EE450 Socket Programming Project: Alternatives to the Provided VM

Only Applicable to Mac M1 Users

As the new Apple Mac M1 machine does not support VM execution, students are facing difficulties in testing their socket programming project in the provided Ubuntu VM. Here I am providing an alternative solution based on Amazon AWS cloud EC2 instances. For the students who cannot launch the provided Ubuntu VM, please follow the below steps to test your project before submission.

Step 0: create an AWS account

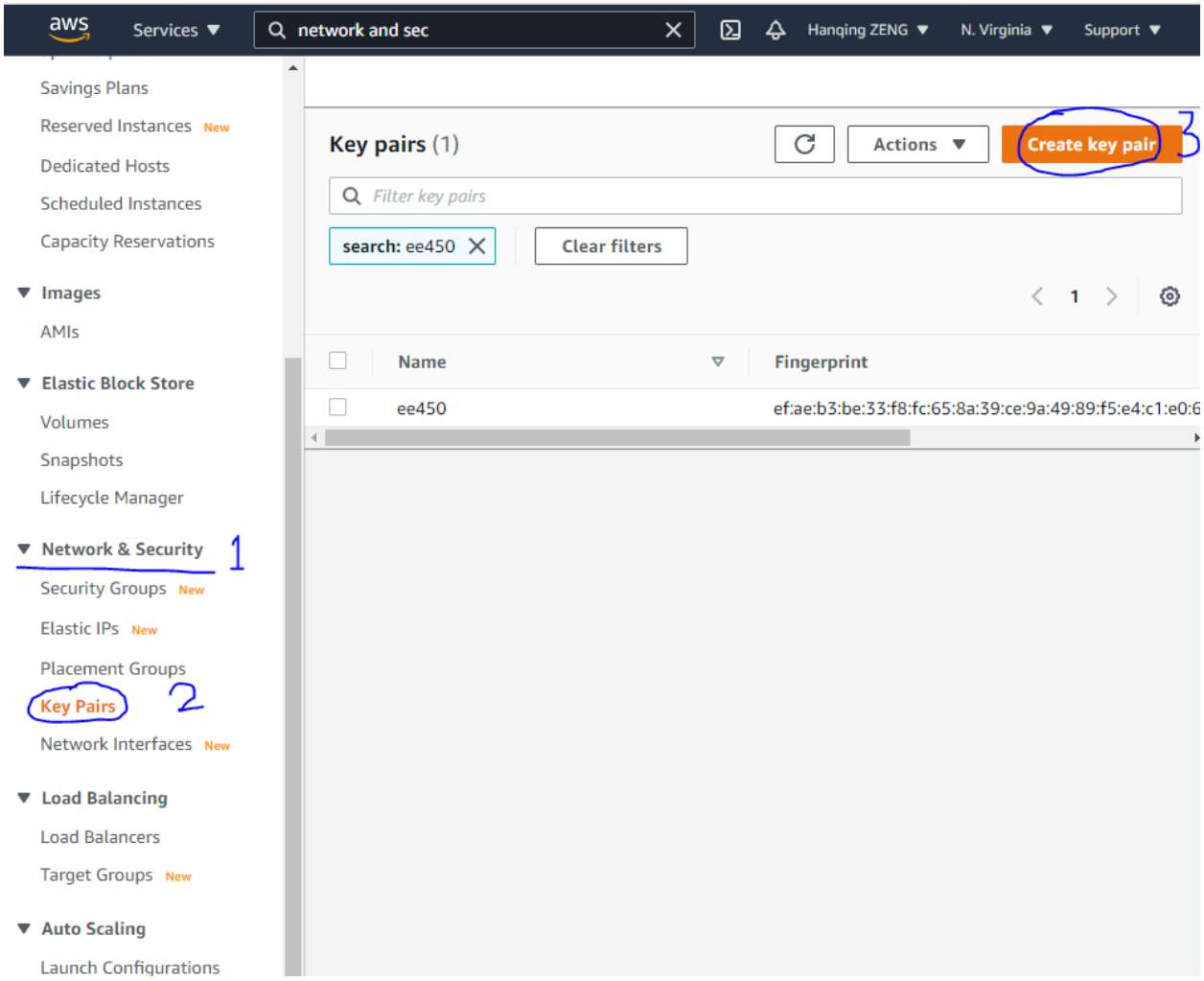
Google amazon aws and create your own account.

Be aware that AWS charges you based on your hourly usage. Always remember to terminate your instance after you are done using it. Otherwise, you may be surprised by your monthly bill!

Step 1: Create Key Pairs

The key pair is used later on to securely log in (via `ssh`) your launched EC2 instance.

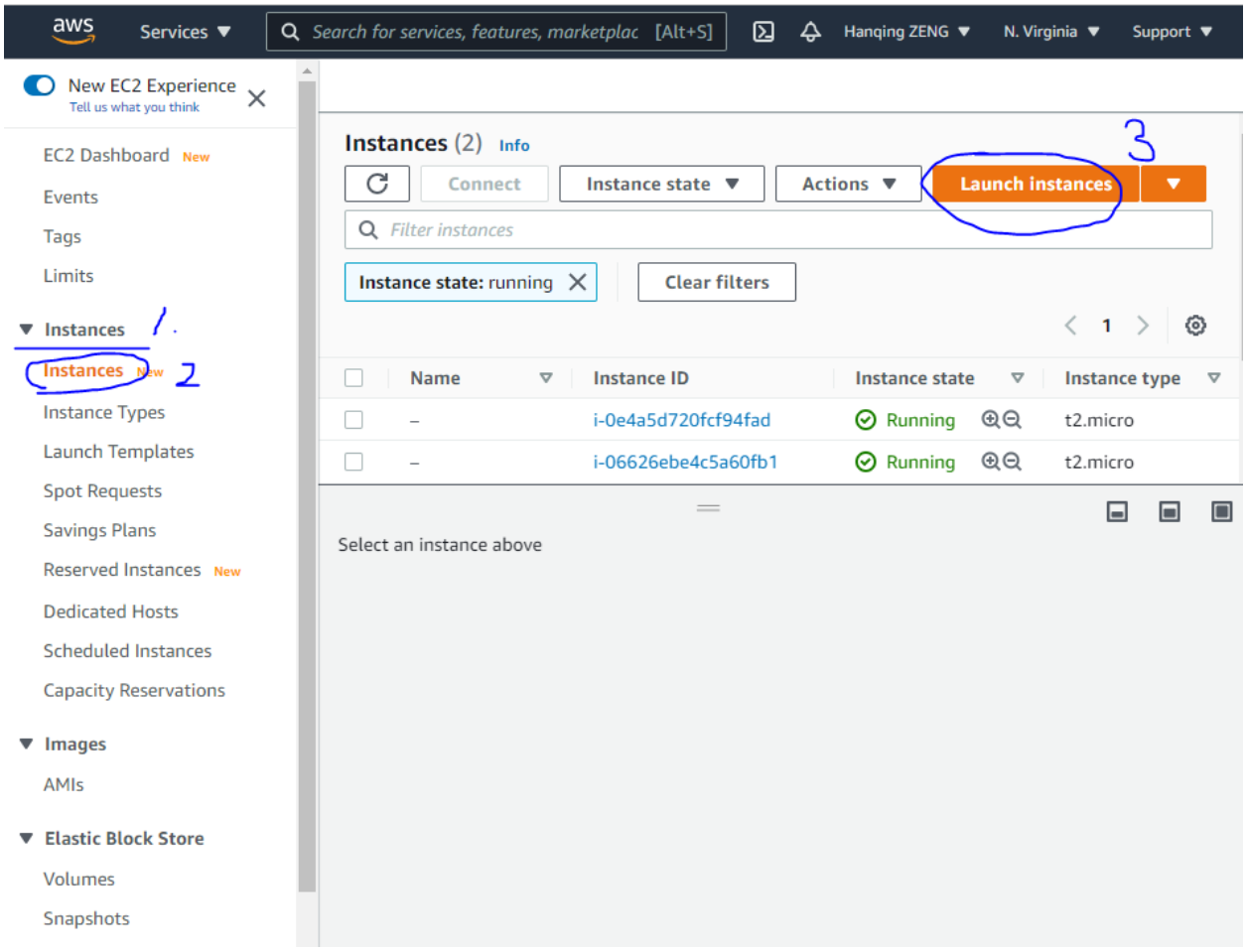
Go to the dashboard. Click “Network & Security” → “Key Pairs” on the left panel. Then click “Create key pair” on the right panel. Give whatever name to your newly created key-pair (in the example, I named it “ee450”). For Mac M1, you should create the file in the *.pem format. After successful creation, you should see a new row in the dashboard, and your browser should download the “*.pem” file automatically for you. Save the downloaded file to some local folder, as this file will be needed to log in the ec2 late on.



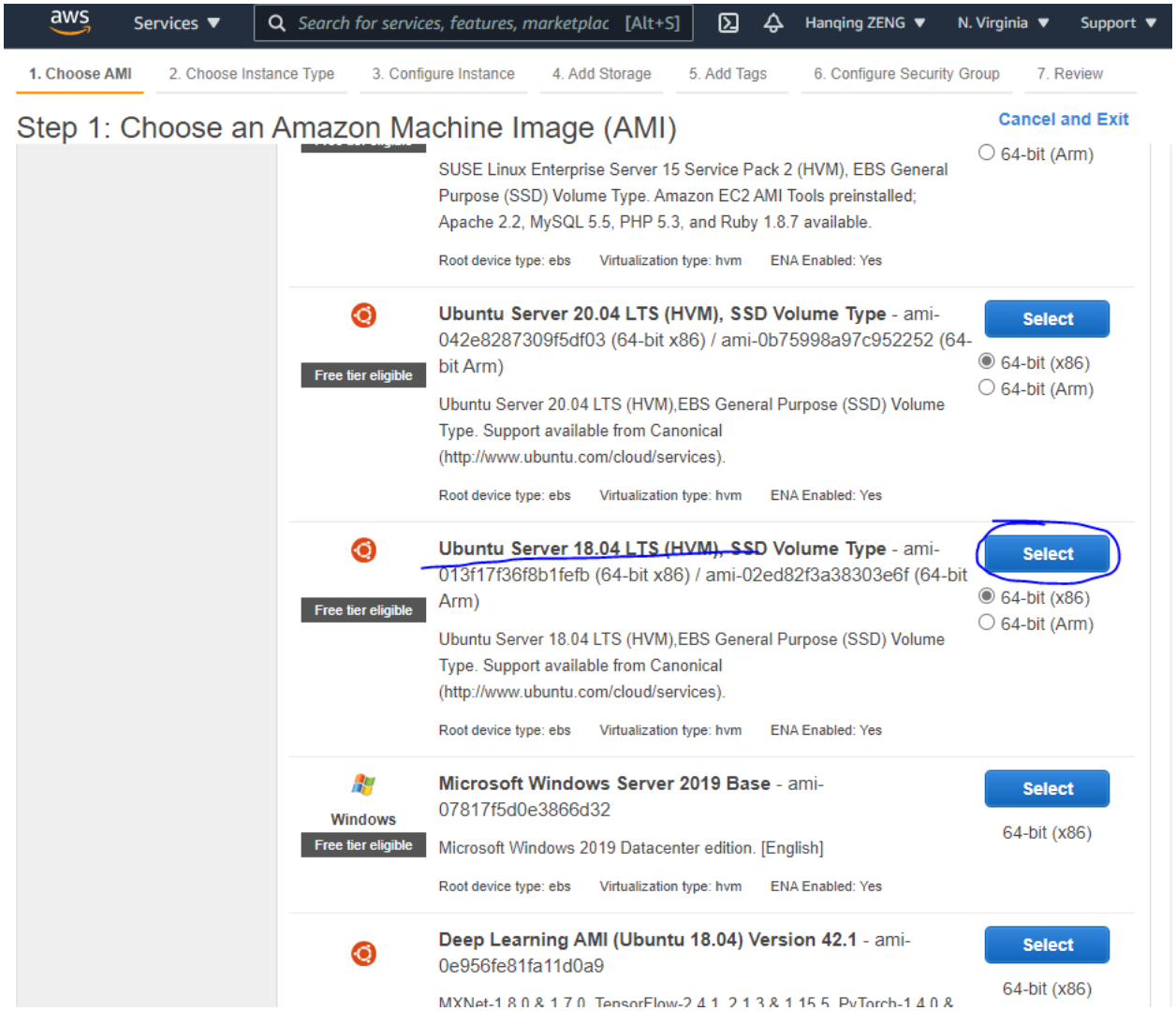
Step 2: Launch EC2 instance

Now you are ready to launch EC2 instances in Ubuntu.

Step 2.1 Go back to the main dashboard, and click “Instances” → “Instances” on the left panel. Then click “Launch instances” on the right panel.

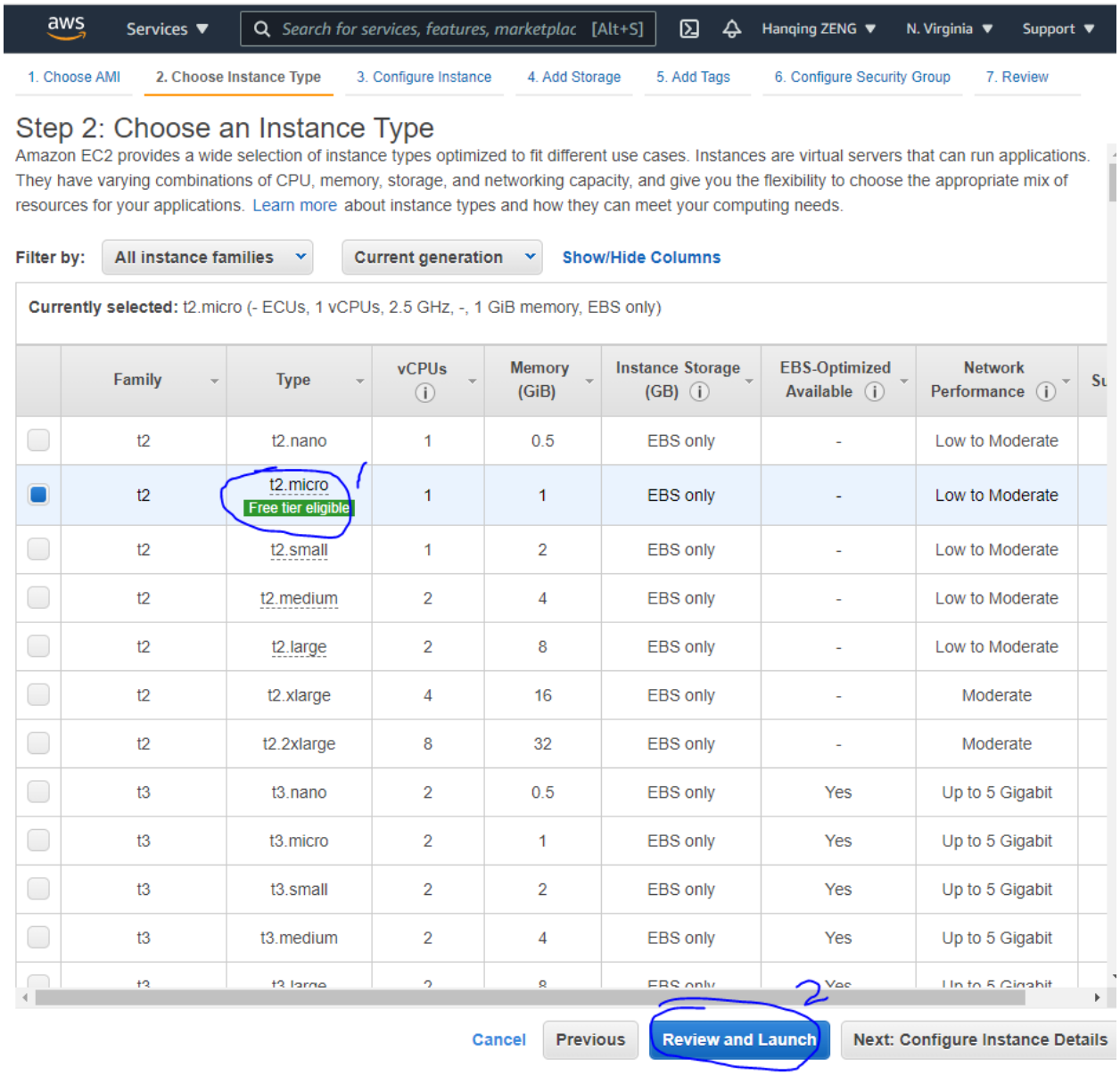


Step 2.2 You should see the following page. Scroll down and find “Ubuntu Server 18.04 LTS”. Click “Select”.

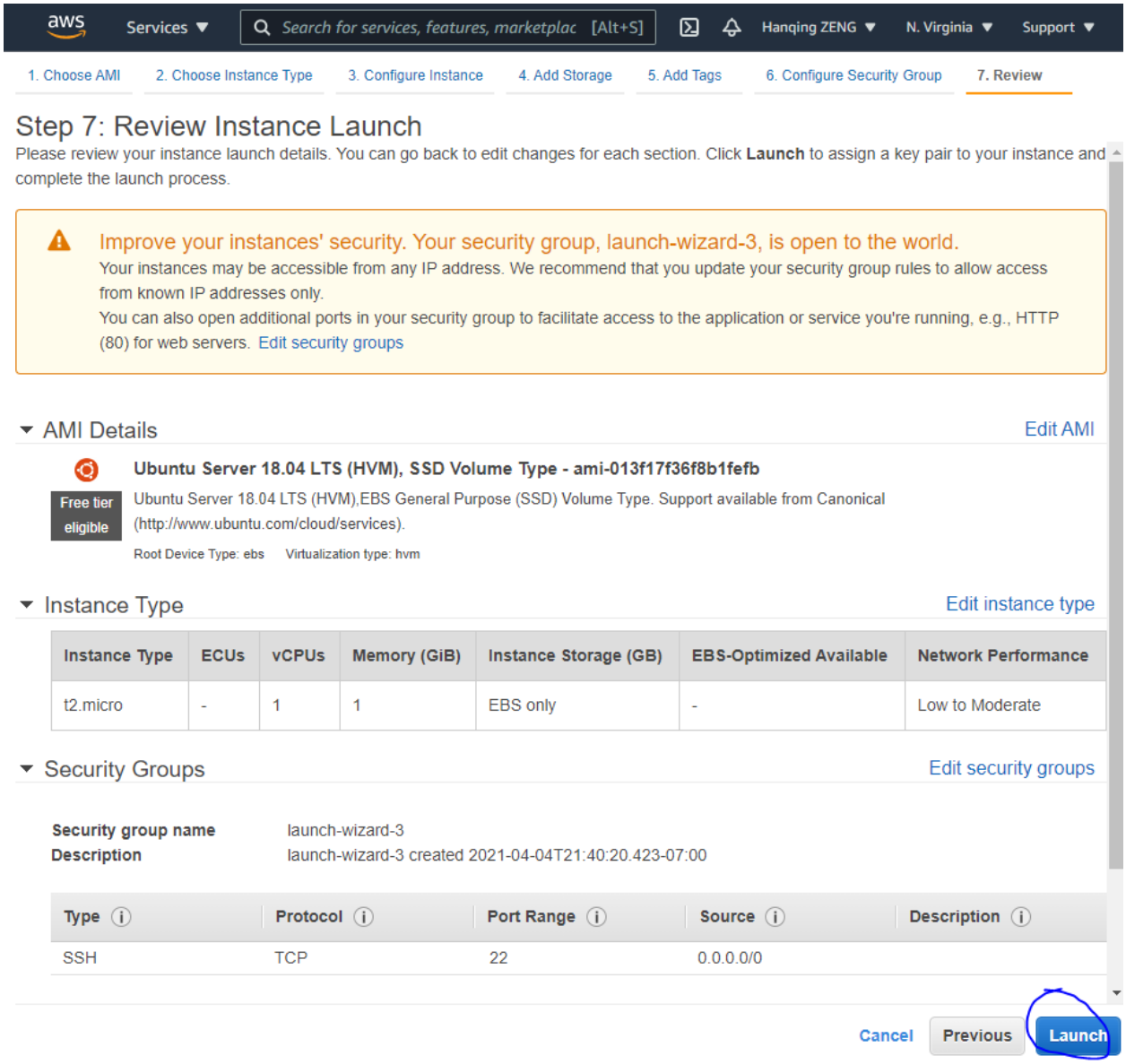


Step 2.3 Now set the instance type to be “t2.micro”. The socket programming project does not need much processing power or memory storage. So the “t2.micro” instance should be fine. If you select other instance types, you will then need to pay for their usage out of your own pocket.

Then directly click “Review and Launch”. We don’t need to do any other configurations.

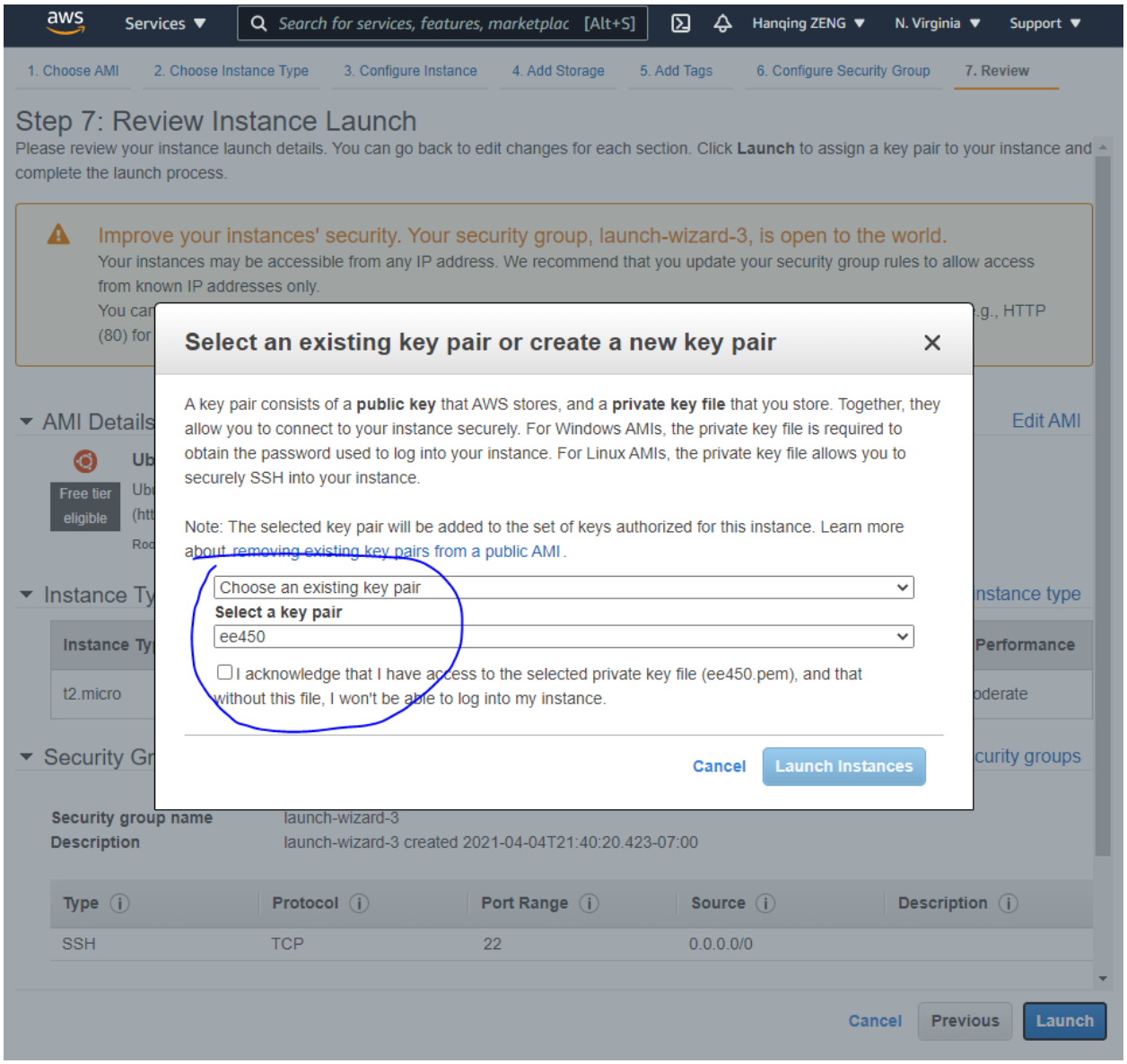


Step 2.4 In the following page, click “Launch”.

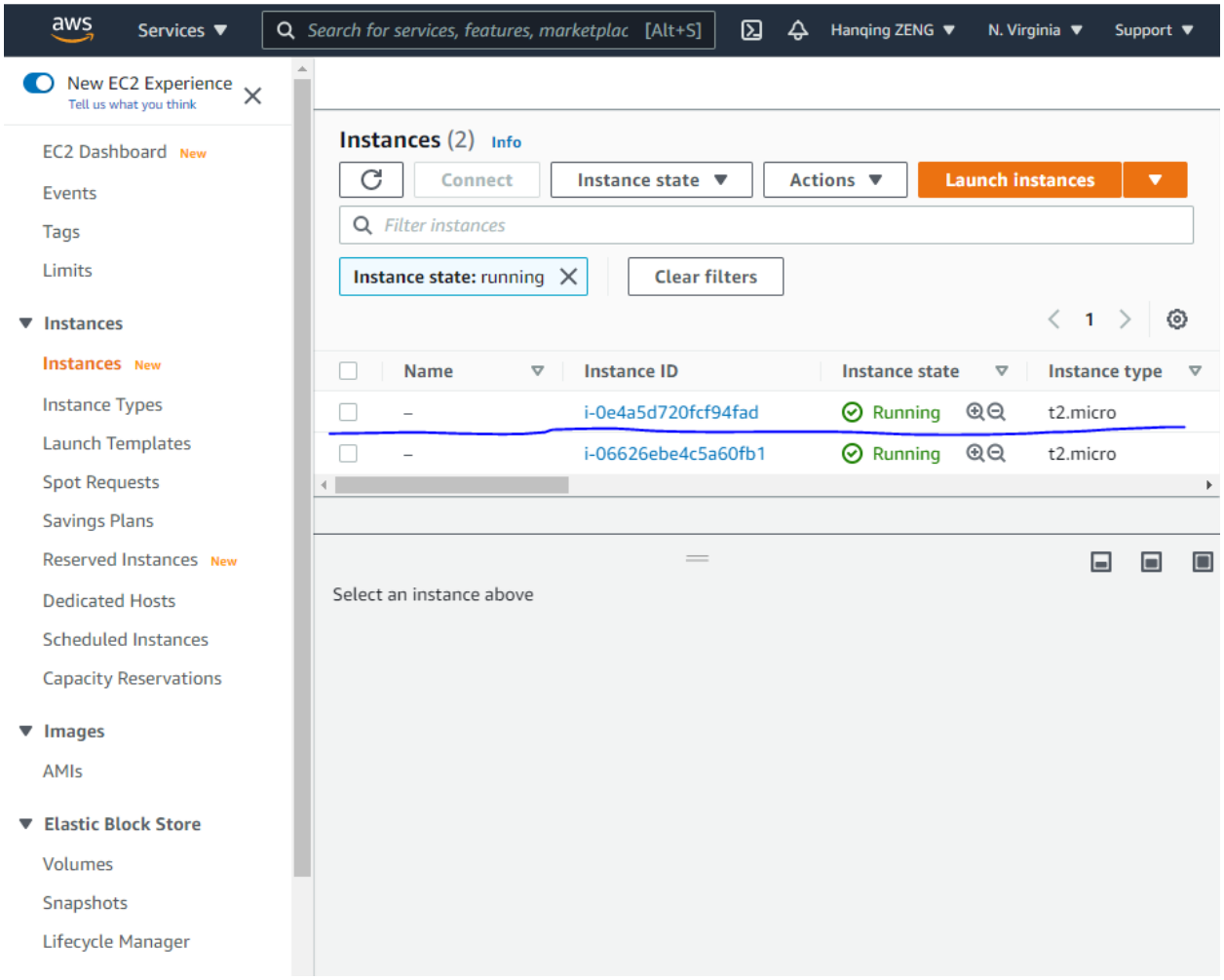


Step 2.5 Now you need to confirm the key pair to use. Select the key-pair that you just created (it probably selected for you by default).

Finally, “Launch instances”.

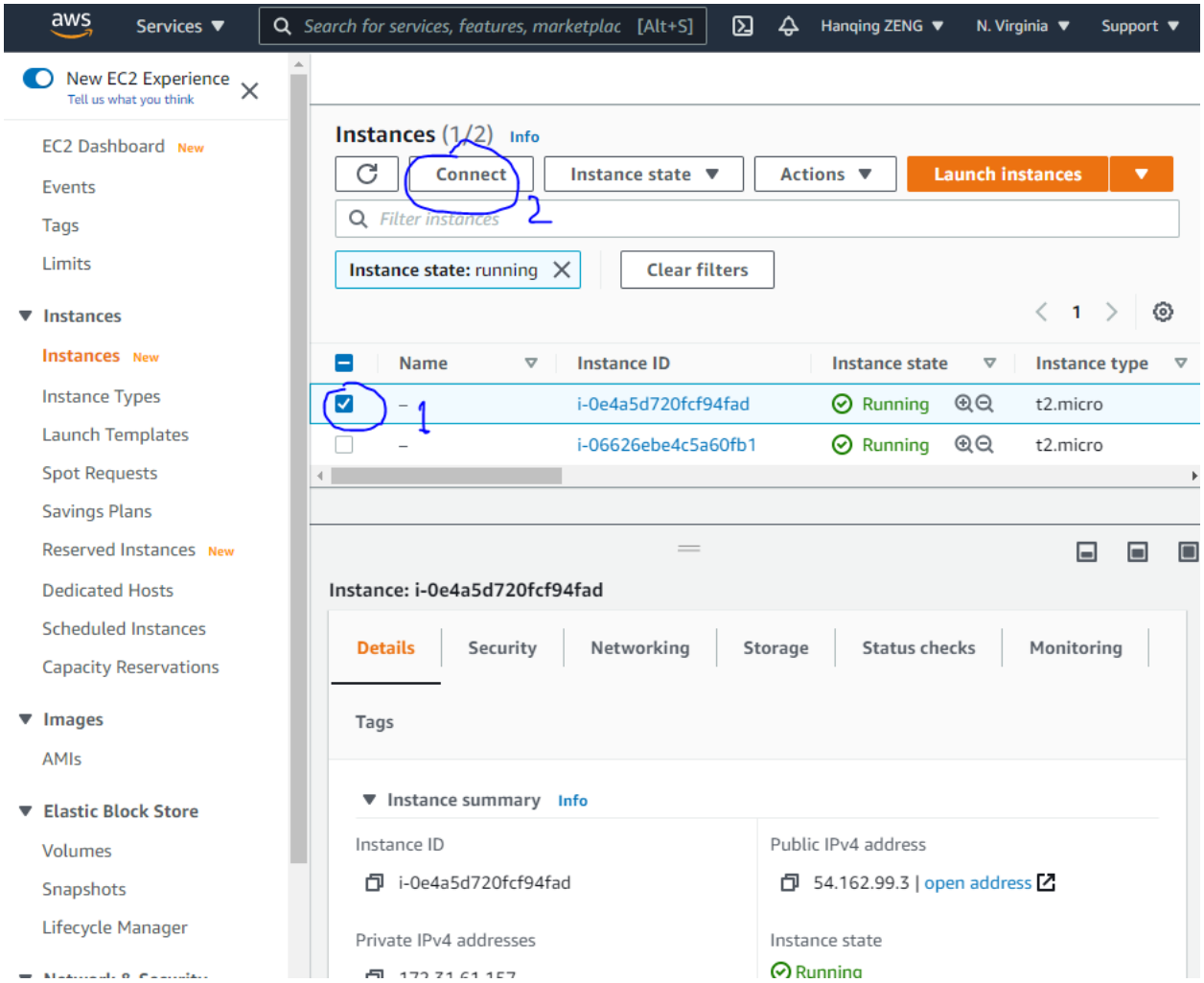


Step 2.6 Now go back to the main dashboard. You should be able to see a new entry listed under “Instances”. It will probably take a few minutes before the “Instance state” to become “Running”.

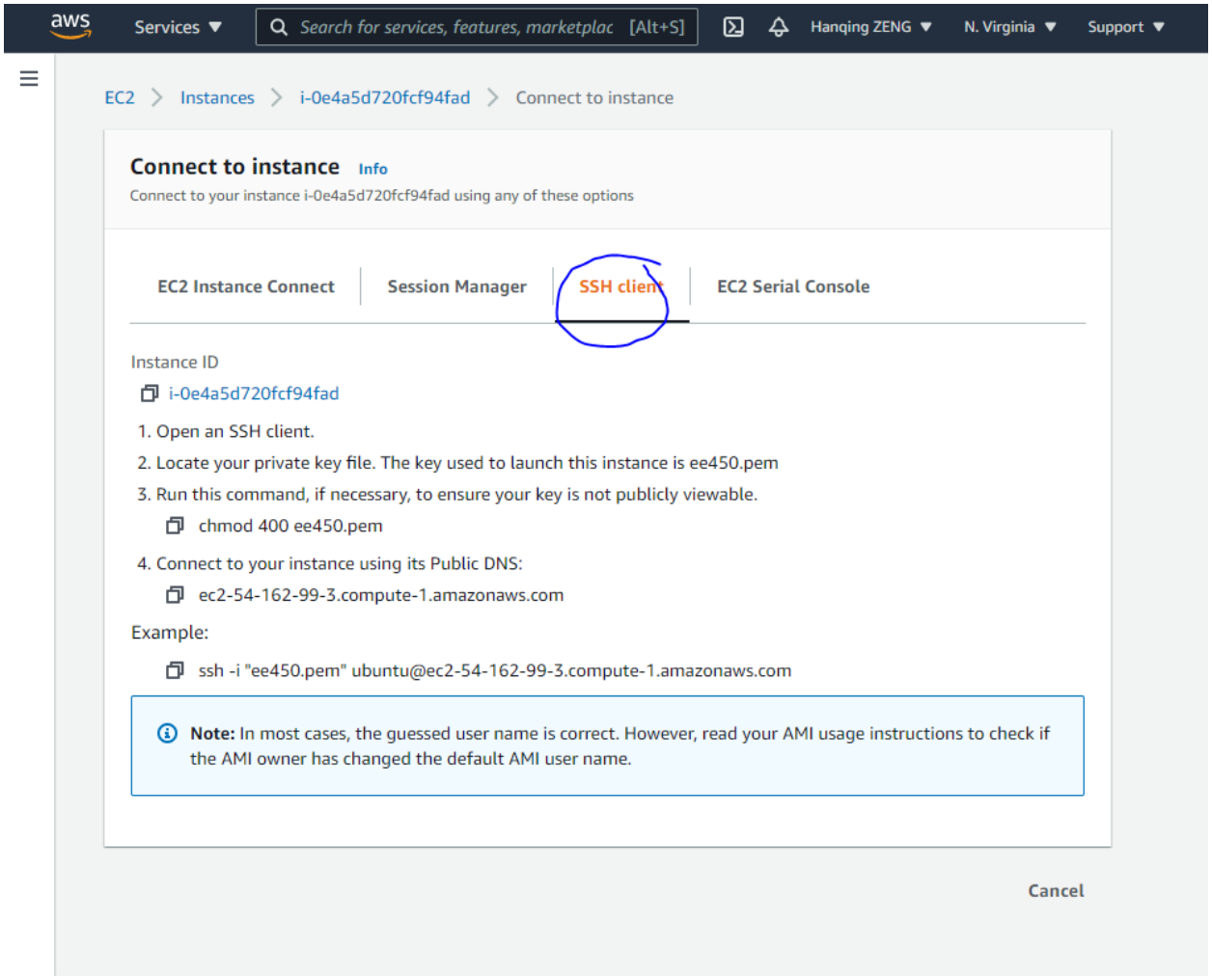


Step 3 Connect

After the status becomes “running”, select the instance you just launched. Click “Connect”.



You should be able to see the following page. Select the “SSH client” tab, and follow the instructions to login the instance. Basically, you need to open a new terminal in your laptop, go to the local folder containing your “*.pem” key-pair file, and type the `ssh` command as shown in the webpage.



Step 4 Install some basic software.

After you `ssh` into the EC2 instance, type the following in your EC2 terminal to get `gcc` ready:

```
$ sudo apt update
$ sudo apt install build-essential
$ sudo apt install manpages-dev
```

You can also install text editors such as vim.

At this point, you should be able to compile and run your socket programming project. You may need to open multiple terminals and `ssh` into the EC2 to test the communication.

Step 5 (Optional) Save your own image

You may save your own EC2 image as “AMI”, so that you don’t need to do the above Step 4 each time you launch a new instance. If you do so, you would then just select the image you created on your own rather than the “Ubuntu 18.04” in Step 2.2. You may want to check out

https://docs.aws.amazon.com/toolkit-for-visual-studio/latest/user-guide/tkv-create-ami-from-instance.html

for more details.

Notes

As stated before, for M1 users, please be sure to test your project in the EC2 instance before submission. When grading, we will also run your project in the EC2 instance.

For other users, please stick to the provided VM, and we will grade your project in exactly the same VM.