

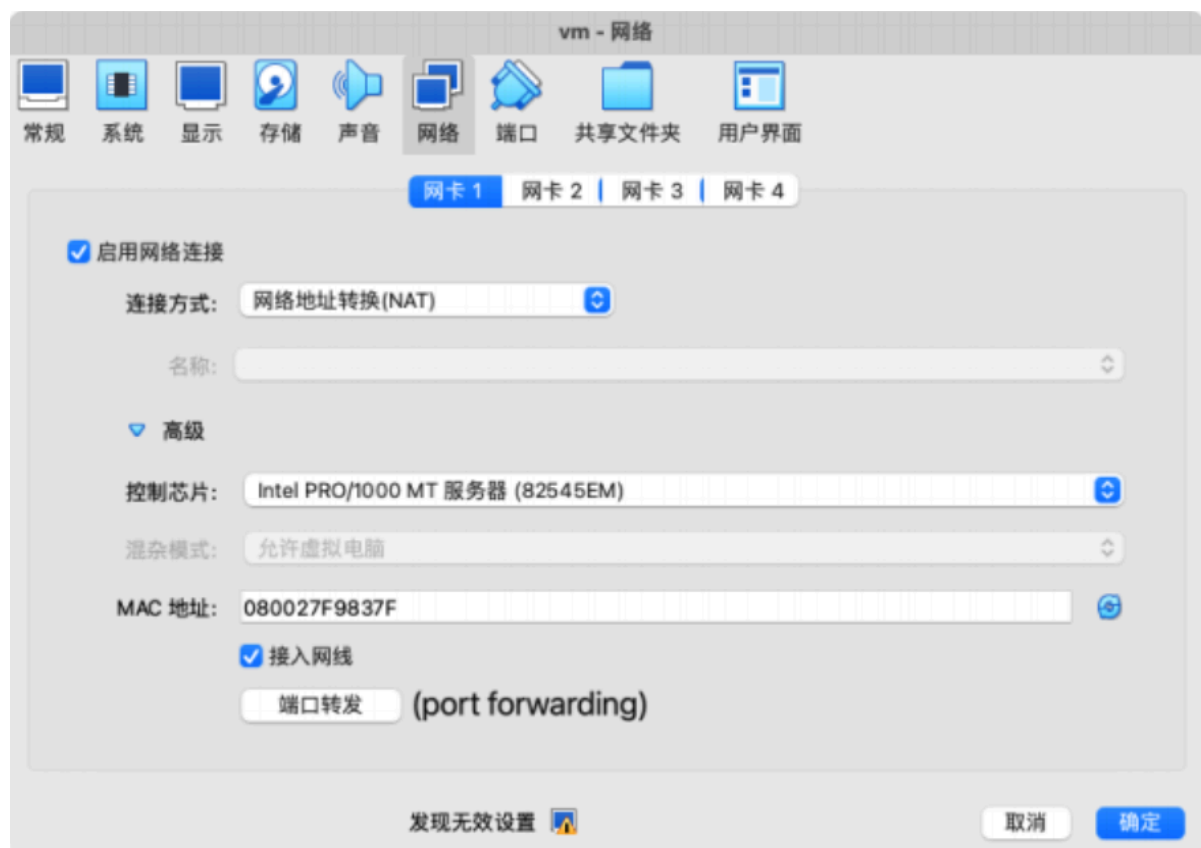
VM Setting

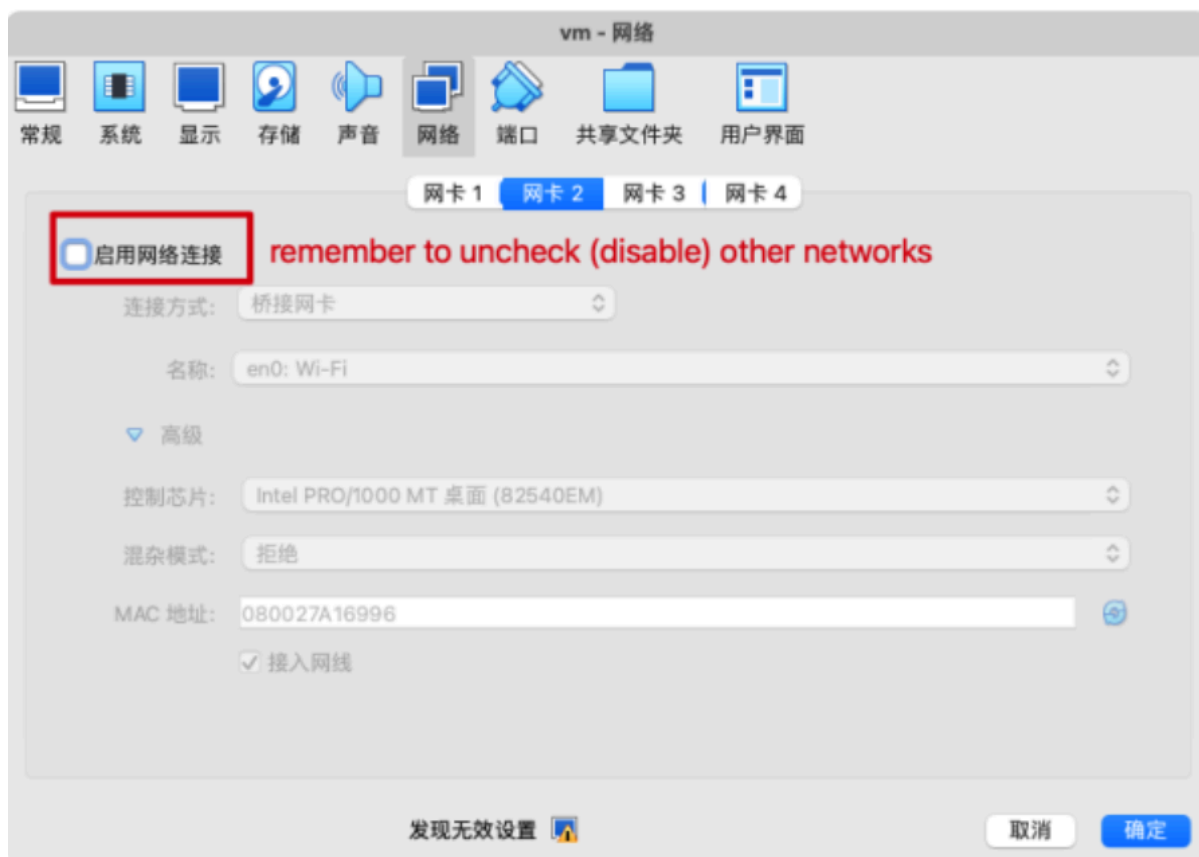
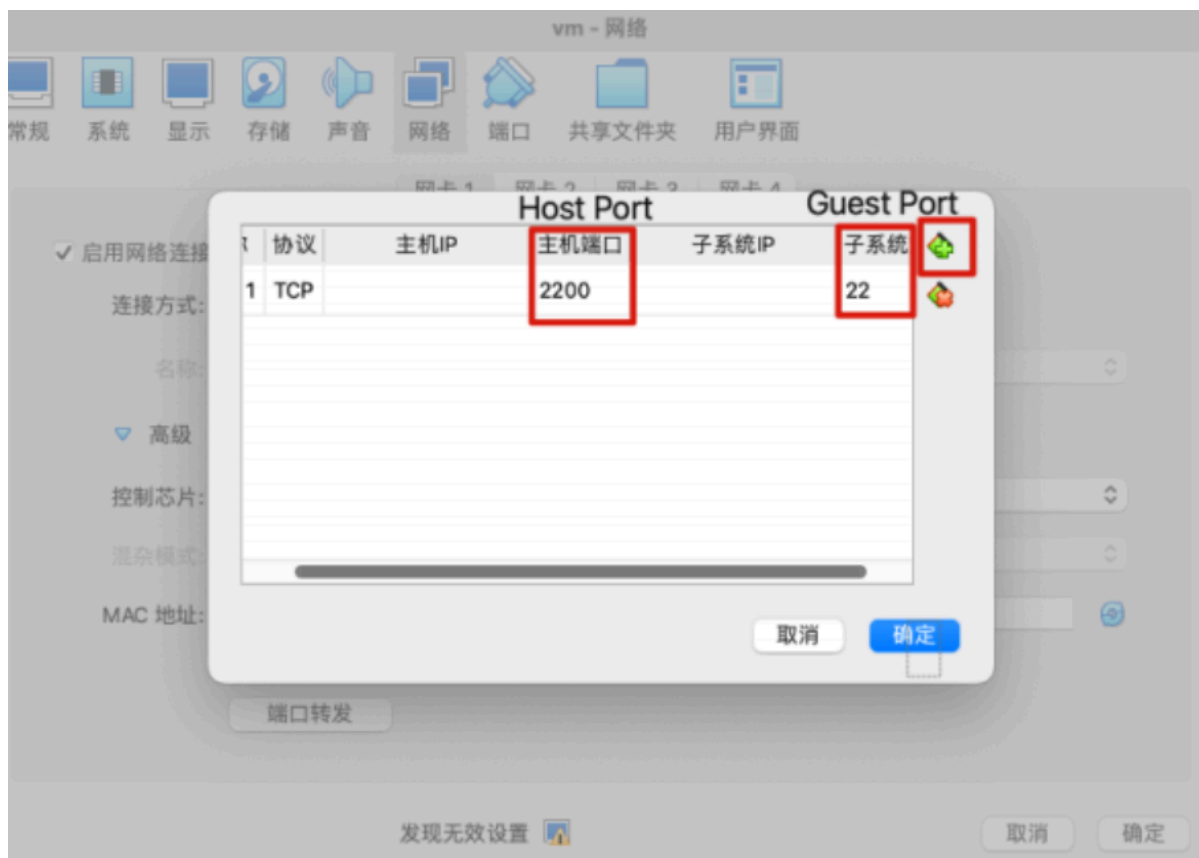
Virtual Machine Login and Usage Instruction

Since the project3 is based on xv6, it requires a series of toolchain to support. We have already prepared all necessary environments for you. 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), network configuration can be referred to as follows: Only one network, i.e., **Network Address Translation (NAT)**. Set port forwarding configuration as **host port:2200, guest port:22**.

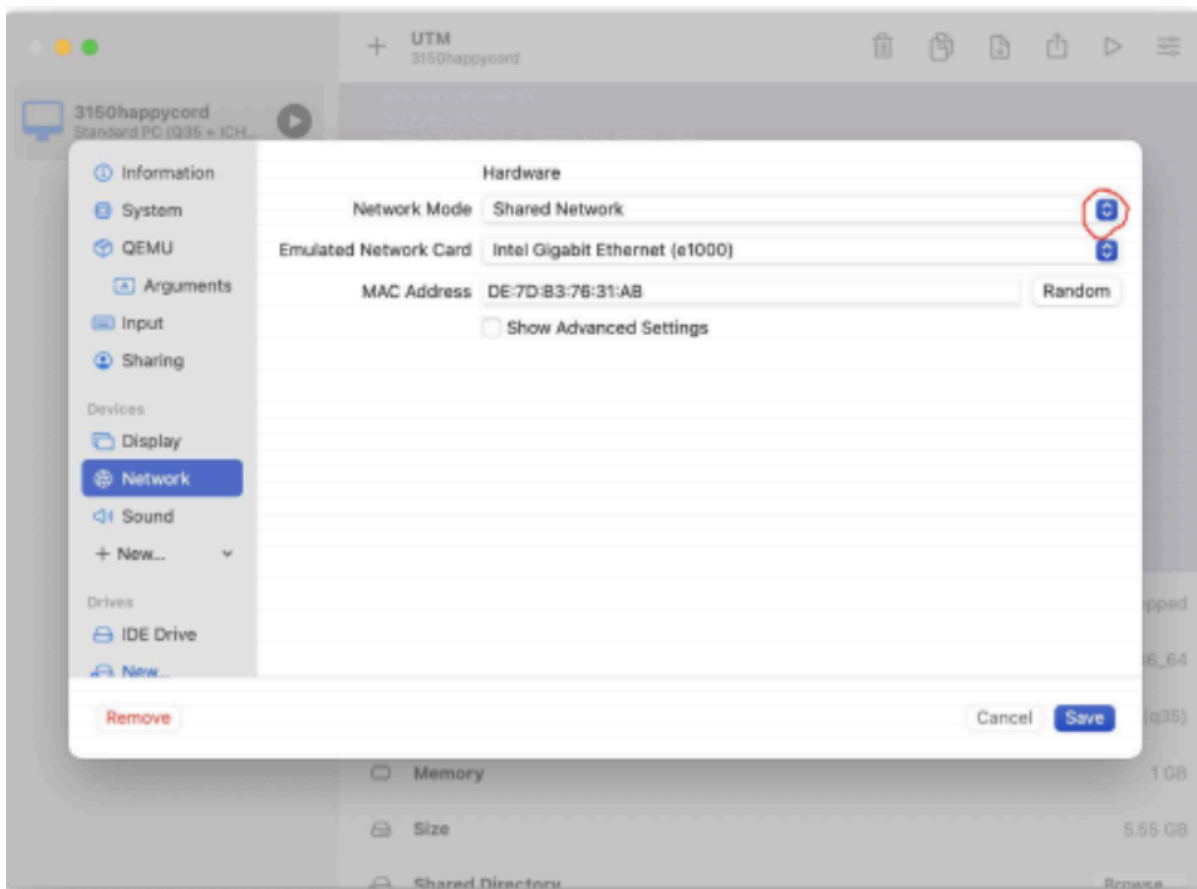
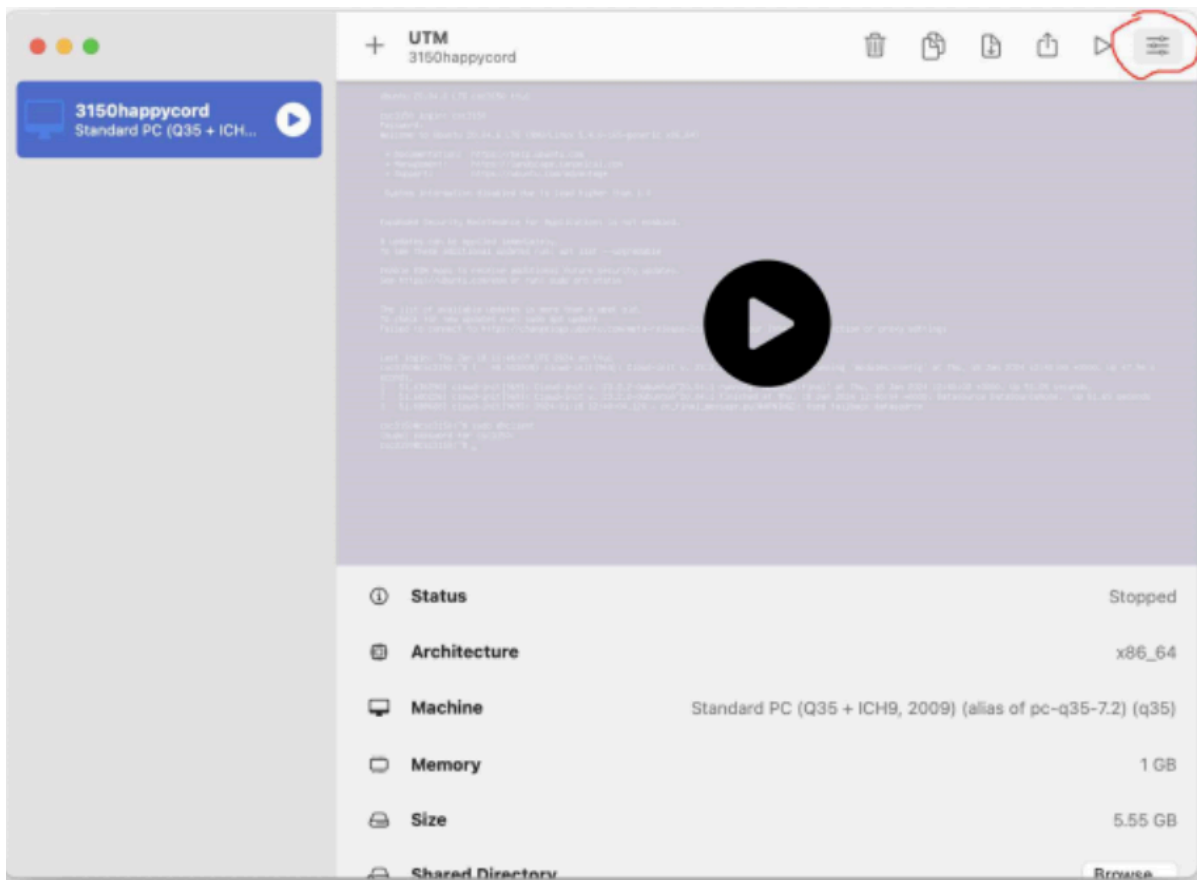




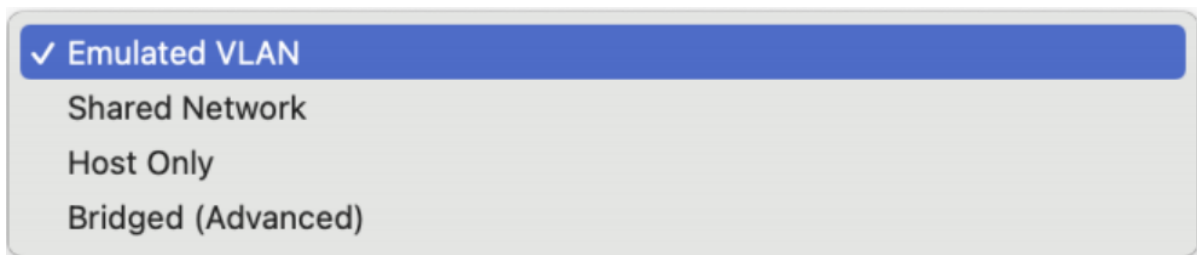
For UTM users (Macbook M1/M2), follow this [quick tutorial](#) to import the .qcow2 file.

The network settings of UTM are as follows:

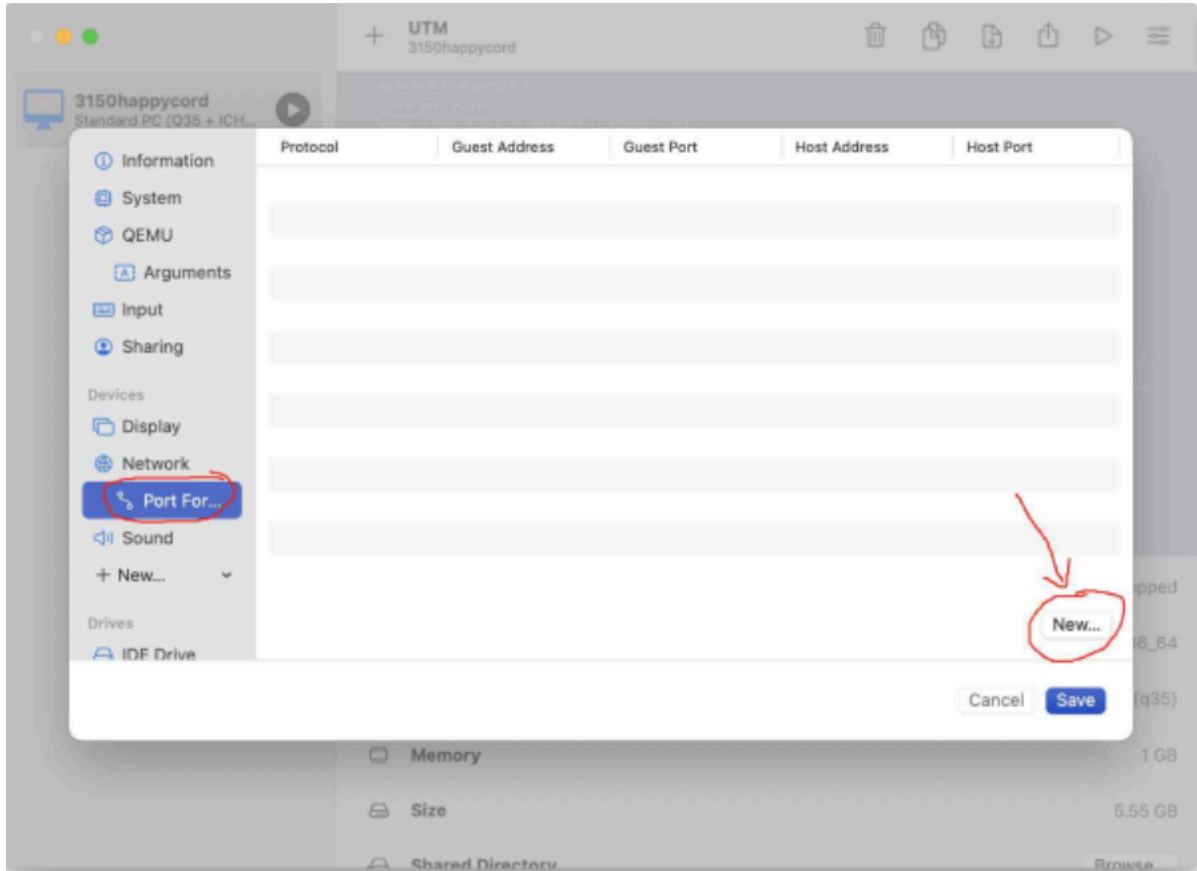
First open the network configuration of imported VM.



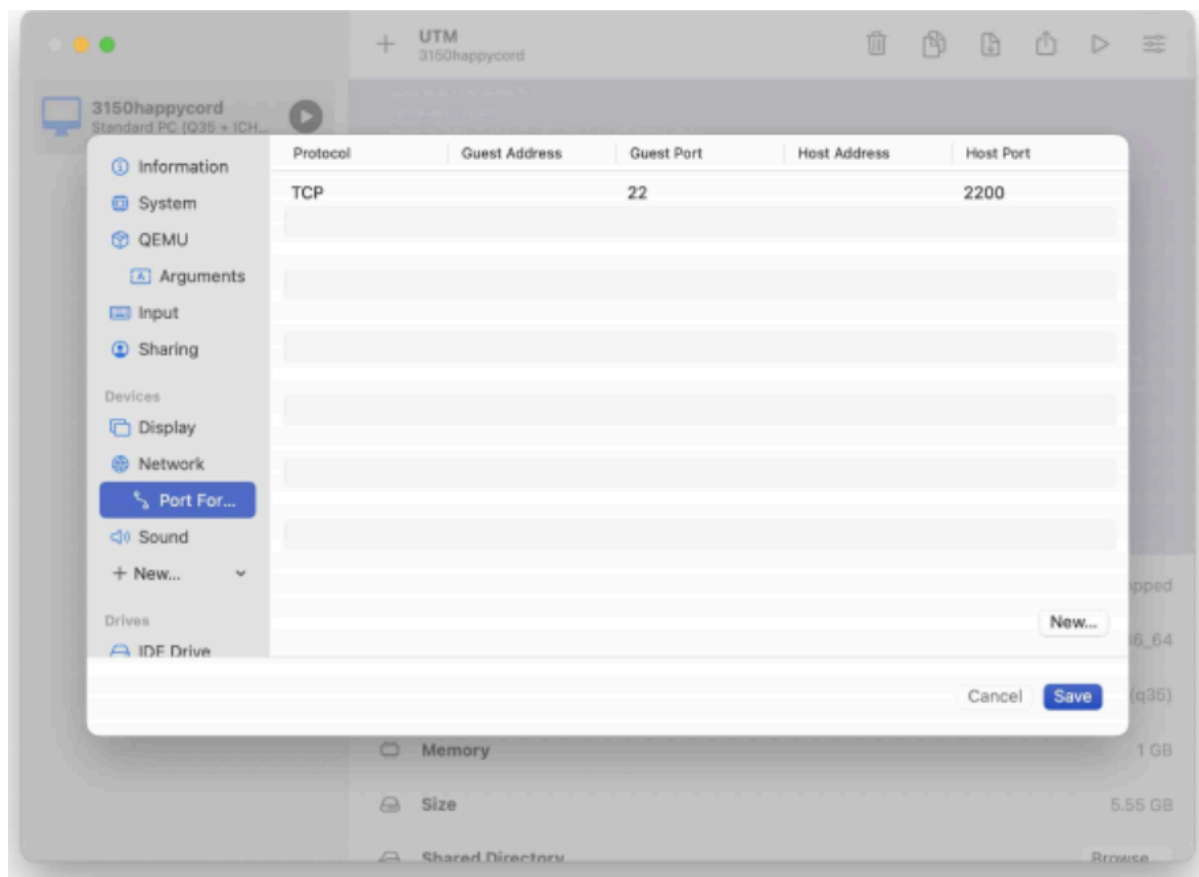
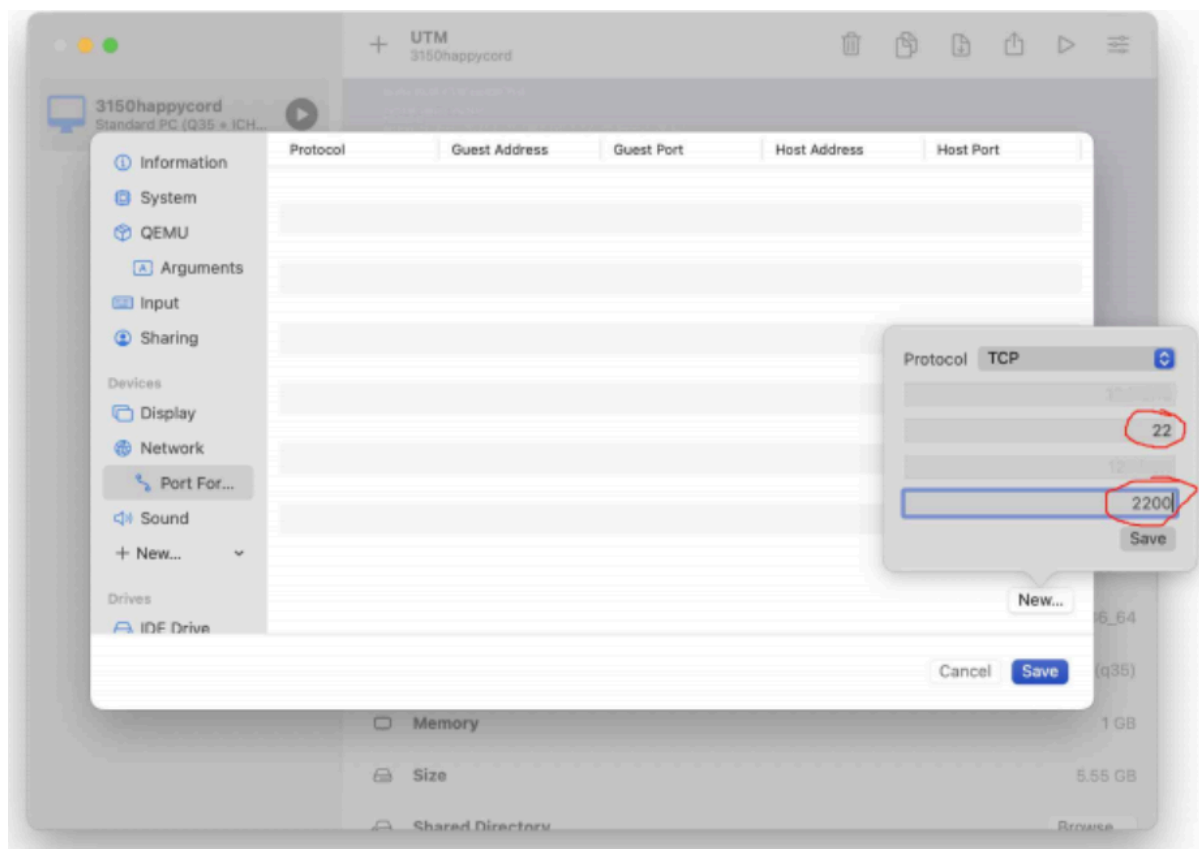
For network mode, choose Emulated VLAN



Press 'Port Forward...', then press 'New...'

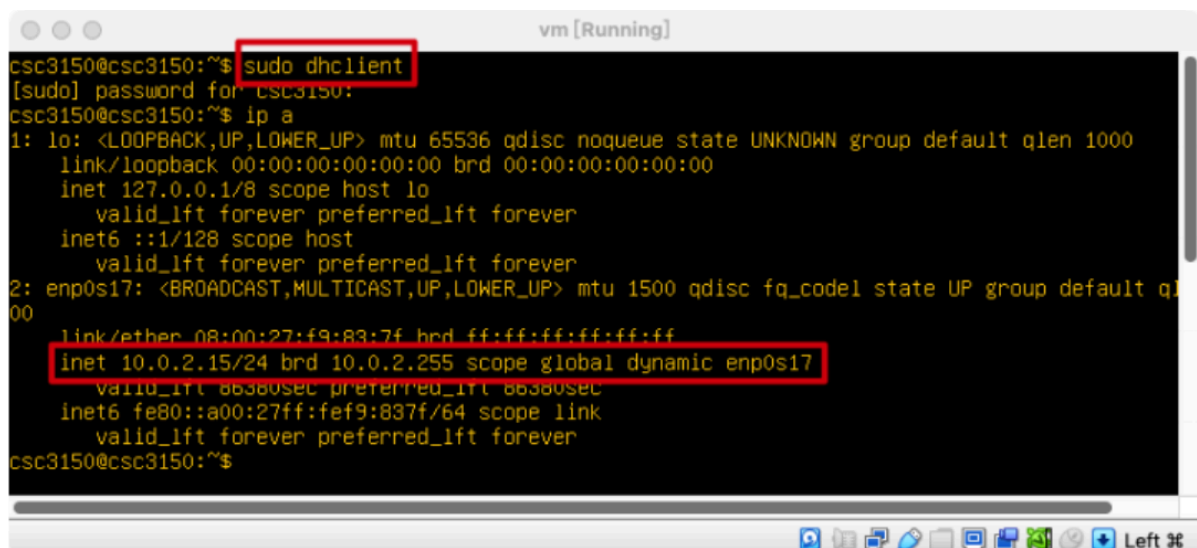


Set the new port forward rule as following



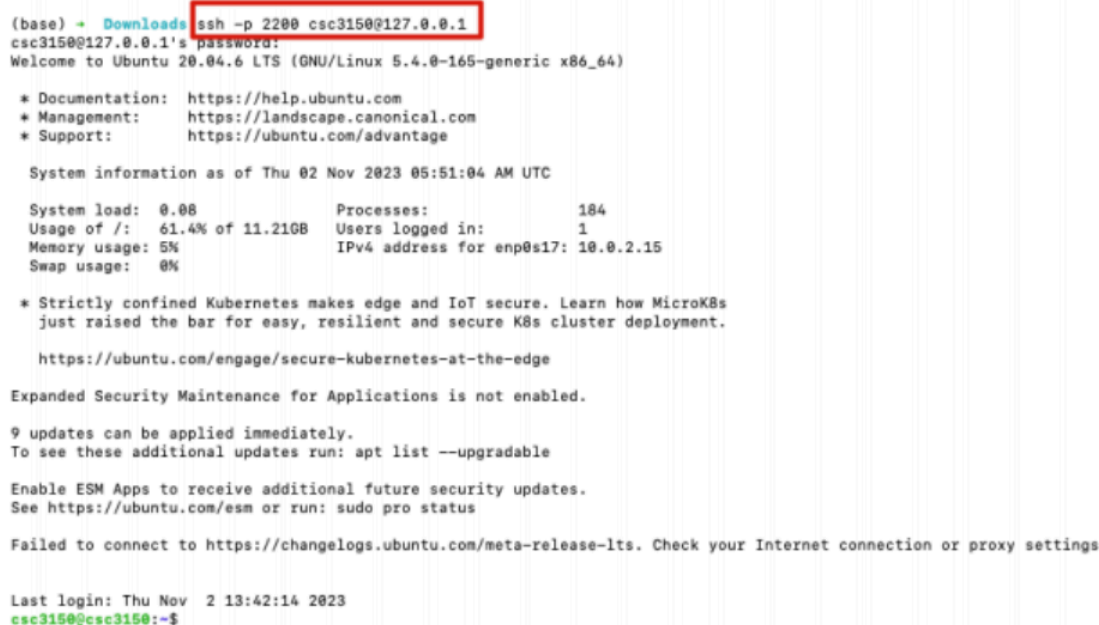
For All Students

- Log in the virtual machine through the username **csc3150** and password **csc3150**
- Use 'sudo dhclient' command to assign an IP address. Then try 'ip a' again.



```
vm [Running]
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: enp0s17: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:f9:83:7f brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic enp0s17
        valid_lft 86380sec preferred_lft 86380sec
    inet6 fe80::a00:27ff:fef9:837f/64 scope link
        valid_lft forever preferred_lft forever
csc3150@csc3150:~$
```

- If you can see the assigned IP shown in the above figure, dhclient works. Then, we use the following command to connect.
 - `ssh -p 2200 csc3150@127.0.0.1`



```
(base) + Downloads ssh -p 2200 csc3150@127.0.0.1
csc3150@127.0.0.1's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.4.0-165-generic x86_64)

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

System information as of Thu 02 Nov 2023 05:51:04 AM UTC

System load:  0.08          Processes:            184
Usage of /:   61.4% of 11.21GB Users logged in:          1
Memory usage: 5%           IPv4 address for enp0s17: 10.0.2.15
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.

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

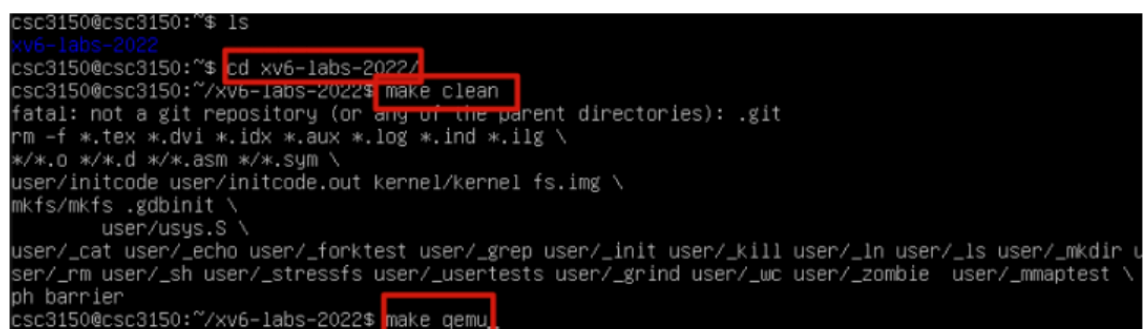
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your Internet connection or proxy settings

Last login: Thu Nov  2 13:42:14 2023
csc3150@csc3150:~$
```

To Run The Project

1. 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
 - a. (xv6-labs-2022 is the assignment template we gonna to use in assignment 3 and 4, have a try if the following works well)



```
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
```

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

```
xv6 kernel is booting  
  
hart 1 starting  
hart 2 starting  
init: starting sh  
$
```

3. Try 'ls'. You are expected to have the following output like this

```
xv6 kernel is booting  
  
hart 1 starting  
hart 2 starting  
init: starting sh  
$ ls  
.  
..  
README  
cat  
echo  
forktest  
grep  
init  
kill  
ln  
ls  
mkdir  
rm  
sh  
stressfs  
usertests  
grind  
wc  
zombie  
mmaptest  
console  
$
```

4. 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
$ _
```

5. To quit the xv6 system, press Ctrl a. Leave it. Then type x.