


Take Home Case	
OSBP	
Periode Berlaku Semester Ganjil 2021/2022 <i>Valid on Odd Semester Year 2021/2022</i>	Software Laboratory Center Assistant Recruitment 22-1

Materi

Material

- Linux Commands

Soal

Case

Internship as Network Administrator at Bluejackets

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T040

Menjawab no 1, 2, dan 20

• Setting Secure Shell (SSH) Connection*

1. Generate private/public key pair using **Elliptic Curve Digital Signature Algorithm** with "NAR22-1" as password.

ssh-keygen -t ecdsa

Masukkan NAR22-1 sebagai password

Masukkan NAR22-1 lagi untuk Konfirmasi password

- ssh => execute command, lalu dia akan mengenerate suatu key yang memiliki tipe ecdsa
- ecdsa (Elliptic Curve Digital Signature Algorithm) berfungsi untuk membuat Digital Signature Algorithm menggunakan algoritma Elliptic Curve

```
prk@ubuntu:~$ ssh-keygen -t ecdsa
Bad escape character 'ygen'.
prk@ubuntu:~$ ssh-keygen -t ecdsa
Generating public/private ecdsa key pair.
Enter file in which to save the key (/home/prk/.ssh/id_ecdsa):
Created directory '/home/prk/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/prk/.ssh/id_ecdsa
Your public key has been saved in /home/prk/.ssh/id_ecdsa.pub
The key fingerprint is:
SHA256:1YQoY/xi5XUX92UdBanz2AF7SeDwFSVLM9ziZ40g/lk prk@ubuntu
The key's randomart image is:
+---[ECDSA 256]---+
|      .    ...ooXOX|
|      = o  +*+o*B=|
|      .  *  o.o+O.+o|
|      o o.. + E +|
|      . .S  . O +|
|                  + o|
|                  |
|                  |
+-----[SHA256]-----+
```

```
prk@ubuntu:~$ cd /home/prk/.ssh
prk@ubuntu:~/.ssh$ ls
id_ecdsa id_ecdsa.pub
prk@ubuntu:~/.ssh$ cat id_ecdsa
-----BEGIN OPENSSH PRIVATE KEY-----
b3BlbnNzaC1rZXktdjEAAAACmFlczI1Ni1jdHIAAAAGYmNyebXB0AAAAGAAAABDjGwR+pb
xjNtR1WVs8JwV2AAAAEAAAAEAAABoAAAAE2VjZHNhLXNoYTItbmlzdHAYNTYAAAAIbmlz
dHAYNTYAAABBBN7a4Qib9xpXFc90LzkaupKYgdIgEFY5oYiLXXiLd0eaFYWXgtajHfHi
LohlXPLuuVBH4MvorV1tJHN3W5WY8AAACwF1/U+jGre/C092P/SSsVJU78M7IDctYrggLY
bYPn31CA6jFxoMkuZWCbwnb/ELSSeA139PxronwXRyaLNa/vEKyILbzCaR0ykqES8cmnPd
Eh45mupFQ1sNSb4i+riQ5/3GtAoBWUuaFYGcRmS0eQfyYrDxTn4n9MSFk/F+DzjT8GIzJL
mBJ8hE2WiKiHly/eVq1z13MH2uStZH8uA6zCIGM1DVQqeJEFQ0SS5Gckxwg=
-----END OPENSSH PRIVATE KEY-----
prk@ubuntu:~/.ssh$ cat id_ecdsa.pub
ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAYNTYAAAAIbmlzdHAYNTYAAABBBN7a4Qib9xpXFc90Lzka
upKYgdIgEFY5oYiLXXiLd0eaFYWXgtajHfHiLohlXPLuuVBH4MvorV1tJHN3W5WY8= prk@ubuntu
prk@ubuntu:~/.ssh$ sudo apt update
[sudo] password for prk:
Get:1 http://packages.microsoft.com/repos/vscode stable InRelease [3,959 B]
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:3 http://packages.microsoft.com/repos/vscode stable/main amd64 Packages [280 kB]
Hit:4 http://us.archive.ubuntu.com/ubuntu focal InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
560 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

`cd /home/prk/.ssh`

Change directory ke .ssh

cat id_ecdsa

Menampilkan private key punya .ssh

cat id_ecdsa.pub

Menampilkan public key punya .ssh

Menjalankan Remote Machine dengan client SSH

-keygen berfungsi untuk membuat private dan public key baru

-t sebagai tipe key, dan Ecdsa adalah tipe keynya

2. Connect to the server (with your own IP Address and user).

```

prk@ubuntu:~/.ssh$ sudo apt-get install openssh-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  ncurses-term openssh-client openssh-sftp-server ssh-import-id
Suggested packages:
  keychain libpam-ssh monkeysphere ssh-askpass molly-guard
The following NEW packages will be installed:
  ncurses-term openssh-server openssh-sftp-server ssh-import-id
The following packages will be upgraded:
  openssh-client
1 upgraded, 4 newly installed, 0 to remove and 559 not upgraded.
Need to get 1,359 kB of archives.
After this operation, 6,010 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-client amd64 1:8.2p1-4ubuntu0.4 [671 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu focal/main amd64 ncurses-term all 6.2-0ubuntu2 [249 kB]
Get:3 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-sftp-server amd64 1:8.2p1-4ubuntu0.4 [51.5 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu focal-updates/main amd64 openssh-server amd64 1:8.2p1-4ubuntu0.4 [377 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu focal/main amd64 ssh-import-id all 5.10-0ubuntu1 [10.0 kB]
Fetched 1,359 kB in 15s (88.5 kB/s)
Preconfiguring packages ...
prk@ubuntu:~/.ssh$ ssh-copy-id prk@ubuntu
The authenticity of host 'ubuntu (127.0.1.1)' can't be established.
ECDSA key fingerprint is SHA256:7gMMfTBF4j1TKyXh+eoWFIGKeKq/oEPZgk+M0qinNtA.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that
are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is
to install the new keys
prk@ubuntu's password:

Number of key(s) added: 1

Now try logging into the machine, with:  "ssh 'prk@ubuntu'"
and check to make sure that only the key(s) you wanted were added.

```



```
prk@ubuntu:~/.ssh$ ssh prk@ubuntu
Welcome to Ubuntu 20.04 LTS (GNU/Linux 5.4.0-37-generic x86_64)

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

575 updates can be installed immediately.
306 of these updates are security updates.
To see these additional updates run: apt list --upgradable

Your Hardware Enablement Stack (HWE) is supported until April 2025.
prk@ubuntu:~$ sudo fdisk /dev/sda
[sudo] password for prk:

Welcome to fdisk (util-linux 2.34).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.
```

```

Select prk@ubuntu: ~
Microsoft Windows [Version 10.0.19043.1466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\HP>ssh prk@ubuntu
The authenticity of host 'ubuntu (fe80::2f78:b133:c6ad:150%5)' can't be established.
ECDSA key fingerprint is SHA256:7gMMfTBF4j1TKyXh+eoWFIGeKq/oEPZgk+M0qinNtA.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ubuntu,fe80::2f78:b133:c6ad:150%5' (ECDSA) to the list of known hosts.
prk@ubuntu's password:
Welcome to Ubuntu 20.04 LTS (GNU/Linux 5.4.0-37-generic x86_64)

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

575 updates can be installed immediately.
306 of these updates are security updates.
To see these additional updates run: apt list --upgradable

Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Sun Jan 23 10:45:32 2022 from 127.0.0.1
prk@ubuntu:~$
```

Sudo apt install openssh-server

Install terlebih dahulu SSH server agar nanti dapat kita connect kan dan menjadi host di suatu server

Ip addr show

Mencheck IP Address kita terlebih dahulu

Sudo service status

Mencheck server online atau tidak
Setelah kita check, ternyata dia online

Maka kita sambungkan IP Address kita ke server tersebut

ssh prk@192.168.19.128

prk menjadi user dan IP Address yang dimiliki akan menhost server yang sudah kita sambungkan

```
prk@ubuntu:~/.ssh$ ssh prk@192.168.19.128
prk@192.168.19.128's password:
Welcome to Ubuntu 20.04 LTS (GNU/Linux 5.4.0-37-generic x86_64)

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

575 updates can be installed immediately.
306 of these updates are security updates.
To see these additional updates run: apt list --upgradable

Your Hardware Enablement Stack (HWE) is supported until April 2025.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

prk@ubuntu:~$
```

- **Logical Volume Management (LVM)***

You are asked to set LVM in your server as a server administrator of your company.

3. Create a **primary partition** with **LVM** as its partition type with a size of **550MB**.

```
prk@ubuntu:~$ sudo fdisk /dev/sda
[sudo] password for prk:

Welcome to fdisk (util-linux 2.34).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.


Command (m for help): m

Help:

DOS (MBR)
 a  toggle a bootable flag
 b  edit nested BSD disklabel
 c  toggle the dos compatibility flag

Generic
 d  delete a partition
 F  list free unpartitioned space
 l  list known partition types
 n  add a new partition
 p  print the partition table
 t  change a partition type
 v  verify the partition table
 i  print information about a partition

Misc
 m  print this menu
 u  change display/entry units
 x  extra functionality (experts only)

Command (m for help): p
Disk /dev/sda: 42 GiB, 45097156608 bytes, 88080384 sectors
Disk model: VMware Virtual S
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x8c726f57

Device      Boot  Start      End  Sectors  Size Id Type
/dev/sda1   *      2048    1050623   1048576   512M  b W95 FAT32
/dev/sda2                1052670   83884031   82831362   39.5G  5 Extended
/dev/sda5                1052672   83884031   82831360   39.5G  83 Linux
```



```

Command (m for help): n
Partition type
  p   primary (1 primary, 1 extended, 2 free)
  l   logical (numbered from 5)
Select (default p): p
Partition number (3,4, default 3): 4
First sector (83884032-88080383, default 83884032):
Last sector, +/-sectors or +/-size[K,M,G,T,P] (83884032-88080383, default 88080383):

Created a new partition 4 of type 'Linux' and of size 2 GiB.

Command (m for help): p
Disk /dev/sda: 42 GiB, 45097156608 bytes, 88080384 sectors
Disk model: VMware Virtual S
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x8c726f57



| Device    | Boot | Start    | End      | Sectors  | Size  | Id | Type      |
|-----------|------|----------|----------|----------|-------|----|-----------|
| /dev/sda1 | *    | 2048     | 1050623  | 1048576  | 512M  | b  | W95 FAT32 |
| /dev/sda2 |      | 1052670  | 83884031 | 82831362 | 39.5G | 5  | Extended  |
| /dev/sda4 |      | 83884032 | 88080383 | 4196352  | 2G    | 83 | Linux     |
| /dev/sda5 |      | 1052672  | 83884031 | 82831360 | 39.5G | 83 | Linux     |



Partition table entries are not in disk order.
Command (m for help): t
Partition number (1,2,4,5, default 5): 4
Hex code (type L to list all codes): 8e

Changed type of partition 'Linux' to 'Linux LVM'.

Command (m for help): p
Disk /dev/sda: 42 GiB, 45097156608 bytes, 88080384 sectors
Disk model: VMware Virtual S
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0x8c726f57



| Device    | Boot | Start    | End      | Sectors  | Size  | Id | Type      |
|-----------|------|----------|----------|----------|-------|----|-----------|
| /dev/sda1 | *    | 2048     | 1050623  | 1048576  | 512M  | b  | W95 FAT32 |
| /dev/sda2 |      | 1052670  | 83884031 | 82831362 | 39.5G | 5  | Extended  |
| /dev/sda4 |      | 83884032 | 88080383 | 4196352  | 2G    | 8e | Linux LVM |
| /dev/sda5 |      | 1052672  | 83884031 | 82831360 | 39.5G | 83 | Linux     |



Partition table entries are not in disk order.

Command (m for help): w
The partition table has been altered.
Syncing disks.

```


4. Create a physical volume, volume group with a name called **"server"** and 2 logical volumes called **"frontend"** and **"backend"**. For each logical volume, allocate **256MB each** and use **ext4** as filesystem for both volumes.

```
prk@ubuntu:~$ sudo apt-get install lvm2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  dmeventd libaio1 libdevmapper-event1.02.1 liblvm2cmd2.03 libreadline5
  thin-provisioning-tools
The following NEW packages will be installed:
  dmeventd libaio1 libdevmapper-event1.02.1 liblvm2cmd2.03 libreadline5 lvm2
  thin-provisioning-tools
0 upgraded, 7 newly installed, 0 to remove and 559 not upgraded.
Need to get 2,255 kB of archives.
After this operation, 8,919 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libdevmapper-event1.02.1 amd64 2:1
.02.167-1ubuntu1 [11.9 kB]
Get:2 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libaio1 amd64 0.3.112-5 [7,184 B]
Get:3 http://us.archive.ubuntu.com/ubuntu focal/main amd64 liblvm2cmd2.03 amd64 2.03.07-1ubun
tu1 [673 kB]
Get:4 http://us.archive.ubuntu.com/ubuntu focal/main amd64 dmeventd amd64 2:1.02.167-1ubuntu1
 [35.1 kB]
Get:5 http://us.archive.ubuntu.com/ubuntu focal/main amd64 libreadline5 amd64 5.2+dfsg-3build
3 [100 kB]
Get:6 http://us.archive.ubuntu.com/ubuntu focal/main amd64 lvm2 amd64 2.03.07-1ubuntu1 [1,053
kB]
Get:7 http://us.archive.ubuntu.com/ubuntu focal/main amd64 thin-provisioning-tools amd64 0.8.
5-4build1 [375 kB]
Fetched 2,255 kB in 10s (226 kB/s)
Selecting previously unselected package libdevmapper-event1.02.1:amd64.
(Reading database ... 189875 files and directories currently installed.)
```

```
prk@ubuntu:~$ sudo pvcreate /dev/sda4
Physical volume "/dev/sda4" successfully created.
prk@ubuntu:~$ sudo vgcreate server /dev/sda4
Volume group "server" successfully created
prk@ubuntu:~$ sudo lvcreate -L 256M -n frontend server
Logical volume "frontend" created.
prk@ubuntu:~$ sudo lvcreate -L 256M -n backend server
Logical volume "backend" created.
```

```
prk@ubuntu:~$ sudo lvsdisplay
--- Logical volume ---
LV Path                /dev/server/frontend
LV Name                 frontend
VG Name                 server
LV UUID                 Nqotkv-r9qU-325h-1E60-qJQN-iZZy-ZE8ngx
LV Write Access         read/write
LV Creation host, time  ubuntu, 2022-01-23 11:03:32 -0800
LV Status                available
# open                  0
LV Size                 256.00 MiB
Current LE              64
Segments                1
Allocation              inherit
Read ahead sectors      auto
- currently set to     256
Block device            253:0

--- Logical volume ---
LV Path                /dev/server/backend
LV Name                 backend
VG Name                 server
LV UUID                 RT6egw-NNUU-ej7h-XgJF-eFr6-EXIh-wUYvav
LV Write Access         read/write
LV Creation host, time  ubuntu, 2022-01-23 11:04:15 -0800
LV Status                available
# open                  0
LV Size                 256.00 MiB
Current LE              64
Segments                1
Allocation              inherit
Read ahead sectors      auto
- currently set to     256
```

```
prk@ubuntu:~$ sudo mkfs.ext4 /dev/server/frontend
mke2fs 1.45.5 (07-Jan-2020)
Creating filesystem with 65536 4k blocks and 65536 inodes
Filesystem UUID: e4ab452a-d569-4373-bfd1-18cc23d8a929
Superblock backups stored on blocks:
    32768

Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Writing superblocks and filesystem accounting information: done
```

```
prk@ubuntu:~$ sudo apt-get install lvm2
Reading package lists... Done
Building dependency tree
Reading state information... Done
lvm2 is already the newest version (2.03.07-1ubuntu1).
0 upgraded, 0 newly installed, 0 to remove and 559 not upgraded.
prk@ubuntu:~$ sudo mkfs.ext4 /dev/server/backend
mke2fs 1.45.5 (07-Jan-2020)
Creating filesystem with 65536 4k blocks and 65536 inodes
Filesystem UUID: b58dc2f8-b1c0-49ca-b70a-312c233313ff
Superblock backups stored on blocks:
    32768

Allocating group tables: done
Writing inode tables: done
Creating journal (4096 blocks): done
Writing superblocks and filesystem accounting information: done
```

5. Create 2 directories called **frontend** and **backend** in **/var/www** directory. Mount **frontend** to **/var/www/frontend** and **backend** to **/var/www/backend**.


```

prk@ubuntu:~/var/www$ sudo mkdir /var/www/frontend
mkdir: cannot create directory '/var/www/frontend': File exists
prk@ubuntu:~/var/www$ ls
prk@ubuntu:~/var/www$ sudo mkdir /var/www/frontend
mkdir: cannot create directory '/var/www/frontend': File exists
prk@ubuntu:~/var/www$ ls
prk@ubuntu:~/var/www$ sudo mkdir frontend
prk@ubuntu:~/var/www$ ls
frontend
prk@ubuntu:~/var/www$ sudo mkdir backend
prk@ubuntu:~/var/www$ ls
backend frontend
prk@ubuntu:~/var/www$ sudo mount /dev/server/frontend /var/www/frontend
prk@ubuntu:~/var/www$ sudo mount /dev/server/frontend /var/www/backend
mount: /var/www/backend: mount point does not exist.
prk@ubuntu:~/var/www$ sudo mount /dev/server/backend /var/www/frontend
prk@ubuntu:~/var/www$ sudo mount /dev/server/backend /var/www/backend
mount: /var/www/backend: mount point does not exist.
prk@ubuntu:~/var/www$ ls
backend frontend
prk@ubuntu:~/var/www$ cd ../
prk@ubuntu:~/var$ sudo mount /dev/server/backend /var/www/backend
mount: /var/www/backend: mount point does not exist.
prk@ubuntu:~/var$ cd ../
prk@ubuntu:~$ cd ../
prk@ubuntu:/home$ cd ../
prk@ubuntu:/$ ls
bin      dev      lib      libx32   mnt      root     snap     sys      var
boot     etc      lib32    lost+found  opt      run      srv      tmp
cdrom    home     lib64    media    proc     sbin     swapfile usr

```

```

prk@ubuntu:/$ cd var
prk@ubuntu:/var$ ls
backups  crash  local  log  metrics  run  spool  www
cache    lib    lock   mail  opt      snap  tmp
prk@ubuntu:/var$ cd www
prk@ubuntu:/var/www$ ls
frontend
prk@ubuntu:/var/www$ mkdir backend
mkdir: cannot create directory 'backend': Permission denied
prk@ubuntu:/var/www$ sudo mkdir backend
prk@ubuntu:/var/www$ ls
backend frontend
prk@ubuntu:/var/www$ sudo mount /dev/server/backend /var/www/backend
prk@ubuntu:/var/www$ sudo mount /dev/server/frontend /var/www/frontend
prk@ubuntu:/var/www$ sudo lkid
sudo: lkid: command not found

```

6. Make sure to make the logical volumes are automatically mounted on boot.

```

prk@ubuntu:/var/www$ sudo blkid
/dev/sda5: UUID="24efb64a-684c-4401-b99f-f1a982e0fa62" TYPE="ext4" PARTUUID="8c726f57-05"
/dev/loop0: TYPE="squashfs"
/dev/loop1: TYPE="squashfs"
/dev/loop2: TYPE="squashfs"
/dev/loop3: TYPE="squashfs"
/dev/loop4: TYPE="squashfs"
/dev/loop5: TYPE="squashfs"
/dev/loop6: TYPE="squashfs"
/dev/loop7: TYPE="squashfs"
/dev/sda1: UUID="9B84-5441" TYPE="vfat" PARTUUID="8c726f57-01"
/dev/sda4: UUID="tYwy7T-ZTvx-zKtZ-EWxf-PBVq-nbZ5-YkmZJ0" TYPE="LVM2_member" PARTUUID="8c726f57-04"
/dev/loop8: TYPE="squashfs"
/dev/loop9: TYPE="squashfs"
/dev/loop10: TYPE="squashfs"
/dev/loop11: TYPE="squashfs"
/dev/loop12: TYPE="squashfs"
/dev/mapper/server-frontend: UUID="e4ab452a-d569-4373-bfd1-18cc23d8a929" TYPE="ext4"
/dev/mapper/server-backend: UUID="b58dc2f8-b1c0-49ca-b70a-312c233313ff" TYPE="ext4"
prk@ubuntu:/var/www$ sudo nano /etc/ftsab
prk@ubuntu:/var/www$ sudo nano /etc/ftsab
prk@ubuntu:/var/www$ sudo nano /etc/ftsab
prk@ubuntu:/var/www$ sudo nano /etc/ftsab

Use "fg" to return to nano.

[1]+  Stopped                  sudo nano /etc/ftsab
prk@ubuntu:/var/www$ sudo nano /etc/fstab
prk@ubuntu:/var/www$ sudo nano /etc/fstab
prk@ubuntu:/var/www$ sudo mount -a
prk@ubuntu:/var/www$ mount
/dev/mapper/server-backend on /var/www/backend type ext4 (rw,relatime)
/dev/mapper/server-frontend on /var/www/frontend type ext4 (rw,relatime)

```

Extending Logical Volume Management (LVM)**

You need to complete **Logical Volume Management (LVM)** before advancing to this topic. Software engineers from your company ask you to extend the **frontend** and **backend** folders because they need more space. You decide to add another **256MB**.

7. Extend the space for **frontend** and **backend** logical volumes **without creating or deleting physical volume, volume group and logical volume**. You need to provide proof that the **space is already updated**.

```
prk@ubuntu:/var/www$ sudo cfdisk
[2]+  Stopped                  sudo cfdisk
prk@ubuntu:/var/www$ sudo pvresize --setphysicalvolumesize 2G /dev/sda3
Failed to find device for physical volume "/dev/sda3".
 0 physical volume(s) resized or updated / 0 physical volume(s) not resized
prk@ubuntu:/var/www$ sudo pvresize --setphysicalvolumesize 2G /dev/sda4
/dev/sda4: Requested size 2.00 GiB is less than real size 2.00 GiB. Proceed? [y/n]: y
WARNING: /dev/sda4: Pretending size is 4194304 not 4196352 sectors.
Physical volume "/dev/sda4" changed
1 physical volume(s) resized or updated / 0 physical volume(s) not resized
prk@ubuntu:/var/www$ sudo lvextend -L +256M /dev/mapper/server-frontend
Size of logical volume server/frontend changed from 256.00 MiB (64 extents) to 512.00 MiB (128 extents).
Logical volume server/frontend successfully resized.
prk@ubuntu:/var/www$ sudo lvextend -L +256M /dev/mapper/server-backend
Size of logical volume server/backend changed from 256.00 MiB (64 extents) to 512.00 MiB (128 extents).
Logical volume server/backend successfully resized.
```



```

prk@ubuntu:/var/www$ sudo lvs
  --- Logical volume ---
LV Path                /dev/server/frontend
LV Name                 frontend
VG Name                 server
LV UUID                 Nqotkv-r9qU-325h-1E60-qJQN-iZZy-ZE8ngx
LV Write Access         read/write
LV Creation host, time  ubuntu, 2022-01-23 11:03:32 -0800
LV Status                available
# open                  1
LV Size                 512.00 MiB
Current LE              128
Segments                2
Allocation               inherit
Read ahead sectors      auto
 - currently set to     256
Block device            253:0

  --- Logical volume ---
LV Path                /dev/server/backend
LV Name                 backend
VG Name                 server
LV UUID                 RT6egw-NNUU-ej7h-XgJF-eFr6-EXIh-wUYvav
LV Write Access         read/write
LV Creation host, time  ubuntu, 2022-01-23 11:04:15 -0800
LV Status                available
# open                  1
LV Size                 512.00 MiB
Current LE              128
Segments                2
Allocation               inherit
Read ahead sectors      auto
 - currently set to     256

Read ahead sectors      auto
 - currently set to     256
Block device            253:1

```

- **Bash Scripts**

8. Make a bash script to rename .png file to .jpg file with these conditions:

- The script can accept multiple files.
- If there are no arguments that are supplied, return 1 as the exit code.
- By default, the script will use bash.
- The script can escape spaces in the file name. (e.g., "hello world.png" will become "hello world.jpg").
- Validate that the file must exist.



```
GNU nano 4.8 rename.sh
#!/bin/bash

if [[ ! "$@" ]];
then
    echo 1
else
    for i in "$@"
    do
        if [[ -f $i ]];
        then
            if [[ "$i.png" ]];
            then
                mv "$i" "${i%.png/.jpg}"
            fi
        else
            echo "File not exists"
        fi
    done
fi
```

9. Make a bash script to display current foreground process in that terminal session with these conditions:

- The script can be terminated after receiving SIGINT twice from the user.
- Display Process ID, Teletype and Command that are executed and refresh for every 3 seconds.
- Change the color when printing, Process ID will have a red color, Teletype will have a green color and Command will have a blue color. You can choose any shade of red, green, and blue that you like.
- Separate Process ID, Teletype and Command that are executed with tab (\t).

10. Make a bash script to display that display Initial with his/her with these conditions: ******(Do case n first)

- The script will read from a file called "ostrainerlist" that contains Lab Assistants' initials, generation, and his/her name.
- Print out the Lab Assistant's initial, generation, and name for every 10 minutes.

11. Make a bash script to backup all your progress with these specification

- The script will backup with format:

Backup_X.gz

Where:

X: Current Date and Time

- Print out backup file name.
- Compress the file and store it on a folder called backup in ~/backup (make the directory if it does not exist).
- After **backing up** the files and compress it, it **won't do** any backup for the next **60 minutes**.

```
prk@ubuntu:~$ touch backup_script.sh
prk@ubuntu:~$ nano backup_script.sh
prk@ubuntu:~$ nano backup_script.sh
```

```
GNU nano 4.8 backup_script.sh
#!/bin/bash

gzip -rc * > Backup_`date +%y%m%d-%H%M%S`.gz
```

```
prk@ubuntu:~$ bash backup_script.sh
prk@ubuntu:~$ ls
Backup_220123-122201.gz  Documents      Music          rename.sh  Videos
backup_script.sh        Downloads      Pictures       Templates
Desktop                 eclipse-workspace  Public        var
prk@ubuntu:~$
```

- **Github Settings *, ****

12. You have created your scripts, now you need to upload all your **bash scripts** and **explanations**, now you are asked to put it into **Github**. Here are some specifications:

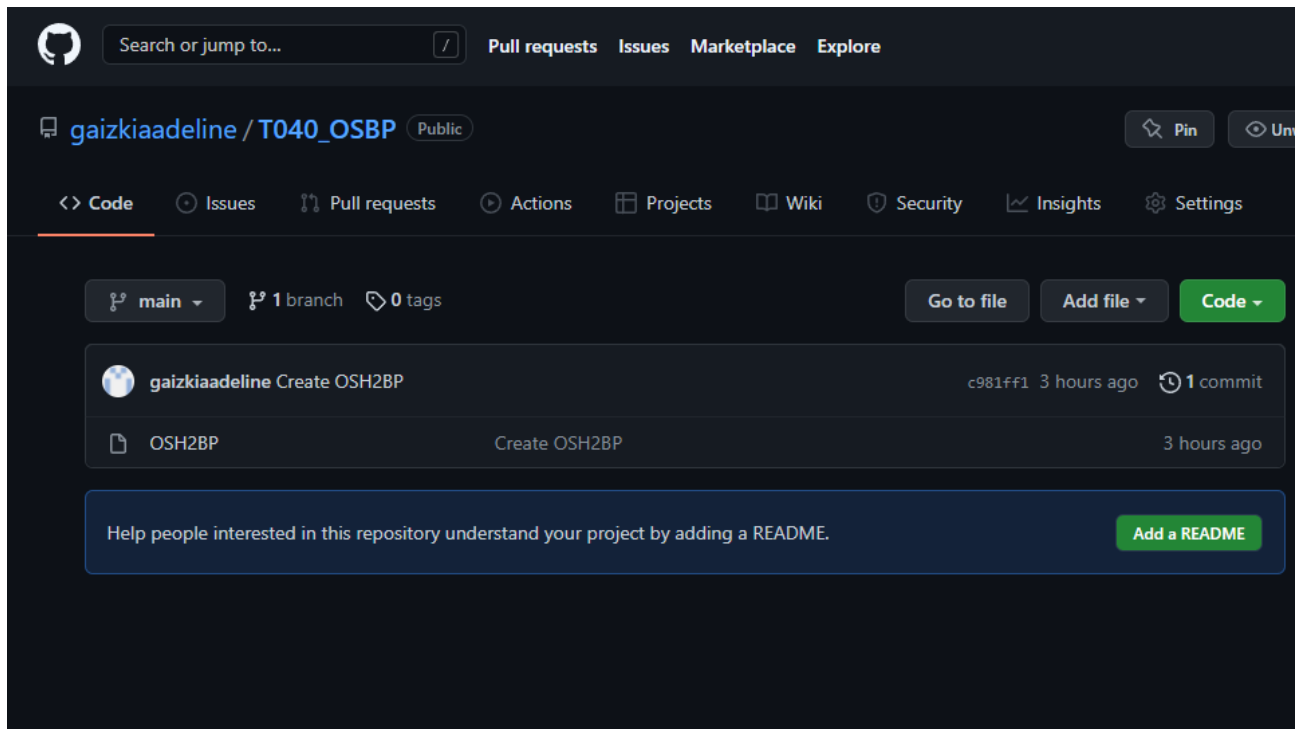
- Create a **Github Account** with a username that you picked, create a project with format:

TXXX_OSBP

Where:

TXXX: Your trainee number

- Set your repository visibility to **public**.
- Create a branch based on:
https://github.com/gaizkiaadeline/T040_OSBP.git



Create account GitHub

Create New Repository

	OSHXBP
Where: X: Day X of Operating System Subject in Core Training	

13. You have created your repository, now you need to push your **bash scripts, answers, and explanations** to your **Github Repository**.

- **System Daemon Settings *, ** (Complete case number 11 first)**

14. You have created your script to back up some files. Now you need to make a system service. Here are some specifications:

- Create a service for **script number 11**.
- Make sure the script will be run on **boot** or **restart**.
- Make sure the script can be **started**.

- **Misc Commands**

15. Display all file types in current directory that only has 3 characters with one command only. (**You cannot use find**).

```
prk@ubuntu:~$ file ???.*
hah.txt: empty
hai.txt: empty
hey.txt: empty
hmm.txt: empty
```

16. Make alias for a command "ll" that are used to display all file and hidden file in the directory. (Without current directory and parent directory).
17. Make sure command number **11 can be accessed** even after rebooting. ******(Do case number 11 first).
18. Run the bash script number **8** on the **background**. ******(Do case number 8 first).
19. Convert **newline** from "ostrainerlist" from **DOS** to **UNIX** format. *****(Explain why you need to convert it)
20. Check what kind of **UNIX Shell** that you use currently with **one command**.

```
prk@ubuntu:~$ echo "$SHELL"
/bin/bash
```

Note

Catatan

- **ALL CASES MUST BE USED ONLY WITH CLI COMMANDS, NO GUI (GRAPHICAL USER INTERFACE).**
- All topics that have **an asterisk (*)** in the end will be counted as correct if you provide the commands that you used, steps that you needed to do to solve that problem and the explanations. You must submit it with **".pdf"** format.
- You can **choose which topics** that you **want to do first**, except for some topics or cases with **2 asterisks (*)**.
- **You might need to expand your VM's Storage (1 GB minimum).**

Komponen

Component

No	Criteria	Score
1.	Script	2.5