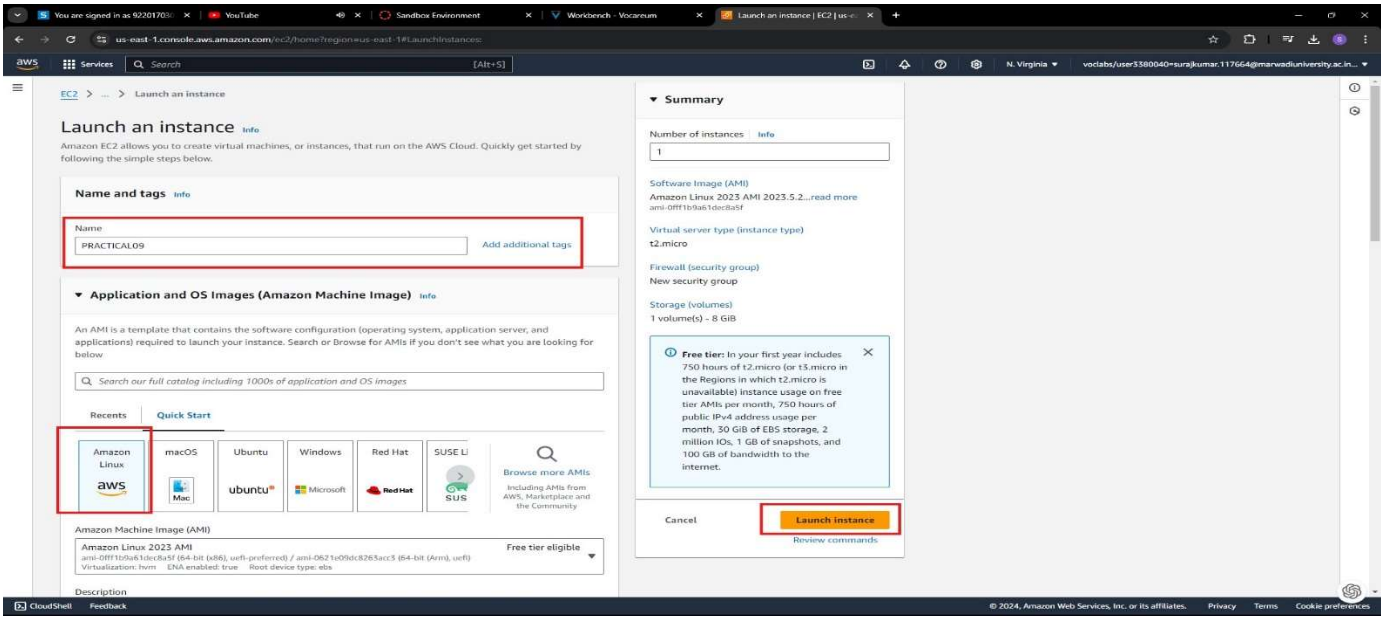
Practical – 9: Containerization with Docker.

Step 01: Create “EC2” instance and after create then “Connect”.



You are signed in as 92201703…
YouTube
Sandbox Environment
Workbench - Vocareum
Launch an instance | EC2 | us-e…
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:
aws
Services
Search
[Alt+S]
N. Virginia
voclabs/user3380040=surajkumar.117664@marwadiuniversity.ac.in…
EC2 > … > Launch an instance
CloudShell
Feedback
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Launch an instance Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags Info

Name: PRACTICAL09 — Add additional tags

Application and OS Images (Amazon Machine Image) Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Recents | Quick Start

Amazon Linux | macOS | Ubuntu | Windows | Red Hat | SUSE Li | Browse more AMIs — Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Amazon Linux 2023 AMI — Free tier eligible
ami-0fff1b9a61dec8a5f (64-bit (x86), uefi-preferred) / ami-0621e09dc8263acc3 (64-bit (Arm), uefi)
Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Summary

Number of instances Info: 1

Software Image (AMI): Amazon Linux 2023 AMI 2023.5.2...read more
ami-0fff1b9a61dec8a5f

Virtual server type (instance type): t2.micro

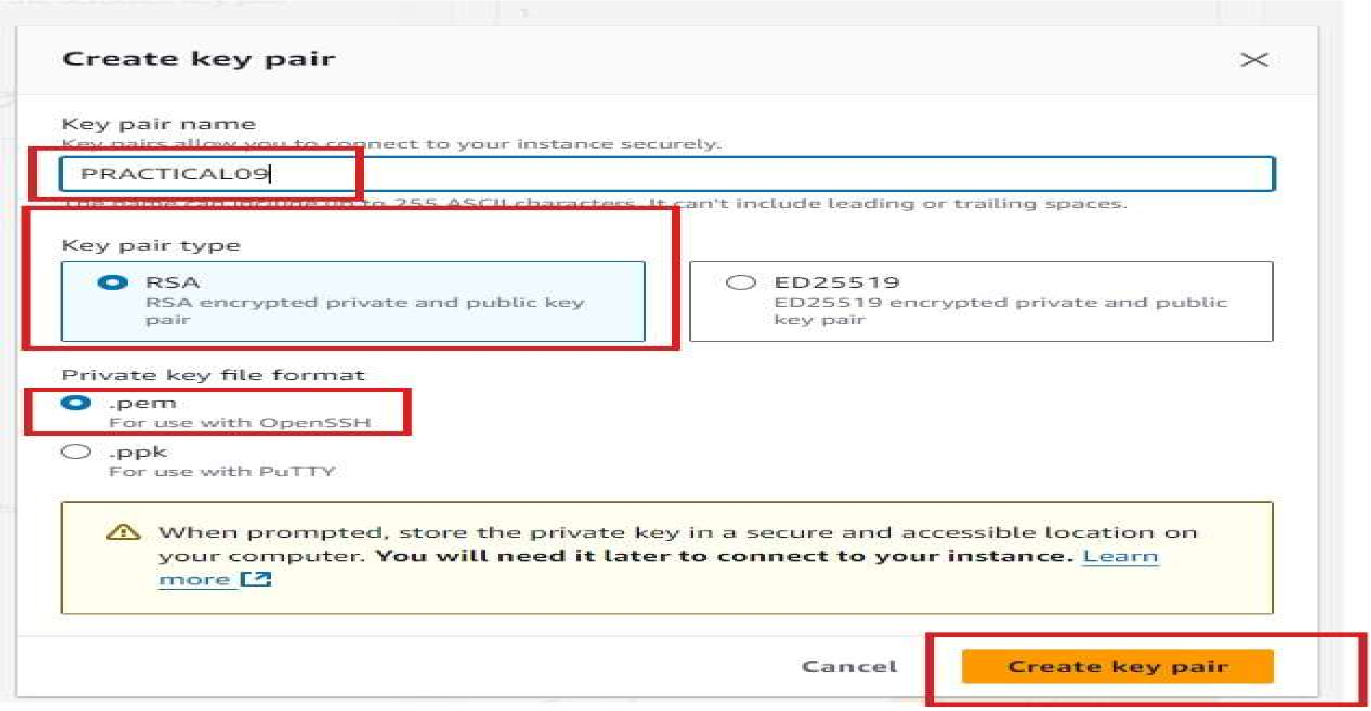
Firewall (security group): New security group

Storage (volumes): 1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel | Launch instance

Review commands



Create key pair

Key pair name
Key pairs allow you to connect to your instance securely.

PRACTICAL09

The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

● RSA
RSA encrypted private and public key pair

○ ED25519
ED25519 encrypted private and public key pair

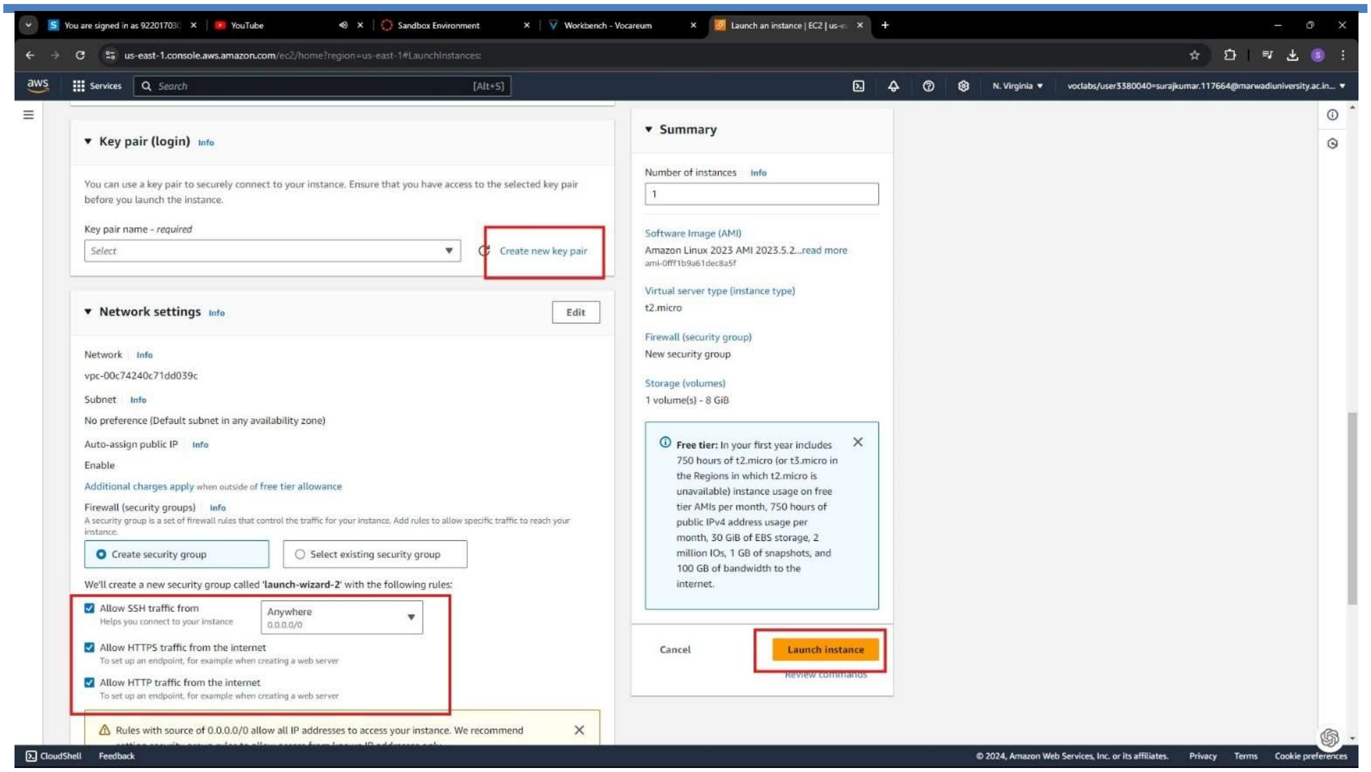
Private key file format

● .pem
For use with OpenSSH

○ .ppk
For use with PuTTY

When prompted, store the private key in a secure and accessible location on your computer. **You will need it later to connect to your instance.** Learn more

Cancel | Create key pair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YouTube
Sandbox Environment
Workbench - Vocareum
Launch an instance | EC2 | us-e
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:
aws
Services
Search
[Alt+S]
N. Virginia
voclabs/user3380040=surajkumar.117664@marwadiuniversity.ac.in...
CloudShell
Feedback
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Cookie preferences

Key pair (login) Info

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*

Select

Create new key pair

Network settings Info Edit

Network Info
vpc-00c74240c71dd039c

Subnet Info
No preference (Default subnet in any availability zone)

Auto-assign public IP Info
Enable

Additional charges apply when outside of free tier allowance

Firewall (security groups) Info
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

● Create security group ○ Select existing security group

We'll create a new security group called '**launch-wizard-2**' with the following rules:

☑ Allow SSH traffic from — Anywhere 0.0.0.0/0
Helps you connect to your instance

☑ Allow HTTPS traffic from the internet
To set up an endpoint, for example when creating a web server

☑ Allow HTTP traffic from the internet
To set up an endpoint, for example when creating a web server

⚠ Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend

Summary

Number of instances Info
1

Software Image (AMI)
Amazon Linux 2023 AMI 2023.5.2...read more
ami-0fff1b9a61dec8a5f

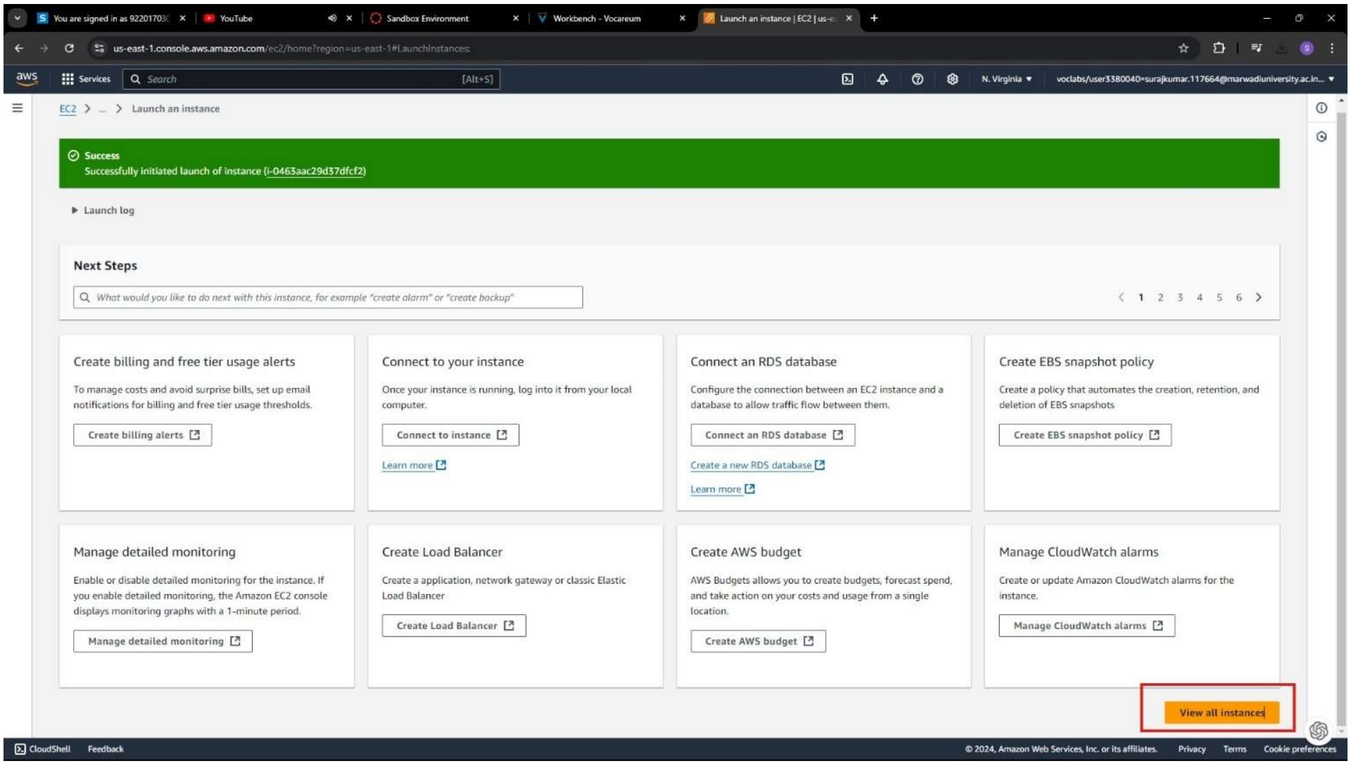
Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel Launch instance
Review commands


You are signed in as 92201703
YouTube
Sandbox Environment
Workbench - Vocareum
Launch an instance | EC2 | us-e
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:
aws
Services
Search
[Alt+S]
N. Virginia
voclabs/user3380040=surajkumar.117664@marwadiuniversity.ac.in...
CloudShell
Feedback
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EC2 > ... > Launch an instance

Success
Successfully initiated launch of instance (i-0463aac29d37dfcf2)

▶ Launch log

Next Steps

What would you like to do next with this instance, for example "create alarm" or "create backup"

< 1 2 3 4 5 6 >

Create billing and free tier usage alerts
To manage costs and avoid surprise bills, set up email notifications for billing and free tier usage thresholds.
Create billing alerts

Connect to your instance
Once your instance is running, log into it from your local computer.
Connect to instance
Learn more

Connect an RDS database
Configure the connection between an EC2 instance and a database to allow traffic flow between them.
Connect an RDS database
Create a new RDS database
Learn more

Create EBS snapshot policy
Create a policy that automates the creation, retention, and deletion of EBS snapshots
Create EBS snapshot policy

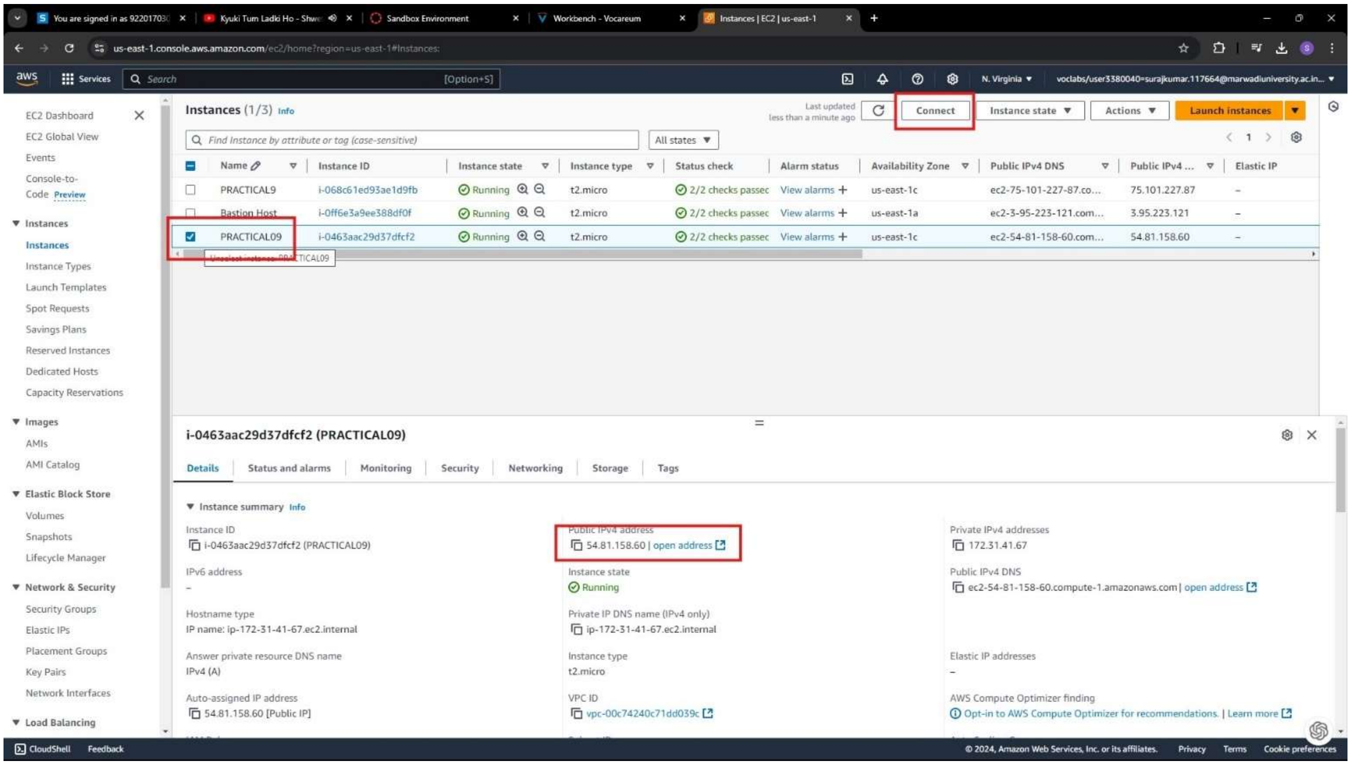
Manage detailed monitoring
Enable or disable detailed monitoring for the instance. If you enable detailed monitoring, the Amazon EC2 console displays monitoring graphs with a 1-minute period.
Manage detailed monitoring

Create Load Balancer
Create a application, network gateway or classic Elastic Load Balancer
Create Load Balancer

Create AWS budget
AWS Budgets allows you to create budgets, forecast spend, and take action on your costs and usage from a single location.
Create AWS budget

Manage CloudWatch alarms
Create or update Amazon CloudWatch alarms for the instance.
Manage CloudWatch alarms

View all instances



Instances (1/3) Info

Find Instance by attribute or tag (case-sensitive)

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
□	PRACTICAL9	i-068c61ed93ae1d9fb	Running	t2.micro	2/2 checks passec	View alarms +	us-east-1c	ec2-75-101-227-87.co...	75.101.227.87	–
□	Bastion Host	i-0ff6e3a9ee388df0f	Running	t2.micro	2/2 checks passec	View alarms +	us-east-1a	ec2-3-95-223-121.com...	3.95.223.121	–
☑	PRACTICAL09	i-0463aac29d37dfcf2	Running	t2.micro	2/2 checks passec	View alarms +	us-east-1c	ec2-54-81-158-60.com...	54.81.158.60	–

i-0463aac29d37dfcf2 (PRACTICAL09)

Details | Status and alarms | Monitoring | Security | Networking | Storage | Tags

Instance summary Info

Instance ID
i-0463aac29d37dfcf2 (PRACTICAL09)

Public IPv4 address
54.81.158.60 | open address

Private IPv4 addresses
172.31.41.67

IPv6 address
–

Instance state
Running

Public IPv4 DNS
ec2-54-81-158-60.compute-1.amazonaws.com | open address

Hostname type
IP name: ip-172-31-41-67.ec2.internal

Private IP DNS name (IPv4 only)
ip-172-31-41-67.ec2.internal

Answer private resource DNS name
IPv4 (A)

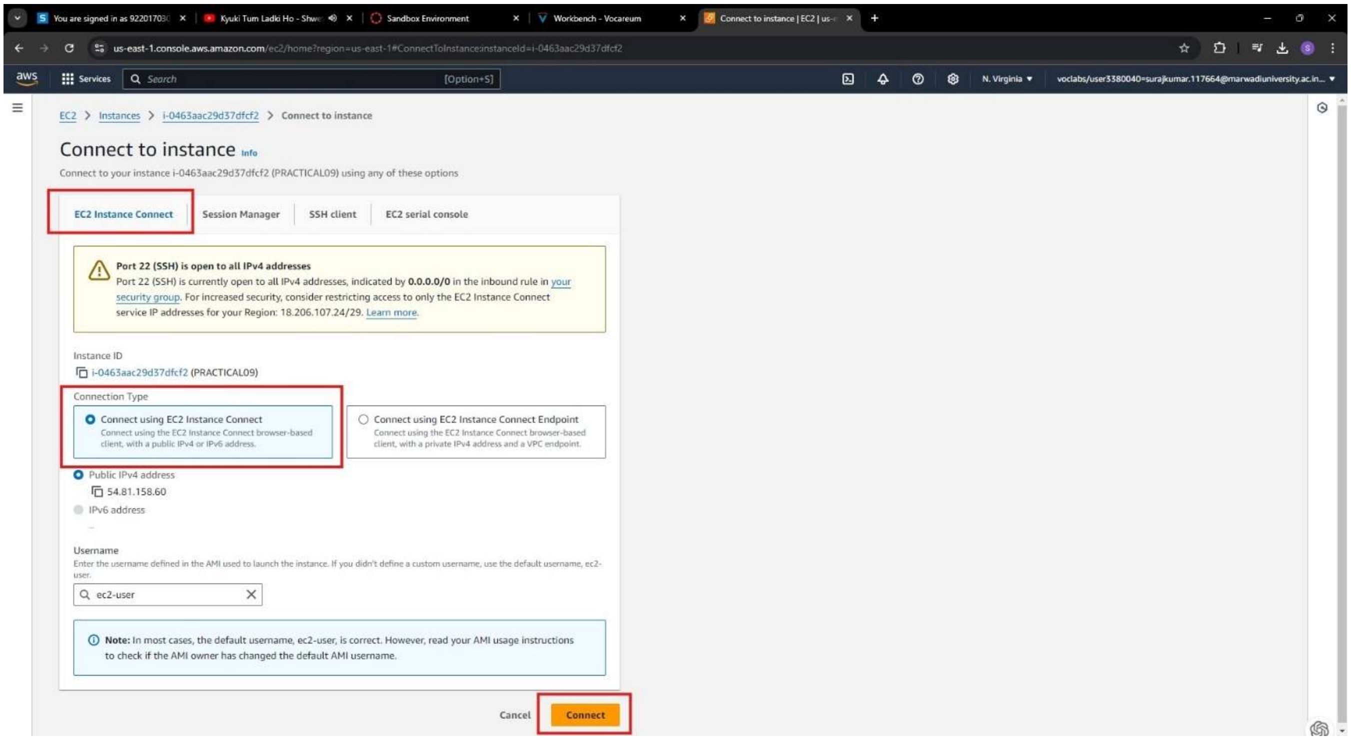
Instance type
t2.micro

Elastic IP addresses
–

Auto-assigned IP address
54.81.158.60 [Public IP]

VPC ID
vpc-00c74240c71dd039c

AWS Compute Optimizer finding
Opt-in to AWS Compute Optimizer for recommendations. | Learn more


You are signed in as 92201703
Kyuki Tum Ladki Ho - Shwe
Sandbox Environment
Workbench - Vocareum
Connect to instance | EC2 | us-e
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#ConnectToInstance:instanceId=i-0463aac29d37dfcf2
aws
Services
Search
[Option+S]
N. Virginia
voclabs/user3380040=surajkumar.117664@marwadiuniversity.ac.in...
EC2 > Instances > i-0463aac29d37dfcf2 > Connect to instance
EC2 Instance Connect
Session Manager
SSH client
EC2 serial console
Cancel
Connect

Connect to instance Info

Connect to your instance i-0463aac29d37dfcf2 (PRACTICAL09) using any of these options

Port 22 (SSH) is open to all IPv4 addresses
Port 22 (SSH) is currently open to all IPv4 addresses, indicated by **0.0.0.0/0** in the inbound rule in your security group. For increased security, consider restricting access to only the EC2 Instance Connect service IP addresses for your Region: 18.206.107.24/29. Learn more.

Instance ID
i-0463aac29d37dfcf2 (PRACTICAL09)

Connection Type
● Connect using EC2 Instance Connect
Connect using the EC2 Instance Connect browser-based client, with a public IPv4 or IPv6 address.
○ Connect using EC2 Instance Connect Endpoint
Connect using the EC2 Instance Connect browser-based client, with a private IPv4 address and a VPC endpoint.

● Public IPv4 address
54.81.158.60
○ IPv6 address
–

Username
Enter the username defined in the AMI used to launch the instance. If you didn't define a custom username, use the default username, ec2-user.
ec2-user

Note: In most cases, the default username, ec2-user, is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username.

Step 02: After you connect instance than automatic open COMMAND LINE INTERFACE, if open terminal then you run some command such us: -

1. sudo su

2. sudo yum update

3. sudo yum install docker

4. sudo service docker start

5. docker version

6. docker search nginx

7. docker pull nginx

8. docker images

9. docekr run -d -p 80:80 nginx (-d for desk mode, p for assinn port)

10. docker ps

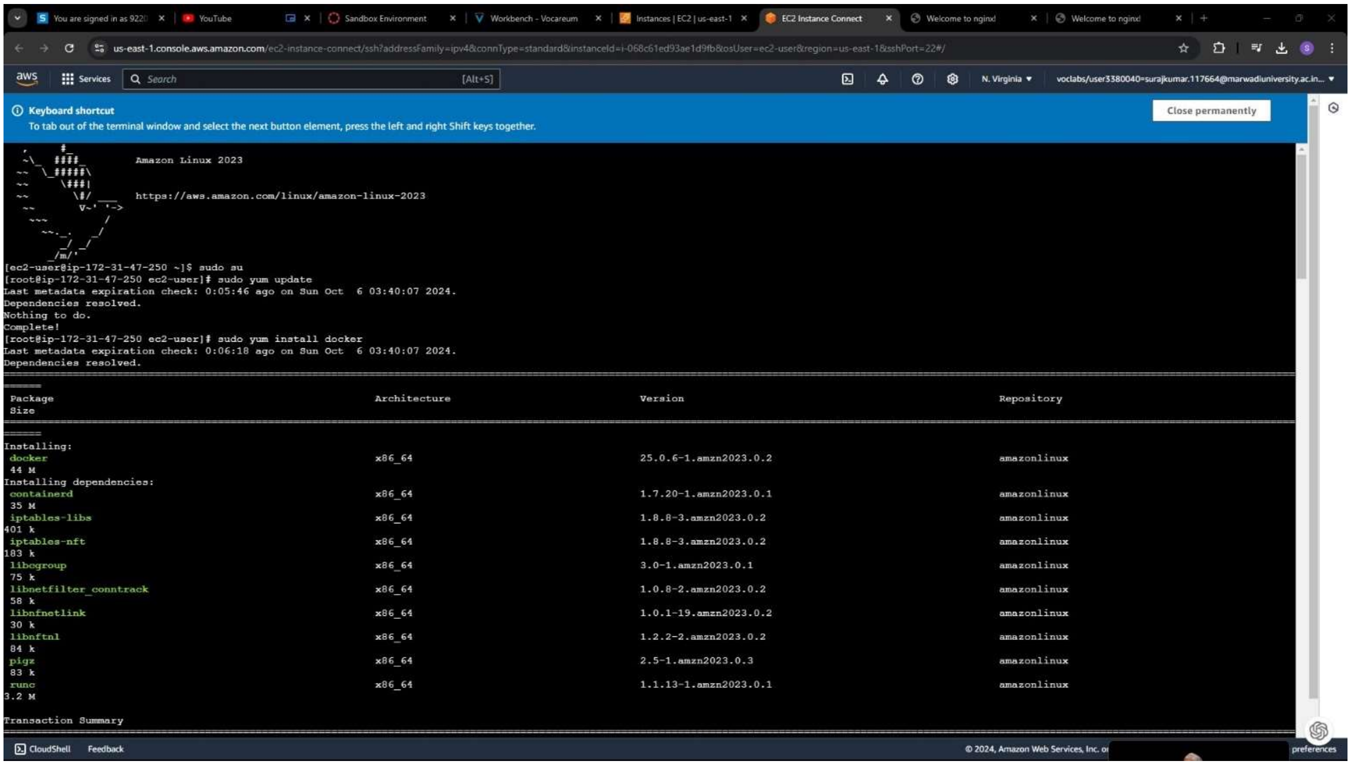
--->> Now copy public IP address and open in a new window so open nginx

11. docker stop 58c7a0bdc95d

12. docker ps

13. docker push nginx

14. docker ps


You are signed in as 9220
YouTube
Sandbox Environment
Workbench - Vocareum
Instances | EC2 | us-east-1
EC2 Instance Connect
Welcome to nginx!
Welcome to nginx!
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?addressFamily=ipv4&connType=standard&instanceId=i-068c61ed93ae1d9fb&osUser=ec2-user&region=us-east-1&sshPort=22#/
aws
Services
Search
[Alt+S]
N. Virginia
voclabs/user3380040=surajkumar.117664@marwadiuniversity.ac.in...
Close permanently
CloudShell
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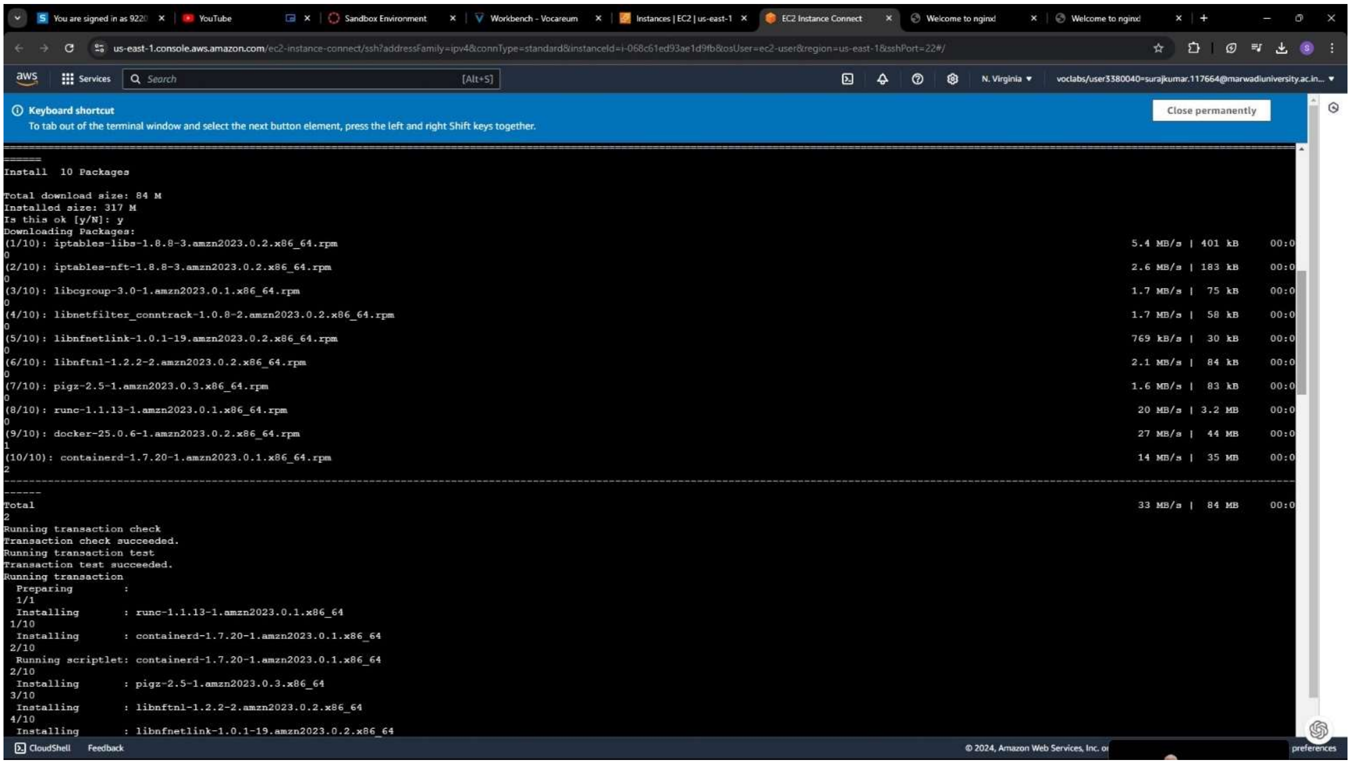
preferences

Keyboard shortcut
To tab out of the terminal window and select the next button element, press the left and right Shift keys together.

```
   ,     #_
   ~\_  ####_        Amazon Linux 2023
  ~~  \_#####\
  ~~     \###|
  ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
   ~~       V~' '->
    ~~~         /
      ~~._.   _/
         _/ _/
       _/m/'
[ec2-user@ip-172-31-47-250 ~]$ sudo su
[root@ip-172-31-47-250 ec2-user]# sudo yum update
Last metadata expiration check: 0:05:46 ago on Sun Oct  6 03:40:07 2024.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-172-31-47-250 ec2-user]# sudo yum install docker
Last metadata expiration check: 0:06:18 ago on Sun Oct  6 03:40:07 2024.
Dependencies resolved.
========================================================================================================================
======
 Package                                     Architecture              Version                              Repository
 Size
========================================================================================================================
======
Installing:
 docker                                      x86_64                    25.0.6-1.amzn2023.0.2                amazonlinux
 44 M
Installing dependencies:
 containerd                                  x86_64                    1.7.20-1.amzn2023.0.1                amazonlinux
 35 M
 iptables-libs                               x86_64                    1.8.8-3.amzn2023.0.2                 amazonlinux
401 k
 iptables-nft                                x86_64                    1.8.8-3.amzn2023.0.2                 amazonlinux
183 k
 libcgroup                                   x86_64                    3.0-1.amzn2023.0.1                   amazonlinux
 75 k
 libnetfilter_conntrack                      x86_64                    1.0.8-2.amzn2023.0.2                 amazonlinux
 58 k
 libnfnetlink                                x86_64                    1.0.1-19.amzn2023.0.2                amazonlinux
 30 k
 libnftnl                                    x86_64                    1.2.2-2.amzn2023.0.2                 amazonlinux
 84 k
 pigz                                        x86_64                    2.5-1.amzn2023.0.3                   amazonlinux
 83 k
 runc                                        x86_64                    1.1.13-1.amzn2023.0.1                amazonlinux
3.2 M

Transaction Summary
========================================================================================================================
```


You are signed in as 9220
YouTube
Sandbox Environment
Workbench - Vocareum
Instances | EC2 | us-east-1
EC2 Instance Connect
Welcome to nginx!
Welcome to nginx!
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?addressFamily=ipv4&connType=standard&instanceId=i-068c61ed93ae1d9fb&osUser=ec2-user&region=us-east-1&sshPort=22#/
aws
Services
Search
[Alt+S]
N. Virginia
voclabs/user3380040=surajkumar.117664@marwadiuniversity.ac.in...
Close permanently
CloudShell
Feedback
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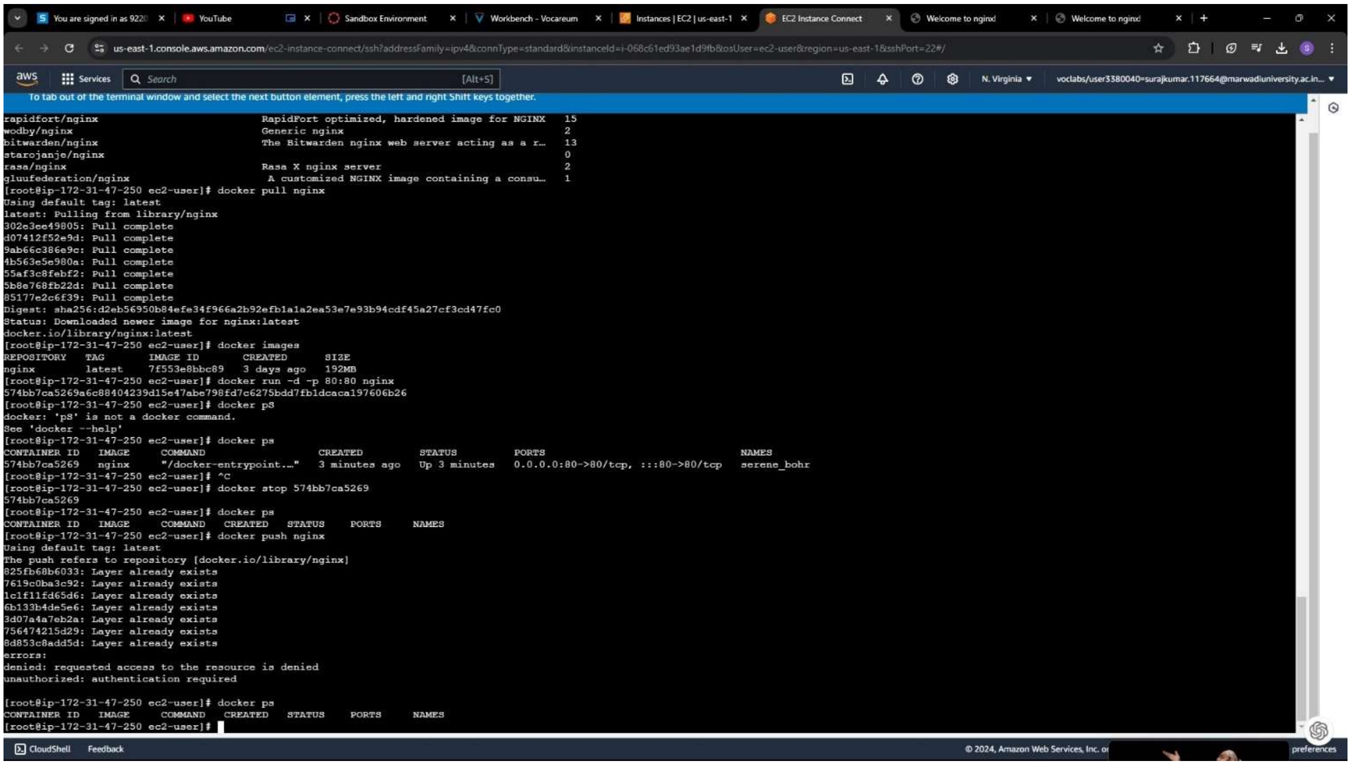
Keyboard shortcut
To tab out of the terminal window and select the next button element, press the left and right Shift keys together.

```
========================================================================================================================
======
Install  10 Packages

Total download size: 84 M
Installed size: 317 M
Is this ok [y/N]: y
Downloading Packages:
(1/10): iptables-libs-1.8.8-3.amzn2023.0.2.x86_64.rpm                                      5.4 MB/s | 401 kB     00:0
0
(2/10): iptables-nft-1.8.8-3.amzn2023.0.2.x86_64.rpm                                       2.6 MB/s | 183 kB     00:0
0
(3/10): libcgroup-3.0-1.amzn2023.0.1.x86_64.rpm                                            1.7 MB/s |  75 kB     00:0
0
(4/10): libnetfilter_conntrack-1.0.8-2.amzn2023.0.2.x86_64.rpm                             1.7 MB/s |  58 kB     00:0
0
(5/10): libnfnetlink-1.0.1-19.amzn2023.0.2.x86_64.rpm                                      769 kB/s |  30 kB     00:0
0
(6/10): libnftnl-1.2.2-2.amzn2023.0.2.x86_64.rpm                                           2.1 MB/s |  84 kB     00:0
0
(7/10): pigz-2.5-1.amzn2023.0.3.x86_64.rpm                                                 1.6 MB/s |  83 kB     00:0
0
(8/10): runc-1.1.13-1.amzn2023.0.1.x86_64.rpm                                               20 MB/s | 3.2 MB     00:0
0
(9/10): docker-25.0.6-1.amzn2023.0.2.x86_64.rpm                                             27 MB/s |  44 MB     00:0
1
(10/10): containerd-1.7.20-1.amzn2023.0.1.x86_64.rpm                                        14 MB/s |  35 MB     00:0
2
------------------------------------------------------------------------------------------------------------------------
------
Total                                                                                       33 MB/s |  84 MB     00:0
2
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing        :
  1/1
  Installing       : runc-1.1.13-1.amzn2023.0.1.x86_64
 1/10
  Installing       : containerd-1.7.20-1.amzn2023.0.1.x86_64
 2/10
  Running scriptlet: containerd-1.7.20-1.amzn2023.0.1.x86_64
 2/10
  Installing       : pigz-2.5-1.amzn2023.0.3.x86_64
 3/10
  Installing       : libnftnl-1.2.2-2.amzn2023.0.2.x86_64
 4/10
  Installing       : libnfnetlink-1.0.1-19.amzn2023.0.2.x86_64
```



```
rapidfort/nginx                       RapidFort optimized, hardened image for NGINX   15
wodby/nginx                           Generic nginx                                   2
bitwarden/nginx                       The Bitwarden nginx web server acting as a r…   13
starojanje/nginx                                                                      0
rasa/nginx                            Rasa X nginx server                             2
gluufederation/nginx                   A customized NGINX image containing a consu…   1
[root@ip-172-31-47-250 ec2-user]# docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
302e3ee49805: Pull complete
d07412f52e9d: Pull complete
9ab66c386e9c: Pull complete
4b563e5e980a: Pull complete
55af3c8febf2: Pull complete
5b8e768fb22d: Pull complete
85177e2c6f39: Pull complete
Digest: sha256:d2eb56950b84efe34f966a2b92efb1a1a2ea53e7e93b94cdf45a27cf3cd47fc0
Status: Downloaded newer image for nginx:latest
docker.io/library/nginx:latest
[root@ip-172-31-47-250 ec2-user]# docker images
REPOSITORY   TAG       IMAGE ID       CREATED      SIZE
nginx        latest    7f553e8bbc89   3 days ago   192MB
[root@ip-172-31-47-250 ec2-user]# docker run -d -p 80:80 nginx
574bb7ca5269a6c88404239d15e47abe798fd7c6275bdd7fb1dcaca197606b26
[root@ip-172-31-47-250 ec2-user]# docker pS
docker: 'pS' is not a docker command.
See 'docker --help'
[root@ip-172-31-47-250 ec2-user]# docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED         STATUS         PORTS                               NAMES
574bb7ca5269   nginx     "/docker-entrypoint.…"   3 minutes ago   Up 3 minutes   0.0.0.0:80->80/tcp, :::80->80/tcp   serene_bohr
[root@ip-172-31-47-250 ec2-user]# ^C
[root@ip-172-31-47-250 ec2-user]# docker stop 574bb7ca5269
574bb7ca5269
[root@ip-172-31-47-250 ec2-user]# docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
[root@ip-172-31-47-250 ec2-user]# docker push nginx
Using default tag: latest
The push refers to repository [docker.io/library/nginx]
825fb68b6033: Layer already exists
7619c0ba3c92: Layer already exists
1c1f11fd65d6: Layer already exists
6b133b4de5e6: Layer already exists
3d07a4a7eb2a: Layer already exists
756474215d29: Layer already exists
8d853c8add5d: Layer already exists
errors:
denied: requested access to the resource is denied
unauthorized: authentication required

[root@ip-172-31-47-250 ec2-user]# docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
[root@ip-172-31-47-250 ec2-user]#
```

You are signed in as 9220
YouTube
Sandbox Environment
Workbench - Vocareum
Instances | EC2 | us-east-1
EC2 Instance Connect
Welcome to nginx!
Welcome to nginx!
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?addressFamily=ipv4&connType=standard&instanceId=i-068c61ed93ae1d9fb&osUser=ec2-user&region=us-east-1&sshPort=22#/
aws
Services
Search
[Alt+S]
N. Virginia
voclabs/user3380040=surajkumar.117664@marwadiuniversity.ac.in…
To tab out of the terminal window and select the next button element, press the left and right Shift keys together.
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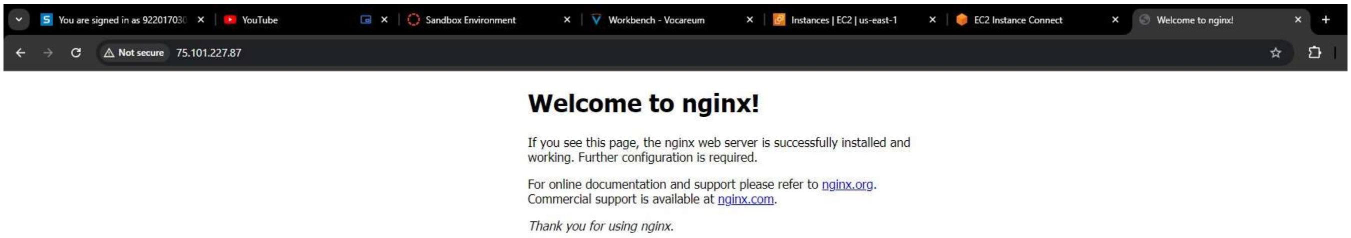


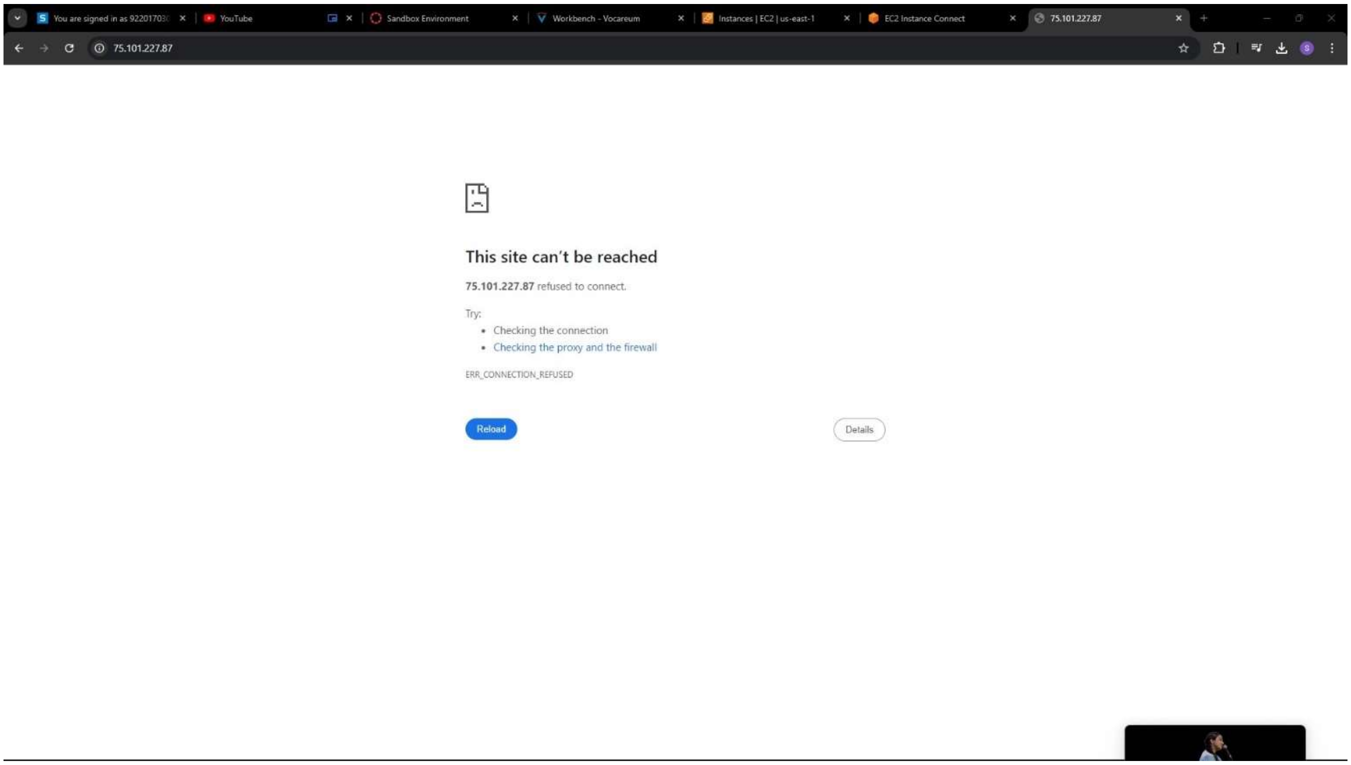
You are signed in as 92201703
YouTube
Sandbox Environment
Workbench - Vocareum
Instances | EC2 | us-east-1
EC2 Instance Connect
Welcome to nginx!
Not secure
75.101.227.87

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.



This site can't be reached

75.101.227.87 refused to connect.

Try:

- Checking the connection
- Checking the proxy and the firewall

ERR_CONNECTION_REFUSED