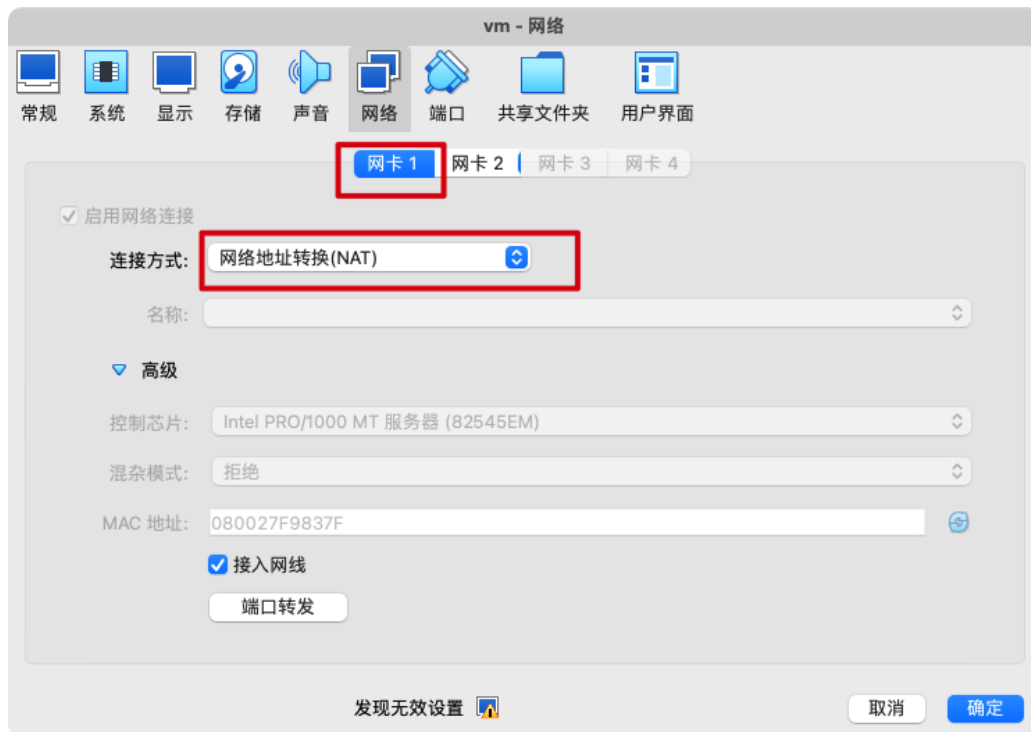


README FIRST

Virtual Machine Login and Usage Instruction

We provide the [CSC3150_a3_xv6.ova](#) file for x64 chip users (can be imported into VirtualBox or VMware) and the [CSC3150_a3_xv6.qcow2](#) file for Macbook m1/2 users (can be imported into UTM).

For VirtualBox users(Normally, all versions would run well. We checked the 7.0 version), remember to set the network as follows.





For UTM users, follow this [quick tutorial](#) to import the .qcow2 file. The default network setting (Shared Network) is good.

For all users

1. Log in the virtual machine through the username csc3150 and password csc3150
2. Type '**ip a**' to get the IP address of your virtual machine. But if it returns like the following figure, use '**sudo dhclient**' command to assign an IP address. Then try 'ip a' again.

```
Last login: Wed Oct 25 06:06:34 UTC 2023 on tty1
csc3150@csc3150:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 00:0c:29:b4:ce:e2 brd ff:ff:ff:ff:ff:ff
```

```
csc3150@csc3150:~$ sudo dhclient
[sudo] password for csc3150:
csc3150@csc3150:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:0c:29:b4:ce:e2 brd ff:ff:ff:ff:ff:ff
    inet 192.168.166.129/24 brd 192.168.166.255 scope global dynamic ens33
        valid_lft 1798sec preferred_lft 1798sec
    inet6 fe80::20c:29ff:feb4:cee2/64 scope link
        valid_lft forever preferred_lft forever
```

3. The above '192.168.166.129' is the IP address of your virtual machine. You can now access it from your local terminal and VsCode by using ssh. (In this case, the command is **ssh csc3150@192.168.166.129**)
4. We have put the template under the default directory. Go to the 'xv6-labs-2022' directory and try the following command to compile and run the project.

```
csc3150@csc3150:~$ ls
xv6-labs-2022
csc3150@csc3150:~$ cd xv6-labs-2022/
csc3150@csc3150:~/xv6-labs-2022$ make clean
fatal: not a git repository (or any of the parent directories): .git
rm -f *.tex *.dvi *.idx *.aux *.log *.ind *.ilg \
*/*.o */*.d */*.asm */*.sym \
user/initcode user/initcode.out kernel/kernel fs.img \
mkfs/mkfs .gdbinit \
user/usys.S \
user/_cat user/_echo user/_forktest user/_grep user/_init user/_kill user/_ln user/_ls user/_mkdir u
ser/_rm user/_sh user/_stressfs user/_usertests user/_grind user/_wc user/_zombie user/_mmaptest \
ph barrier
csc3150@csc3150:~/xv6-labs-2022$ make qemu..
```

5. After 'make qemu', the xv6 system powers on.

```
xv6 kernel is booting

hart 1 starting
hart 2 starting
init: starting sh
$
```

6. Try 'mmaptest', you are expected to have the following output.

```
$ mmaptest
mmap_test starting
test mmap f
mismatch at 0, wanted 'A', got 0x1
mmaptest: mmap_test failed: v1 mismatch (1), pid=3
$ _
```

7. To quit the xv6 system, press Ctrl a. Leave it. Then type x.
8. **Hint:** You can search "TODO" globally in VSCode. We have highlighted the areas you need to complete for the basic part. But you should figure out where to solve the bonus part on your own.

