NASA HW2

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Network Administration

1. Short Answer

1.

> Reference:
>
> http://www.cs.nthu.edu.tw/~nfhuang/chap04.htm
>
> https://zh.wikipedia.org/wiki/%E8%BD%BD%E6%B3%A2%E4%BE%A6%E5%90%AC%E5%A4%9A%E8%B7%AF%E8%AE%BF%E9%97%AE

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2. IPerf

1.

From R204 PC to CSIE Workstation

On R204 PC

```
nslookup linux12.csie.ntu.edu.tw # to get the IP address of workstation
iperf -c 140.112.30.43
```

On CSIE Workstation

```
iperf -s -i 5
```

Result

```
(b09902004) linux12.csie.ntu.edu.tw — Konsole
b09902004@linux12 [~] iperf -s -i 5
------------------------------------------------------------
Server listening on TCP port 5001
TCP window size:  128 KByte (default)
------------------------------------------------------------
[  4] local 140.112.30.43 port 5001 connected with 140.112.16.183 port 1704
[ ID] Interval       Transfer     Bandwidth
[  4]  0.0- 5.0 sec   401 MBytes   672 Mbits/sec
[  4]  5.0-10.0 sec   395 MBytes   662 Mbits/sec
[  4] 10.0-15.0 sec   395 MBytes   663 Mbits/sec
[  4] 15.0-20.0 sec   291 MBytes   488 Mbits/sec
[  4] 20.0-25.0 sec   311 MBytes   522 Mbits/sec
[  4] 25.0-30.0 sec   378 MBytes   634 Mbits/sec
[  4] 30.0-35.0 sec   387 MBytes   649 Mbits/sec
[  4] 35.0-40.0 sec   398 MBytes   668 Mbits/sec
[  4] 40.0-45.0 sec   362 MBytes   607 Mbits/sec
[  4] 45.0-50.0 sec   382 MBytes   642 Mbits/sec
[  4] 50.0-55.0 sec   399 MBytes   670 Mbits/sec
[  4] 55.0-60.0 sec   383 MBytes   642 Mbits/sec
[  4]  0.0-60.0 sec  4.38 GBytes   626 Mbits/sec
```

From laptop (connected to `csie-5G`) to R204 PC

On R204 PC

```
ifconfig # to get the IP address of this system
iperf -s
```

On my laptop

```
iperf -c 192.168.204.36 -t 60 -i 5
```

Result


```
HW2 : zsh — Konsole
(base)
# frank @ Frank-UX425EA-Linux in ~/Github_Repos/NASA-2021/HW2 on git:main x [16:11:40]
$ iperf -c 192.168.204.36 -t 60 -i 5
------------------------------------------------------------
Client connecting to 192.168.204.36, TCP port 5001
TCP window size:  255 KByte (default)
------------------------------------------------------------
[  3] local 10.5.0.147 port 53926 connected with 192.168.204.36 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0- 5.0 sec   128 MBytes   214 Mbits/sec
[  3]  5.0-10.0 sec   142 MBytes   239 Mbits/sec
[  3] 10.0-15.0 sec   119 MBytes   199 Mbits/sec
[  3] 15.0-20.0 sec   119 MBytes   199 Mbits/sec
[  3] 20.0-25.0 sec   136 MBytes   229 Mbits/sec
[  3] 25.0-30.0 sec   145 MBytes   243 Mbits/sec
[  3] 30.0-35.0 sec   132 MBytes   222 Mbits/sec
[  3] 35.0-40.0 sec   127 MBytes   213 Mbits/sec
[  3] 40.0-45.0 sec   118 MBytes   197 Mbits/sec
[  3] 45.0-50.0 sec   117 MBytes   196 Mbits/sec
[  3] 50.0-55.0 sec   151 MBytes   253 Mbits/sec
[  3] 55.0-60.0 sec   144 MBytes   241 Mbits/sec
[  3]  0.0-60.0 sec  1.54 GBytes   220 Mbits/sec
(base)
# frank @ Frank-UX425EA-Linux in ~/Github_Repos/NASA-2021/HW2 on git:main x [16:12:45]
$
```
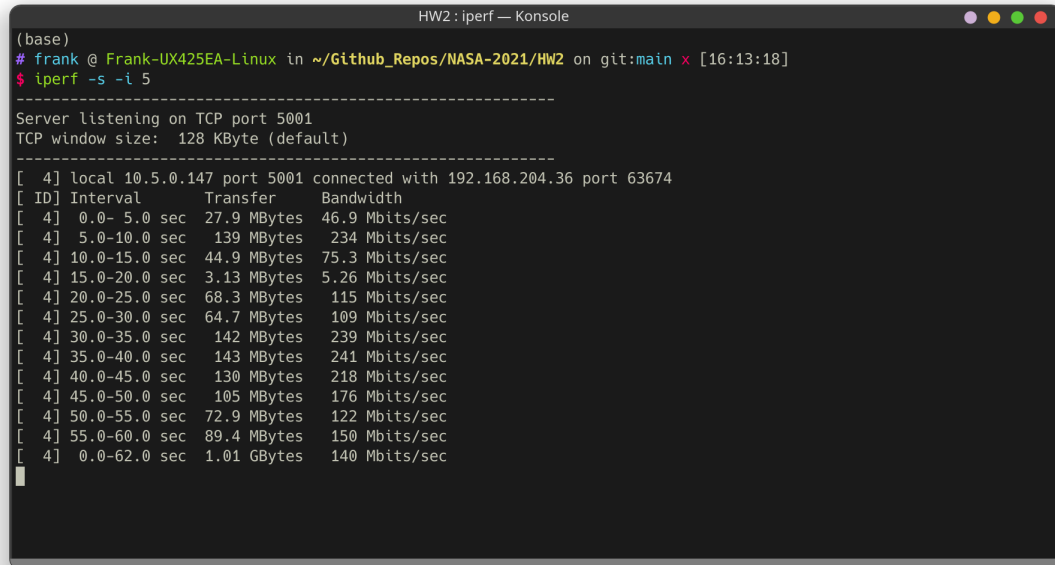
From R204 PC to laptop (connected to `csie-5G`)

On my laptop

```
ifconfig # to get the IP address of this system
iperf -s -i 5
```

On R204 PC

```
iperf -c 10.5.0.147 -t 60
```

Result

From laptop A to laptop B (both connected to `csie-5G`)

On laptop A

```
ifconfig # to get the IP address of this system
iperf -s
```

On laptop B

```
iperf -c 10.5.6.200 -t 60 -i 5
```

Result

```
                              HW2 : zsh — Konsole                         ● ● ●
(base)
# frank @ Frank-UX425EA-Linux in ~/Github_Repos/NASA-2021/HW2 on git:main x [16:06:02]
$ iperf -c 10.5.6.200 -t 60 -i 5
------------------------------------------------------------
Client connecting to 10.5.6.200, TCP port 5001
TCP window size:  119 KByte (default)
------------------------------------------------------------
[  3] local 10.5.0.147 port 46558 connected with 10.5.6.200 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0- 5.0 sec  16.6 MBytes  27.9 Mbits/sec
[  3]  5.0-10.0 sec  13.9 MBytes  23.4 Mbits/sec
[  3] 10.0-15.0 sec  3.81 MBytes  6.39 Mbits/sec
[  3] 15.0-20.0 sec  58.5 MBytes  98.1 Mbits/sec
[  3] 20.0-25.0 sec  52.2 MBytes  87.7 Mbits/sec
[  3] 25.0-30.0 sec  59.1 MBytes  99.2 Mbits/sec
[  3] 30.0-35.0 sec  44.2 MBytes  74.2 Mbits/sec
[  3] 35.0-40.0 sec  52.1 MBytes  87.5 Mbits/sec
[  3] 40.0-45.0 sec  49.8 MBytes  83.5 Mbits/sec
[  3] 45.0-50.0 sec  16.3 MBytes  27.3 Mbits/sec
[  3] 50.0-55.0 sec  46.6 MBytes  78.2 Mbits/sec
[  3] 55.0-60.0 sec  63.8 MBytes   107 Mbits/sec
[  3]  0.0-60.1 sec   477 MBytes  66.6 Mbits/sec
(base)
# frank @ Frank-UX425EA-Linux in ~/Github_Repos/NASA-2021/HW2 on git:main x [16:07:03]
$ ▮
```

2.

From	To	Bandwidth Measured
R204 PC	CSIE Workstation	626 Mbps
Laptop (connected to `csie-5G`)	R204 PC	220 Mbps
R204 PC	Laptop (connected to `csie-5G`)	140 Mbps
Laptop A (connected to `csie-5G`)	Laptop B (connected to `csie-5G`)	66.6 Mbps

3. IPv6

> Reference:
>
> https://unix.stackexchange.com/questions/457670/netcat-how-to-listen-on-a-tcp-port-using-ipv6-address
>
> https://ithelp.ithome.com.tw/articles/10244029
>
> https://stackoverflow.com/questions/24780404/python-tcp-socket-with-ipv6-address-failed

Commands:

```
ifconfig
ncat fe80::5054:ff:fecf:12d9%net0 9453
```

Server message:

```
284a1e00b75784f5ab2f45a086e48bb6
```

```
(b09902004) oasis1.csie.ntu.edu.tw — Konsole
b09902004@oasis1 [~] ncat fe80::5054:ff:fecf:12d9%net0 9453
Please enter your student ID: (first letter should be lowercase)  b09902004
You have successfully connect me using IPv6!
        Please write the follow message in your homework:
        284a1e00b75784f5ab2f45a086e48bb6
```

System Administration
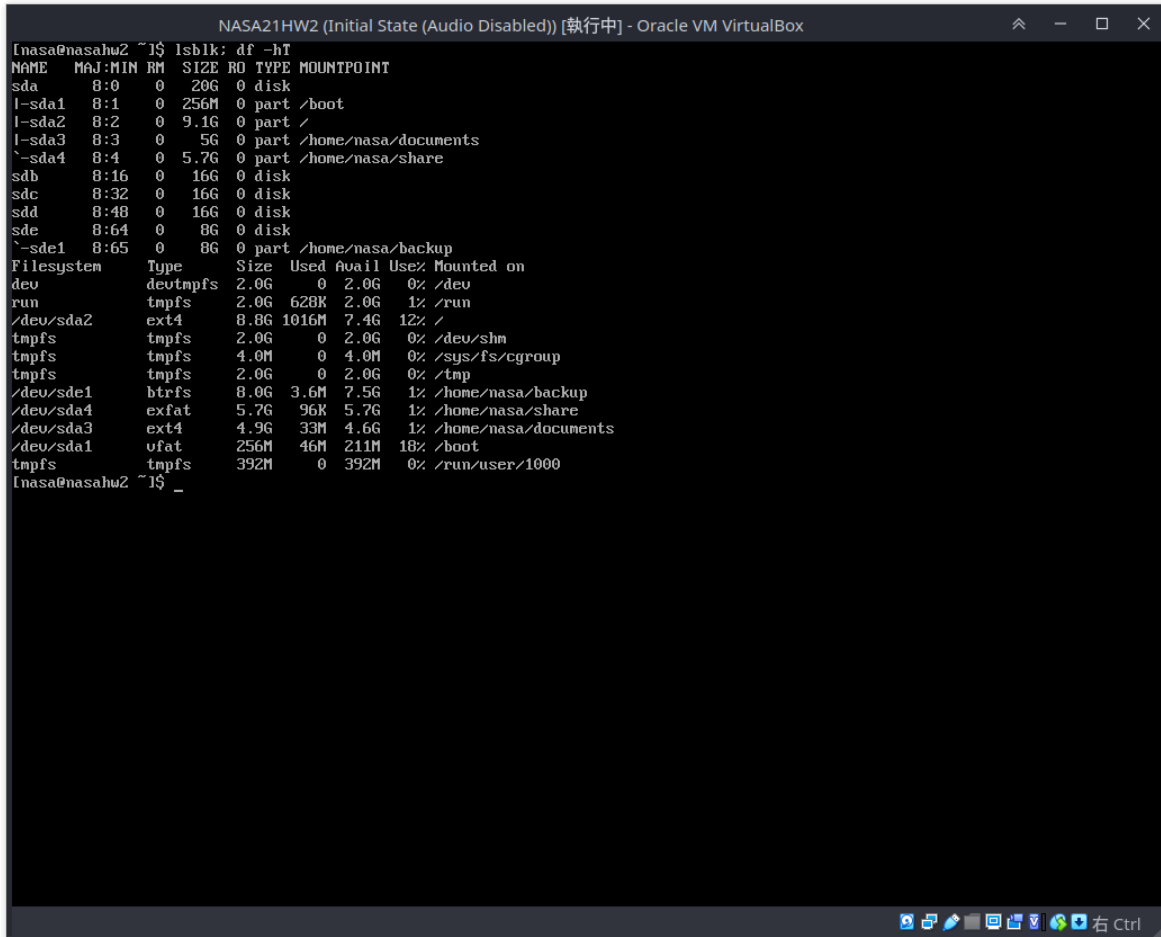
1.

> Reference:
>
> Lab 3 slides
>
> https://zh.wikipedia.org/wiki/%E6%96%87%E4%BB%B6%E7%B3%BB%E7%BB%9F
>
> http://linux.vbird.org/linux_basic/0230filesystem.php
>
> https://unix.stackexchange.com/questions/61209/create-and-format-exfat-partition-from-linux

In the shell:

```
sudo -i
lsblk # check current status
parted /dev/sda print # check if it's MBR or GPT
pacman -Syy
pacman -S gdisk # install gdisk bc it's GPT
umount /dev/sda3
e2fsck /dev/sda3
resize2fs /dev/sda3 5G
gdisk /dev/sda
# then follow the instructions in gdisk to:
# 1. delete partition3
# 2. create partition 3 with 5 GB
# 3. create partition 4 with rest of the space
partprobe
vim /etc/fstab
# in vim:
# find the line for mounting /home/nasa/documents
# change the original 'UUID=<some ID>' to '/dev/sda3'
reboot
# after reboot
sudo -i
```

```
lsblk
mkfs.exfat /dev/sda4
mount /dev/sda4 /home/nasa/share
vim /etc/fstab
# in vim:
# add a new line like this:
# /dev/sda4    /home/nasa/share    exfat    defaults    0 0
reboot
lsblk; df -hT
```



```
[nasa@nasahw2 ~]$ lsblk; df -hT
NAME    MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda       8:0    0   20G  0 disk
|-sda1    8:1    0  256M  0 part /boot
|-sda2    8:2    0  9.1G  0 part /
|-sda3    8:3    0    5G  0 part /home/nasa/documents
`-sda4    8:4    0  5.7G  0 part /home/nasa/share
sdb       8:16   0   16G  0 disk
sdc       8:32   0   16G  0 disk
sdd       8:48   0   16G  0 disk
sde       8:64   0    8G  0 disk
`-sde1    8:65   0    8G  0 part /home/nasa/backup
Filesystem      Type     Size  Used Avail Use% Mounted on
dev             devtmpfs  2.0G     0  2.0G   0% /dev
run             tmpfs     2.0G  628K  2.0G   1% /run
/dev/sda2       ext4      8.8G 1016M  7.4G  12% /
tmpfs           tmpfs     2.0G     0  2.0G   0% /dev/shm
tmpfs           tmpfs     4.0M     0  4.0M   0% /sys/fs/cgroup
tmpfs           tmpfs     2.0G     0  2.0G   0% /tmp
/dev/sde1       btrfs     8.0G  3.6M  7.5G   1% /home/nasa/backup
/dev/sda4       exfat     5.7G   96K  5.7G   1% /home/nasa/share
/dev/sda3       ext4      4.9G   33M  4.6G   1% /home/nasa/documents
/dev/sda1       vfat      256M   46M  211M  18% /boot
tmpfs           tmpfs     392M     0  392M   0% /run/user/1000
[nasa@nasahw2 ~]$ _
```