

CS 451

Fall 2024

Assignment 1

Due: September 4th at 11:59pm CST/CDT

Worth 50 points

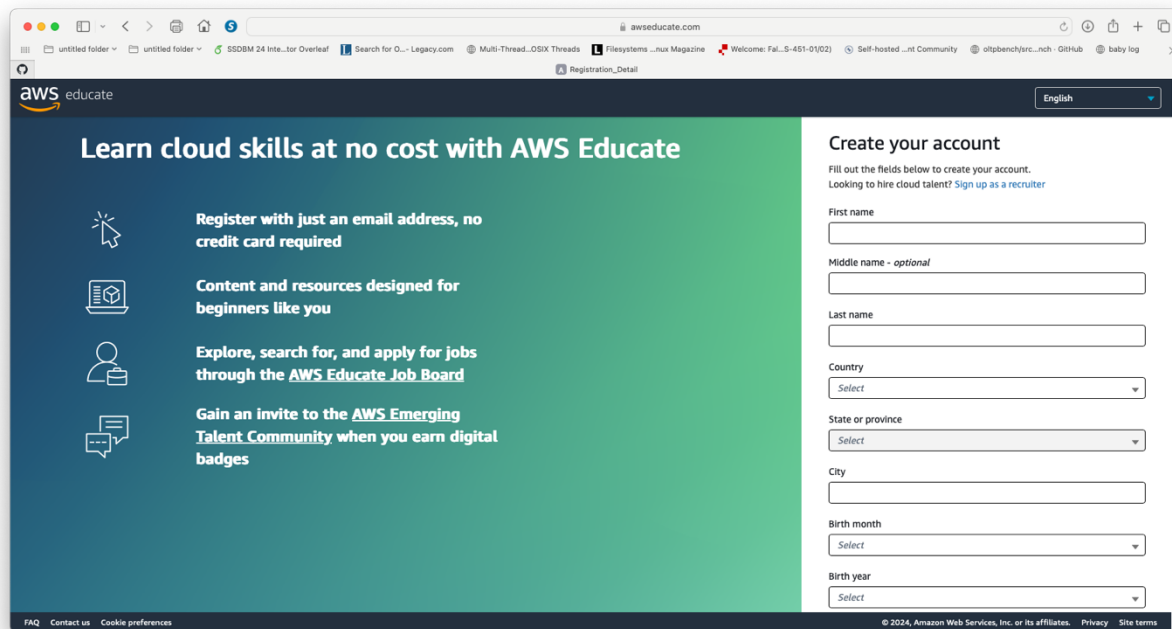
This assignment is to get you used to deploying vm's in AWS.

Part1:

For steps, 3-6 please take a submit screen shots. Also please answer the few questions.

1) Sign up for an AWS Account with your IIT email

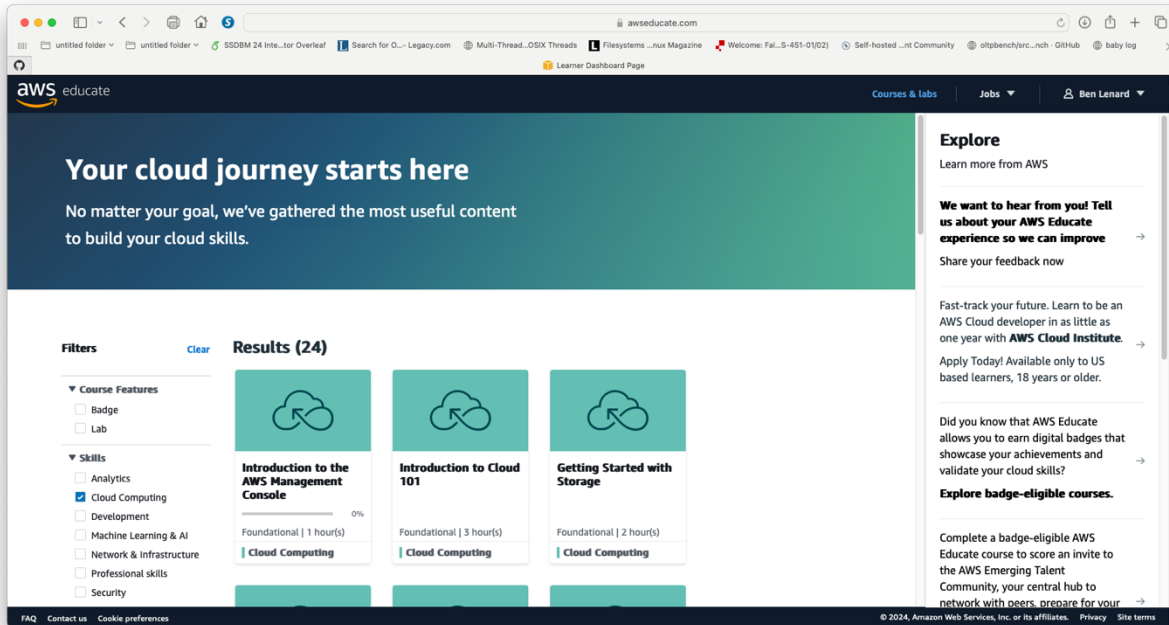
<https://www.awseducate.com/registration/s/registration-detail?>



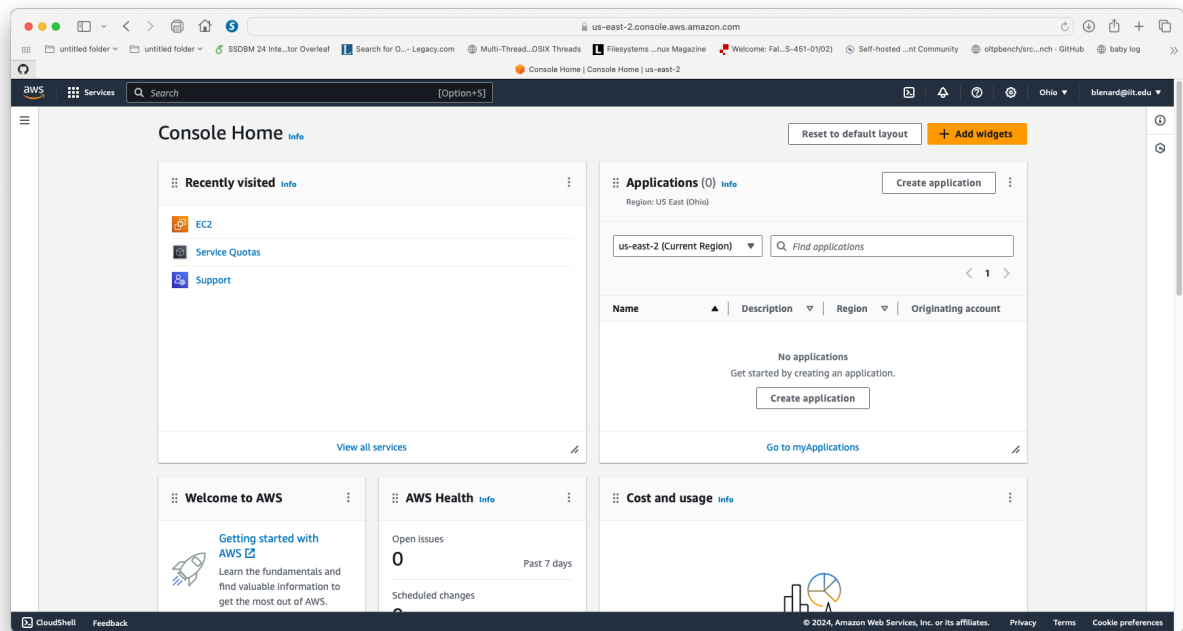
The screenshot shows the AWS Educate registration page. The header includes the AWS Educate logo and a language selector set to 'English'. The main heading is 'Learn cloud skills at no cost with AWS Educate'. Below this, there are four bullet points with icons: 'Register with just an email address, no credit card required', 'Content and resources designed for beginners like you', 'Explore, search for, and apply for jobs through the AWS Educate Job Board', and 'Gain an invite to the AWS Emerging Talent Community when you earn digital badges'. On the right side, there is a 'Create your account' section with the instruction 'Fill out the fields below to create your account. Looking to hire cloud talent? Sign up as a recruiter'. The form fields are: First name, Middle name - optional, Last name, Country (dropdown), State or province (dropdown), City, Birth month (dropdown), and Birth year (dropdown). The footer contains links for FAQ, Contact us, and Cookie preferences, along with the copyright notice '© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Site terms'.

2) Login into AWS Educate <https://www.awseducate.com/>

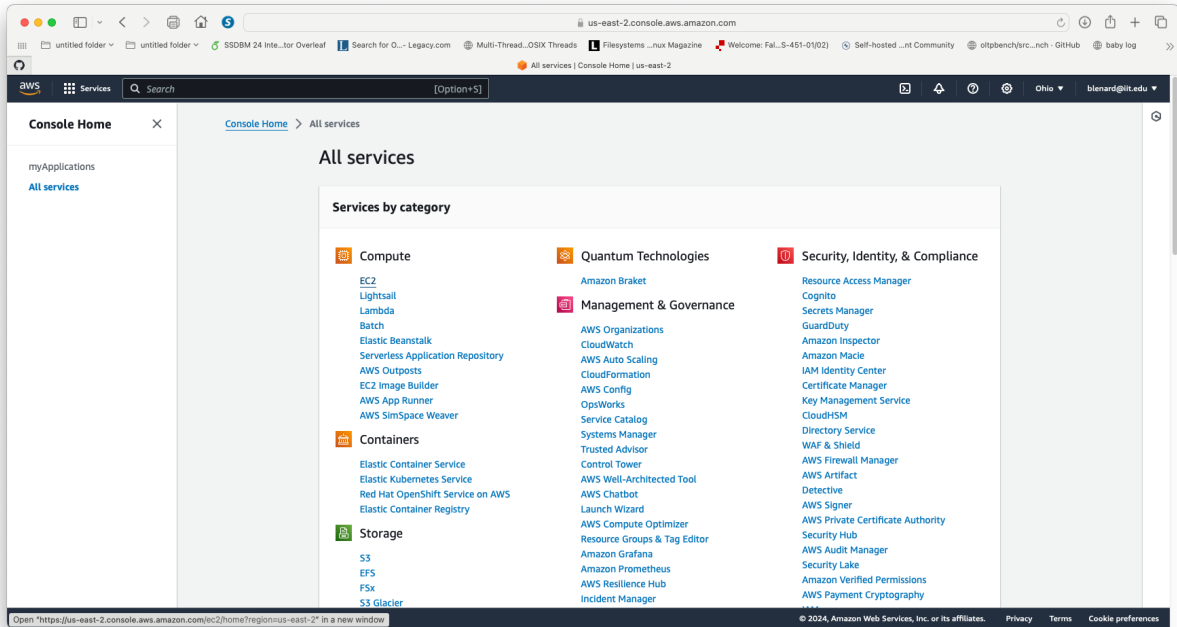
- Take Introduction to AWS Management if you have never used AWS
- Also take Cloud 101 if you have never used AWS



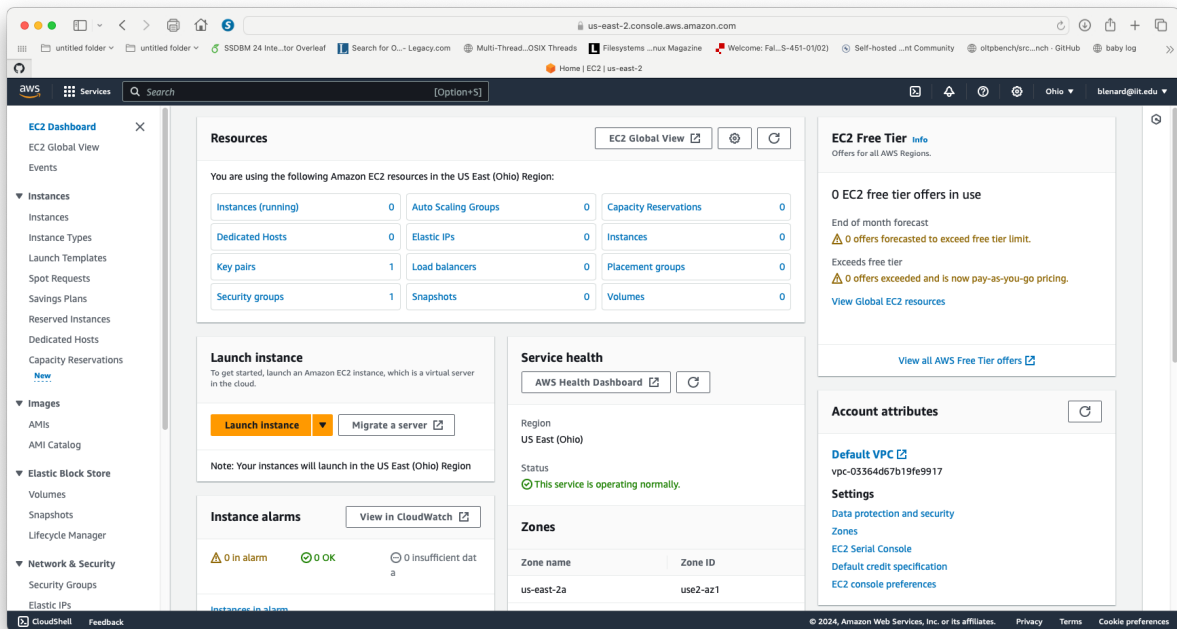
- 3) Let's deploy your 1st vm , login in to <http://aws.amazon.com>
 - a. It should look like this:



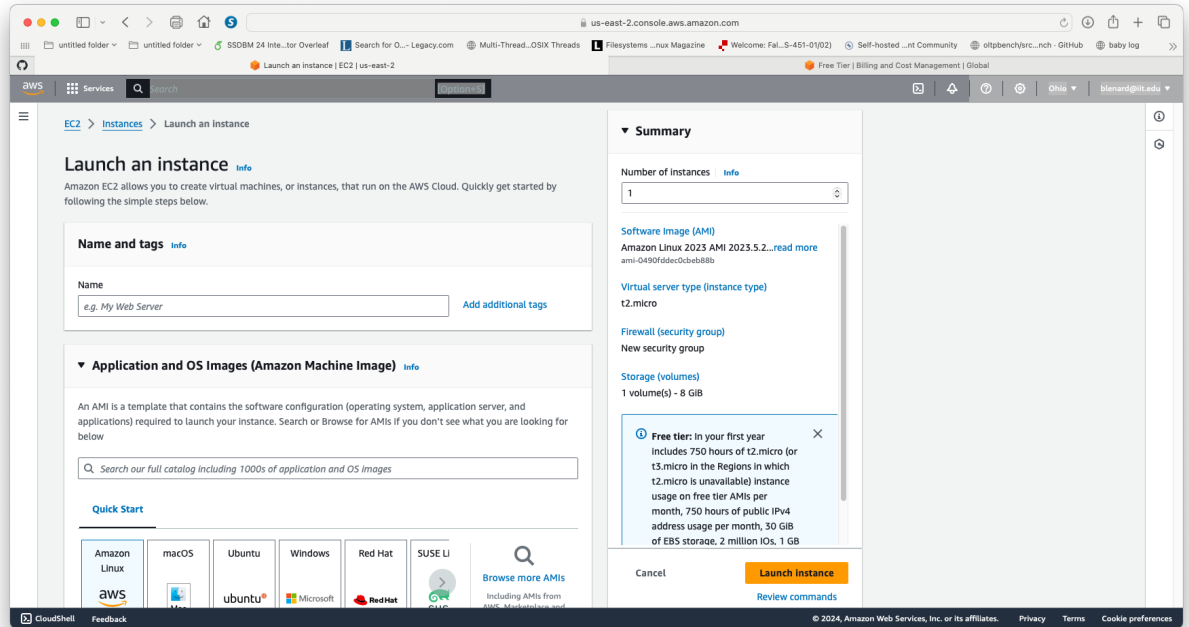
- b. Search for EC2 by clicking view all services



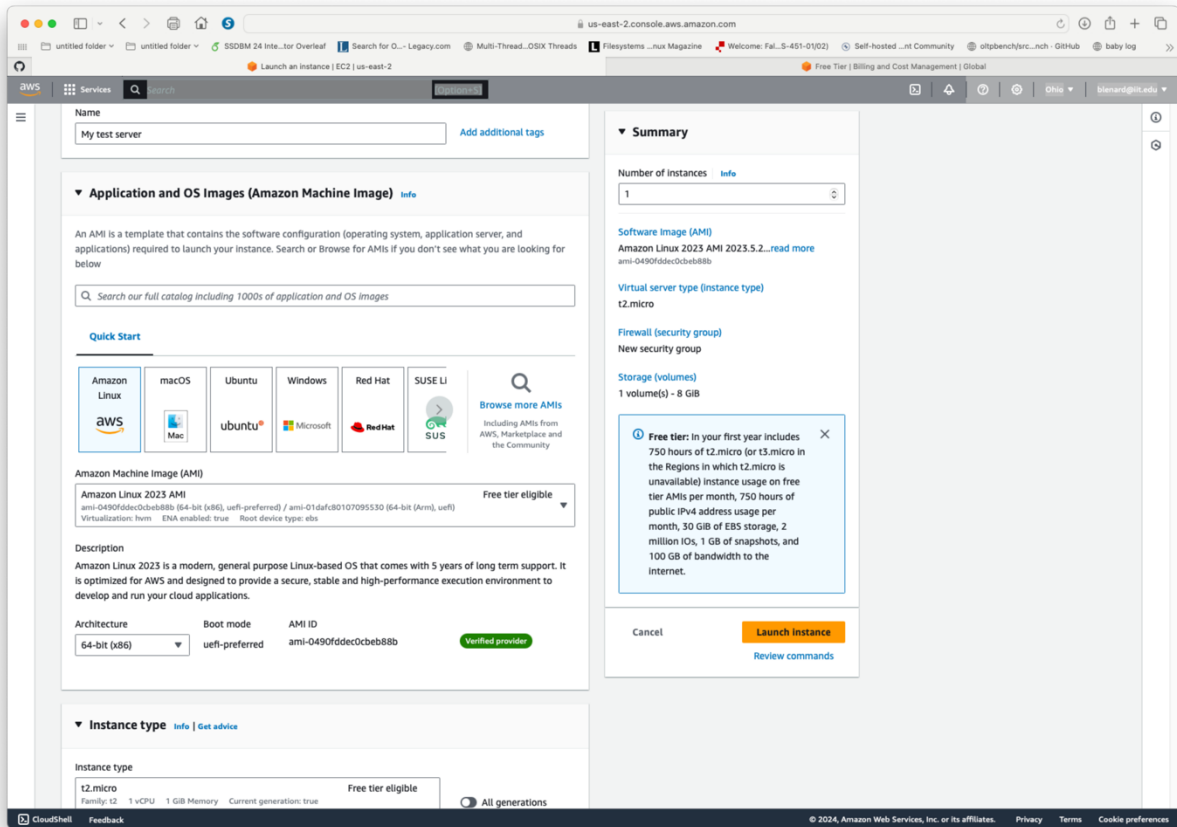
c. Click EC2



d. Click Launch Instance and you should see

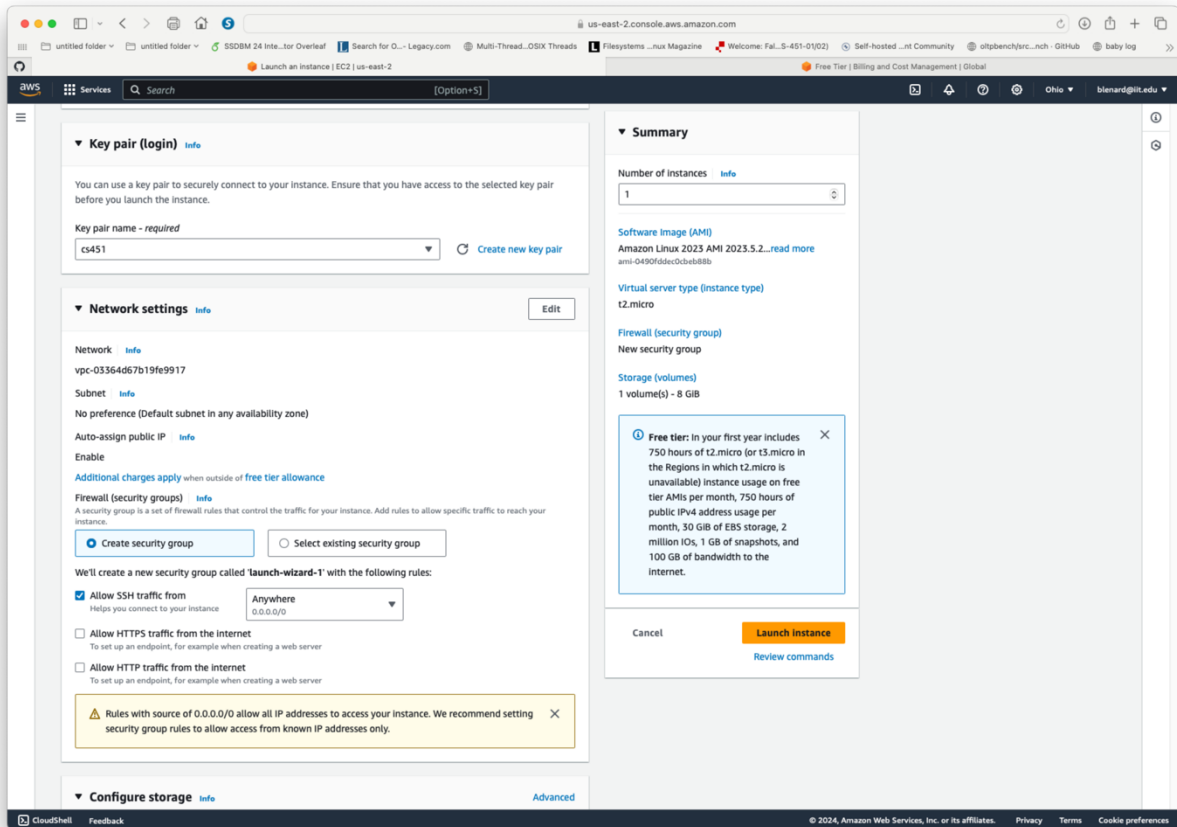


e. It should look like this:

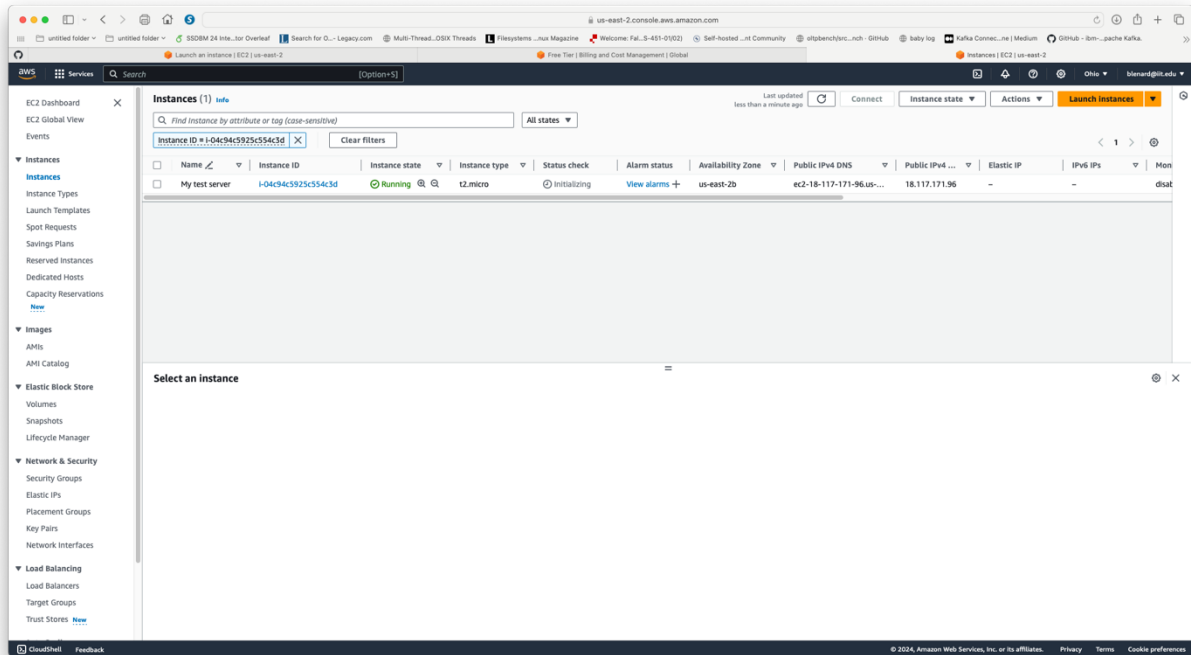


And you will likely need to generate a new RSA key pair so you can login. It will download a PEM file. Make sure you allow 0.0.0.0/0 traffic or your IP address so you can

login. Also for the storage, take the default 8gb . After you did all this, click Launch Instance at the bottom Right.



- 4) Login.
 - a. Copy the IPv4 address and open the shell or Putty



- b. Type or enter – note your PEM file might be different:
- ssh -i Downloads/cs451.pem ec2-user@18.117.171.96
 - enter 'sudo -i' as seen below
 - You'll see this

```

MacBook-Pro-2:~$ blenard$ ssh -i Downloads/cs451.pem ec2-user@18.117.171.96
X11 forwarding failed on channel 1
blenard$ ssh -i Downloads/cs451.pem ec2-user@18.117.171.96
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023

[ec2-user@ip-172-31-16-242 ~]$ sudo -i
[root@ip-172-31-16-242 ~]# cat /proc/cpuinfo
processor       : 0
vendor_id      : GenuineIntel
cpu family     : 6
model          : 79
model name     : Intel(R) Xeon(R) CPU E5-2686 v4 @ 2.30GHz
stepping      : 1
microcode     : 0x0000003e7
cpu mhz        : 2299.988
cache size    : 46080 KB
physical id    : 0
siblings      : 1
core id       : 0
cpu cores     : 1
apicid        : 0
fpu           : yes
fpu_exception : yes
cpuid level   : 13
wp            : yes
flags          : fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx rdtscp lm constant_tsc rep_good nopl xtopology cpuid tsc_known_freq pni pclmulqdq
ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand hypervisor lahf_lm abm invpcid_single pti fsgsbase bti1 avx2 smep bmi2 erms invpcid xsaveopt
bugs          : cpu_meltdown spectre_v1 spectre_v2 spec_store_bypass l1tf mds swaps2 itlb_multihit mmio_stale_data bhi
bogomips      : 4599.99
clflush size  : 64
cache alignment : 64
address sizes  : 46 bits physical, 48 bits virtual
power management:

[root@ip-172-31-16-242 ~]#

```

- c. Install Java by entering 'yum -y install java g++ gcc php-cli php-xml php-json'
- d. Next down load a test suite 'wget <https://github.com/phoronix-test-suite/phoronix-test-suite/archive/refs/heads/master.zip>'

- e. Unzip the file 'unzip master.zip'
- f. `cd phoronix-test-suite-master/ ; ./install-sh`
- g. Run this command '`/usr/bin/phoronix-test-suite install osbench`'
- h. Run the benchmark command '`/usr/bin/phoronix-test-suite run osbench`' and see the options below

```

[root@ip-172-31-16-242: phoronix-test-suite-master]# /usr/bin/phoronix-test-suite run osbench

OSBench:
pts/osbench-1.0.2
OS Test Configuration
1: Create Files
2: Create Processes
3: Create Threads
4: Launch Programs
5: Memory Allocations
6: Test All Options
**
Test: 6

Phoronix Test Suite v10.8.5
System Information

PROCESSOR: Intel Xeon E5-2686 v4
Core Count: 1
Extensions: SSE 4.2 + AVX2 + AVX + RDRAND + FSGSBASE
Cache Size: 45 MB
Microcode: 0xd0003e7
Core Family: Broadwell

GRAPHICS: Cirrus Logic GD 5446

MOTHERBOARD: Xen HVM domU
BIOS Version: 4.11.amazon
Chipset: Intel 480FX 82441FX PMC

MEMORY: 949MB

DISK:
File System: ext4
Mount Options: attr2 inode64 logbsize=32k logbufs=8 noatime noquota rw seclabel sunit=1024 swidth=1024
Disk Scheduler: MQ-DEADLINE
Disk Details: Block Size: 4096

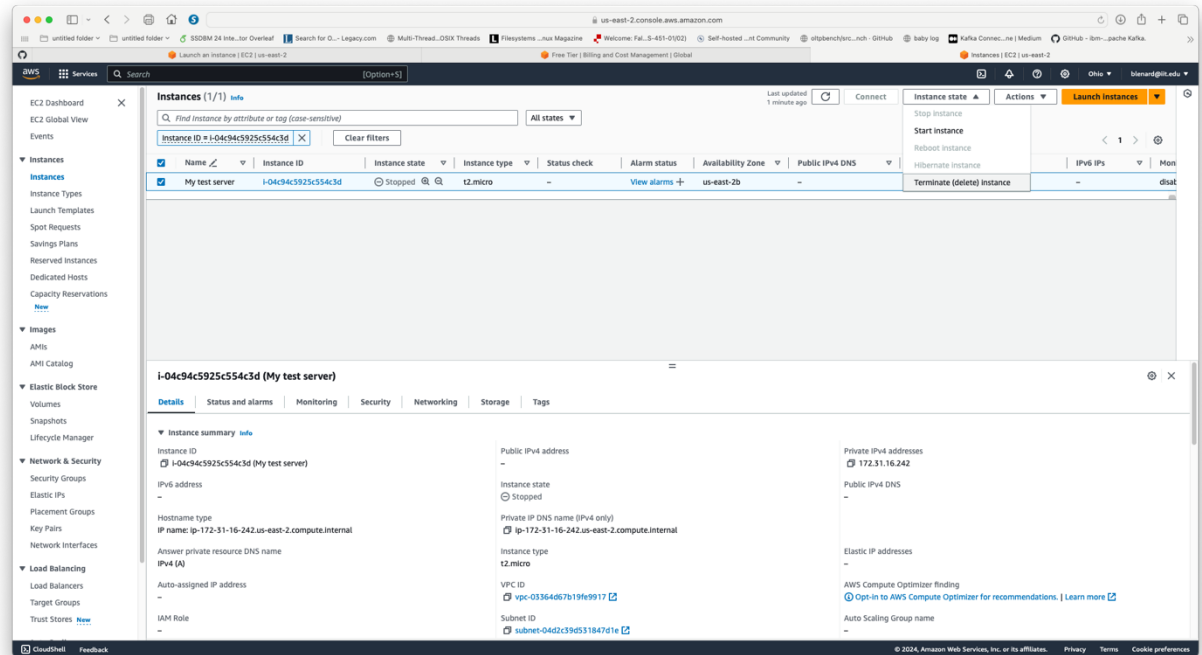
OPERATING SYSTEM: Amazon Linux 2023.5 20240819
Kernel: 6.1.182-111.el9.amzn2023.x86_64 (x86_64)
Compiler: GCC 11.4.1 20230605
System Layer: Xen HVM domU 4.11.amazon
Security:
+ itlb_multihit: KVM: Mitigation of VMX unsupported
+ itlb: Mitigation of PTE Inversion
+ mds: Vulnerable: Clear buffers attempted no microcode; SMT Host state unknown
+ meltdown: Mitigation of PTI
+ mmio_state_data: Vulnerable: Clear buffers attempted no microcode; SMT Host state unknown
+ reg_file_data_sampling: Not affected
+ retbleed: Not affected
+ spec_istack_overflow: Not affected
+ spec_store_bypass: Vulnerable
+ spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization
+ spectre_v2: Mitigation of Retpolines; STIBP: disabled; RSB filling; PRKSB-e18RS: Not affected; BMI: Retpoline
+ srbds: Not affected
+ tsx_async_abort: Not affected

Would you like to save these test results (Y/N): n

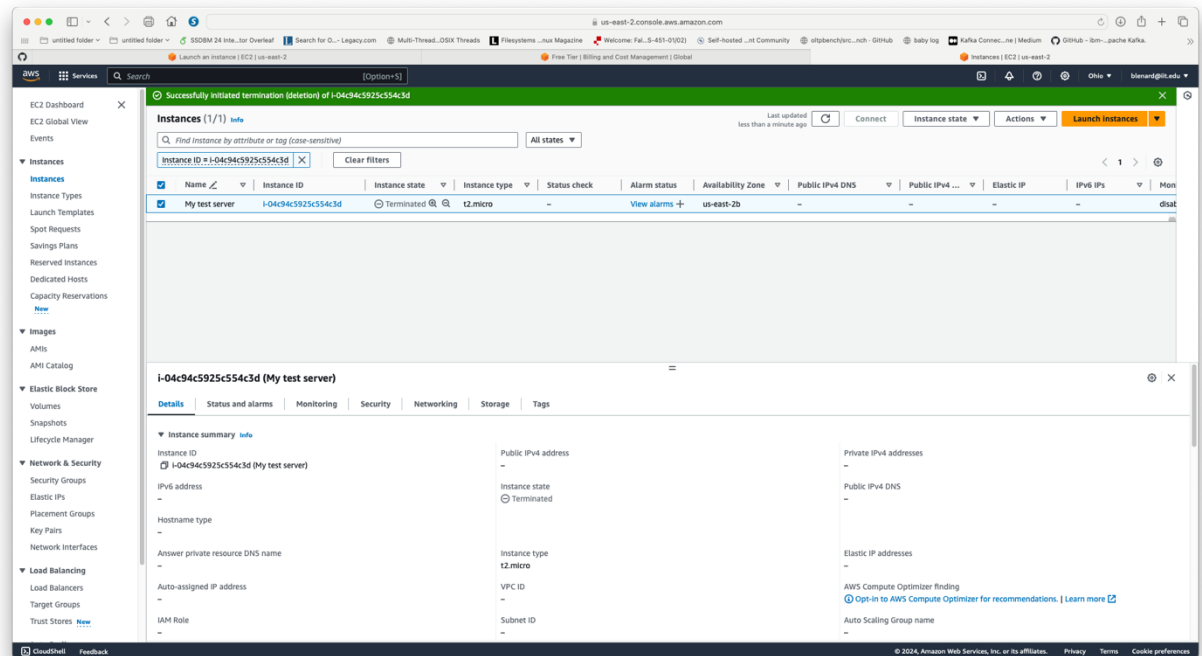
OSBench:
pts/osbench-1.0.2 (Test: Create Files)

```

- i. Notice the results, were there functioning? Why?
- 5) Write and compile a simple C/C++ that displays the time of the system. Take a screen shot of the compile and run
 - 6) Shutdown the vm and delete it. Always shutdown the VM when not in use.
 - a. Execute this: '`shutdown -h +0`'



Then it'll show terminated



Part2:

In your words, what did we do today in this assignment? What IP address was the VM assigned? What did sudo do? What did yum do? Was deploying the vm easier to deploy

then installing an OS on a physical machine? What was the purpose of the SSH key you generated? Why do you think you got a random IP address? What did the test suite do?