize2fs /dev/vg_home3/lvhome3
resize2fs 1.47.0 (5-Feb-2023)
open: No such file or directory while opening /dev/vg_home3/lvhome3
chat@test:~$ sudo resize2fs /dev/vg_home3/lv_home3
resize2fs 1.47.0 (5-Feb-2023)
The filesystem is already 9174016 (4k) blocks long. Nothing to do!

chat@test:~$ df -h /home3
Filesystem           Size  Used Avail Use% Mounted on
/dev/mapper/vg_home3-lv_home3  35G  103M  33G   1% /home3
chat@test:~$
```

2. Restore ไฟล์ Archive ออกมาใน /home3

ใช้คำสั่ง : `sudo tar -xvf /home2/etc_backup.tar.gz -C /home3`
`sudo tar -xvf /home3/var_backup.tar.gz -C /home3`

```
etc/logrotate.d/ufw
etc/logrotate.d/cloud-init
etc/logrotate.d/bootlog
etc/logrotate.d/alternatives
etc/logrotate.d/rsyslog
etc/logrotate.d/ubuntu-pro-client
etc/logrotate.d/utmp
etc/logrotate.d/dpkg
etc/logrotate.d/apt
etc/logrotate.d/btmp
etc/logrotate.d/apport
etc/resolv.conf
etc/rc1.d/
etc/rc1.d/k0iuuid
etc/rc1.d/k0open-lscsi
etc/rc1.d/k0lufu
etc/rc1.d/k0open-vm-tools
etc/rc1.d/k0liscsid
etc/lvm/
etc/lvm/profile/
etc/lvm/profile/thin-generic.profile
etc/lvm/profile/vdo-small.profile
etc/lvm/profile/thin-performance.profile
etc/lvm/profile/metadata_profile_template.profile
etc/lvm/profile/lvmbusd.profile
etc/lvm/profile/command_profile_template.profile
etc/lvm/profile/cache-mq.profile
etc/lvm/profile/cache-smq.profile
etc/lvm/lvlocal.conf
etc/lvm/archive/
etc/lvm/archive/vg_home3_00000-1410318057.vg
etc/lvm/lvm.conf
etc/lvm/backup/
etc/lvm/backup/ubuntu-vg
etc/lvm/backup/vg_home3
etc/libaudit.conf
etc/udev/
etc/udev/locost.conf
etc/udev/rules.d/
etc/udev/rules.d/ubuntu--vg-ubuntu--lv.rules
etc/udev/udev.conf
etc/udev/huadb.d/
etc/UPower/
etc/UPower/UPower.conf
etc/services
etc/rsyslog.d/
etc/rsyslog.d/20-ufw.conf
etc/rsyslog.d/21-cloudinit.conf
etc/rsyslog.d/50-default.conf
chat@test:~$
```

```
var/lib/cloud/instances/iid-datasource-none/boot-finished
var/lib/cloud/instances/iid-datasource-none/scripts/
var/lib/cloud/instances/iid-datasource-none/handlers/
var/lib/cloud/instances/iid-datasource-none/datasource
var/lib/cloud/instances/iid-datasource-none/obj.pkl
var/lib/cloud/instances/iid-datasource-none/vendor-data.txt.i
var/lib/cloud/instances/iid-datasource-none/seam/
var/lib/cloud/instances/iid-datasource-none/seam/config_mounts
var/lib/cloud/instances/iid-datasource-none/seam/config_seed_random
var/lib/cloud/instances/iid-datasource-none/seam/config_ssh_import_id
var/lib/cloud/instances/iid-datasource-none/seam/consume_data
var/lib/cloud/instances/iid-datasource-none/seam/config_apt_configure
var/lib/cloud/instances/iid-datasource-none/seam/config_yobu
var/lib/cloud/instances/iid-datasource-none/seam/config_write_files
var/lib/cloud/instances/iid-datasource-none/seam/config_scripts_user
var/lib/cloud/instances/iid-datasource-none/seam/config_grub_dkg
var/lib/cloud/instances/iid-datasource-none/seam/config_set_passwords
var/lib/cloud/instances/iid-datasource-none/seam/config_scripts_per_instance
var/lib/cloud/instances/iid-datasource-none/seam/config_ssh
var/lib/cloud/instances/iid-datasource-none/seam/config_install_hotplug
var/lib/cloud/instances/iid-datasource-none/seam/config_reset_rmc
var/lib/cloud/instances/iid-datasource-none/seam/config_keys_to_console
var/lib/cloud/instances/iid-datasource-none/seam/config_users_groups
var/lib/cloud/instances/iid-datasource-none/seam/config_write_files_deferred
var/lib/cloud/instances/iid-datasource-none/seam/config_locale
var/lib/cloud/instances/iid-datasource-none/seam/config_scripts_vendor
var/lib/cloud/instances/iid-datasource-none/seam/config_ssh_authkey_fingerprints
var/lib/cloud/instances/iid-datasource-none/seam/config_set_hostname
var/lib/cloud/instances/iid-datasource-none/user-data.txt
var/lib/cloud/instances/iid-datasource-none/vendor-data2.txt.i
var/lib/cloud/seed/
var/lib/cloud/scripts/
var/lib/cloud/scripts/per-instance/
var/lib/cloud/scripts/per-boot/
var/lib/cloud/scripts/per-once/
var/lib/cloud/scripts/vendor/
var/lib/cloud/handlers/
var/lib/cloud/data/
var/lib/cloud/data/instance-id
var/lib/cloud/data/python-version
var/lib/cloud/data/previous-datasource
var/lib/cloud/data/status.json
var/lib/cloud/data/result.json
var/lib/cloud/data/previous-instance-id
var/lib/cloud/instance
var/lib/cloud/seam/
var/lib/cloud/seam/config_scripts_per_once.once
var/snap/
chat@test:~$
```

3. สั่ง ls -la /home2 /home3 และ df -hT แล้วบันทึกผล

```
chat@test:~$ ls -la /home2 /home3
/home2:
total 592
drwxr-xr-x  2 root root  4096 Feb  7 13:21 .
drwxr-xr-x 28 root root  4096 Feb  7 13:21 ..
-rw-r--r--  1 root root 594696 Feb  7 13:21 etc_backup.tar.gz

/home3:
total 104892
drwxr-xr-x  5 root root  4096 Feb  7 13:25 .
drwxr-xr-x 28 root root  4096 Feb  7 13:21 ..
drwxr-xr-x 108 root root  4096 Feb  7 12:53 etc
drwx----- 2 root root 16384 Feb  7 12:48 lost+found
drwxr-xr-x 13 root root  4096 Jan 10 14:04 var
-rw-r--r--  1 root root 107372917 Feb  7 13:09 var_backup.tar.gz
chat@test:~$ df -hT
Filesystem           Type   Size  Used Avail Use% Mounted on
tmpfs                tmpfs  387M  1.6M  386M  1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv ext4   9.8G  4.8G  4.5G  52% /
tmpfs                tmpfs  1.9G     0  1.9G  0% /dev/shm
tmpfs                tmpfs  5.0M     0  5.0M  0% /run/lock
/dev/sda2              ext4   1.8G  182M  1.5G  12% /boot
tmpfs                tmpfs  387M  12K  387M  1% /run/user/1000
/dev/mapper/vg_home3-lv_home3    ext4   35G  683M  32G  3% /home3
chat@test:~$
```

Part 3 (ติดตั้งแบบการร)

1. Restart Linux แล้วสั่ง ls -la /home2 /home3 และ df -hT แล้วบันทึกผล

```
System load: 1.04      Processes:          260
Usage of /: 48.8% of 9.75GB  Users logged in:       0
Memory usage: 7%
Swap usage:  0%
* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
just raised the bar for easy, resilient and secure K8s cluster deployment.
https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

74 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Hello chat
chat@test:~$ ls -la /home2 /home3 df -hT
ls: option requires an argument -- 'T'
Try 'ls --help' for more information.
chat@test:~$ ls -la /home2 /home3
/home2:
total 24
drwxr-xr-x  3 root root  4096 Feb  7 12:39 .
drwxr-xr-x 28 root root  4096 Feb  7 13:21 ..
drwx----- 2 root root 16384 Feb  7 12:39 lost+found
drwxr-xr-x 13 root root  4096 Jan 10 14:04 var
-rw-r--r--  1 root root 107372917 Feb  7 13:09 var_backup.tar.gz
chat@test:~$ df -hT
Filesystem           Type   Size  Used Avail Use% Mounted on
tmpfs                tmpfs  387M  1.6M  386M  1% /run
/dev/mapper/ubuntu--vg-ubuntu--lv ext4   9.8G  4.8G  4.5G  52% /
tmpfs                tmpfs  1.9G     0  1.9G  0% /dev/shm
tmpfs                tmpfs  5.0M     0  5.0M  0% /run/lock
/dev/mapper/vg_home3-lv_home3    ext4   35G  683M  32G  3% /home3
/dev/sda2              ext4   1.8G  182M  1.5G  12% /boot
/dev/sdb1              ext4   35G  24K  33G  1% /home2
tmpfs                tmpfs  387M  12K  387M  1% /run/user/1000
chat@test:~$ _
```

2. Restart Linux แล้วสั่ง ls -la /home2 /home3 และ df -hT แล้วบันทึกผล ถ้าผลที่ได้เหมือน Part 2 ให้สรุปเพื่อจบการทดลอง แต่ถ้าผลที่ได้ไม่เหมือน Part 2 ให้แก้ปัญหาจนได้ผลการทดลองเหมือน Part 2 แล้วอธิบายวิธีแก้ไข แล้วสรุปผลเพื่อจบการทดลอง

ตอบ : ผลจาก part2 และ part3 ไม่แตกต่างกันมาก เพราะ partition /home2 และ home3 ถูกmount อัตโนมัติไว้ก่อนหน้าที่ เลย ทำให้มีไฟล์อยู่ ถ้าไม่มีmount อัตโนมัติไว้ เมื่อเรา -la /home2 /home3 หรือ df -hT จะหาไม่เจอ