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Describe IaaS

Infrastructure as a Service (IaaS) is a cloud computing service model that provides virtualized computing resources over the internet. IaaS is one of the main categories of cloud computing services, alongside Software as a Service (SaaS) and Platform as a Service (PaaS).

In an IaaS model, a third-party provider hosts hardware, software, servers, storage, and other infrastructure components on behalf of its users. IaaS providers also offer a range of services to accompany those infrastructure components, such as monitoring, security, load balancing, and clustering.

Key characteristics of IaaS include:

- Scalability: Users can scale resources up and down as needed. - On-Demand: Resources are available on-demand, reducing the need for upfront capital expenditure.
- Pay-as-You-Go: Users pay for the resources they use, often on a per-hour or per-gigabyte basis.
- Managed Infrastructure: The underlying physical infrastructure is managed by the cloud provider, allowing users to focus on their applications and services.

Common use cases for IaaS include:

- Hosting websites and web applications.
- Providing virtual data centers for enterprise computing.
- Supporting development and testing environments.
- Offering disaster recovery solutions.
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1. List the Compute and Storage Services Available in AWS and GCP

AWS (Amazon Web Services)

Compute Services:

1. Amazon EC2 (Elastic Compute Cloud): Scalable virtual servers in the cloud.
2. AWS Lambda: Serverless compute service to run code in response to events.
 3. Amazon ECS (Elastic Container Service): Container management service to run Docker containers.
4. Amazon EKS (Elastic Kubernetes Service): Managed Kubernetes service.
5. AWS Fargate: Serverless compute engine for containers.
6. Amazon Lightsail: Simplified cloud platform for building applications and websites.
7. AWS Batch: Service for running batch computing jobs.
8. AWS Outposts: On-premises cloud infrastructure and services.

Storage Services:

1. Amazon S3 (Simple Storage Service): Scalable object storage.
2. Amazon EBS (Elastic Block Store): Block storage volumes for EC2 instances.
3. Amazon EFS (Elastic File System): Scalable file storage.
4. Amazon Glacier: Low-cost archival storage.
5. AWS Storage Gateway: Hybrid cloud storage service.
6. Amazon FSx: Managed file storage (FSx for Windows File Server and FSx for Lustre).
7. AWS Backup: Centralized backup service.

GCP (Google Cloud Platform)

Compute Services:

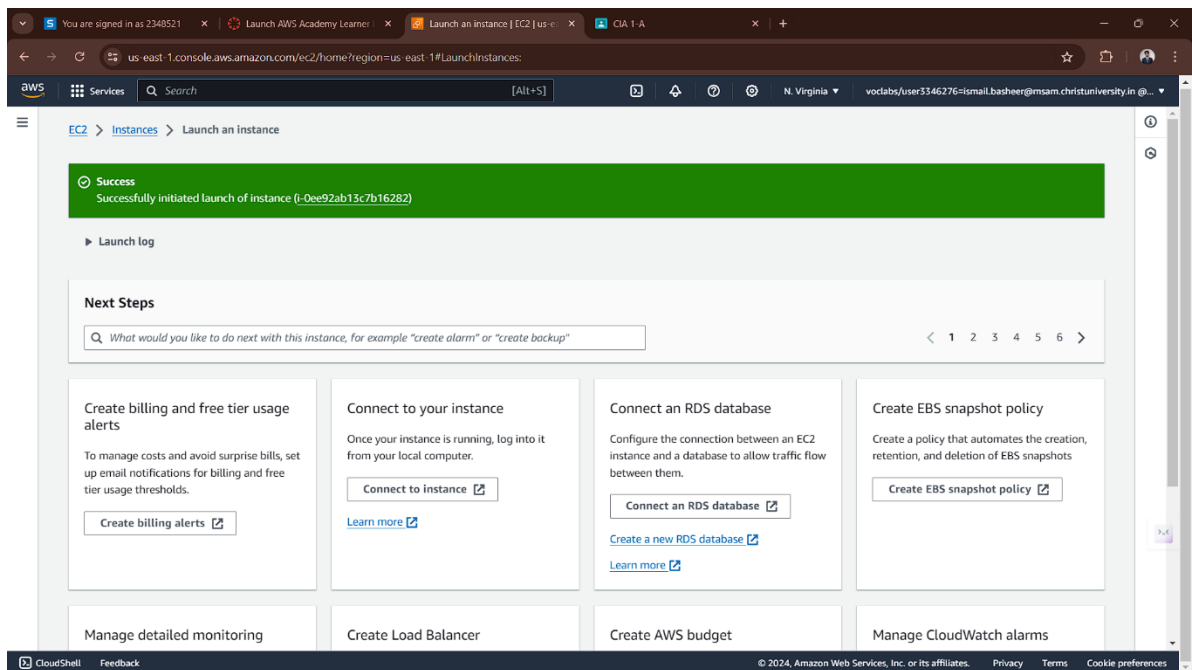
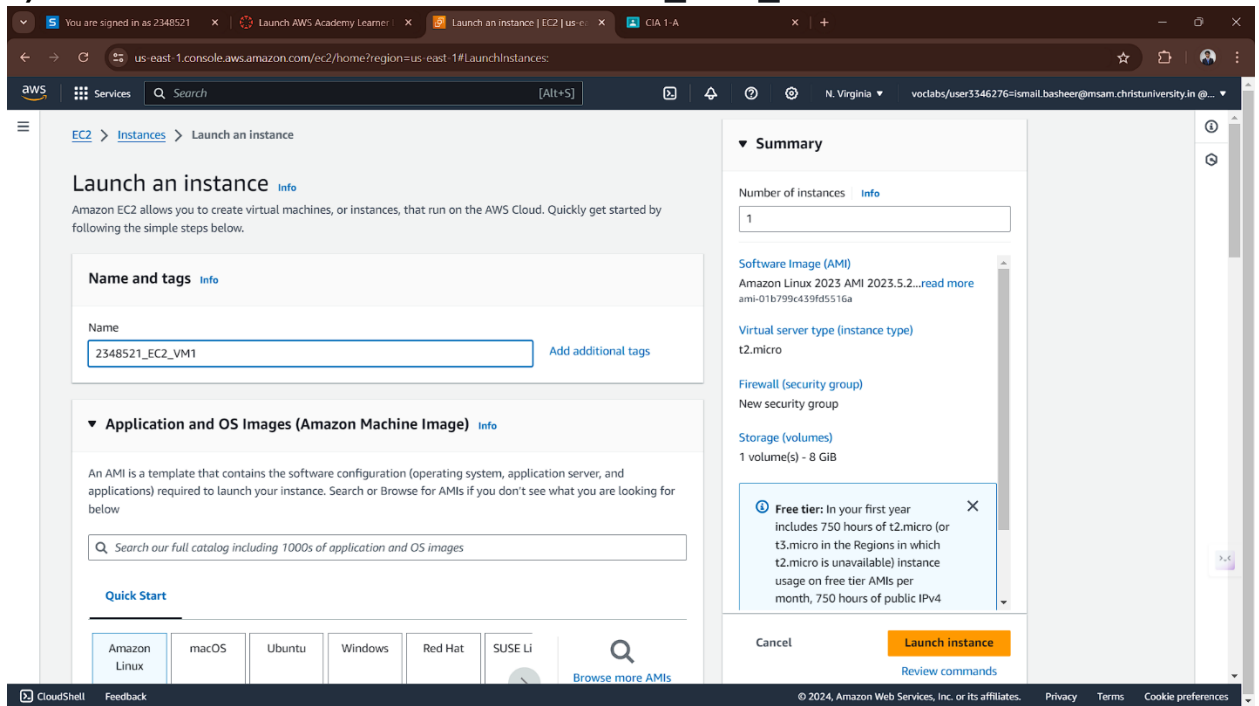
1. Google Compute Engine: Scalable virtual machines.
2. Google Kubernetes Engine (GKE): Managed Kubernetes service.
3. Google App Engine: Platform as a Service (PaaS) for building scalable web applications and mobile backends.
4. Google Cloud Functions: Event-driven serverless compute service.
5. Google Cloud Run: Serverless container service.
6. Google Anthos: Multi-cloud and hybrid cloud platform.

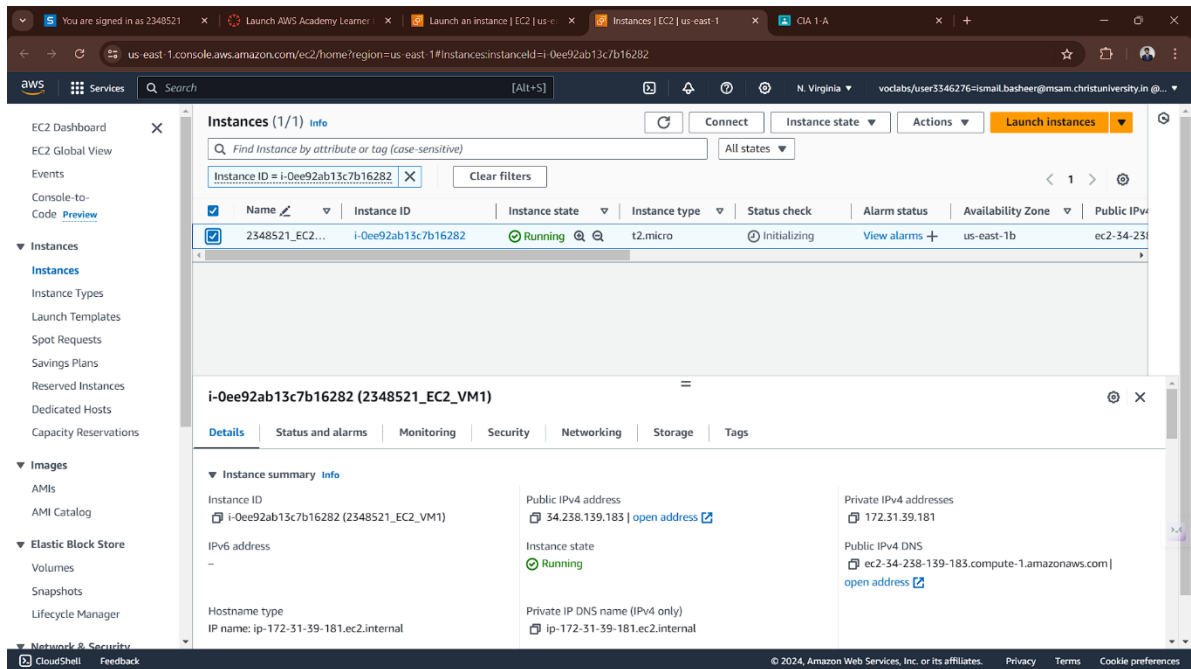
Storage Services:

1. Google Cloud Storage: Scalable object storage.
2. Persistent Disk: Block storage for virtual machine instances.

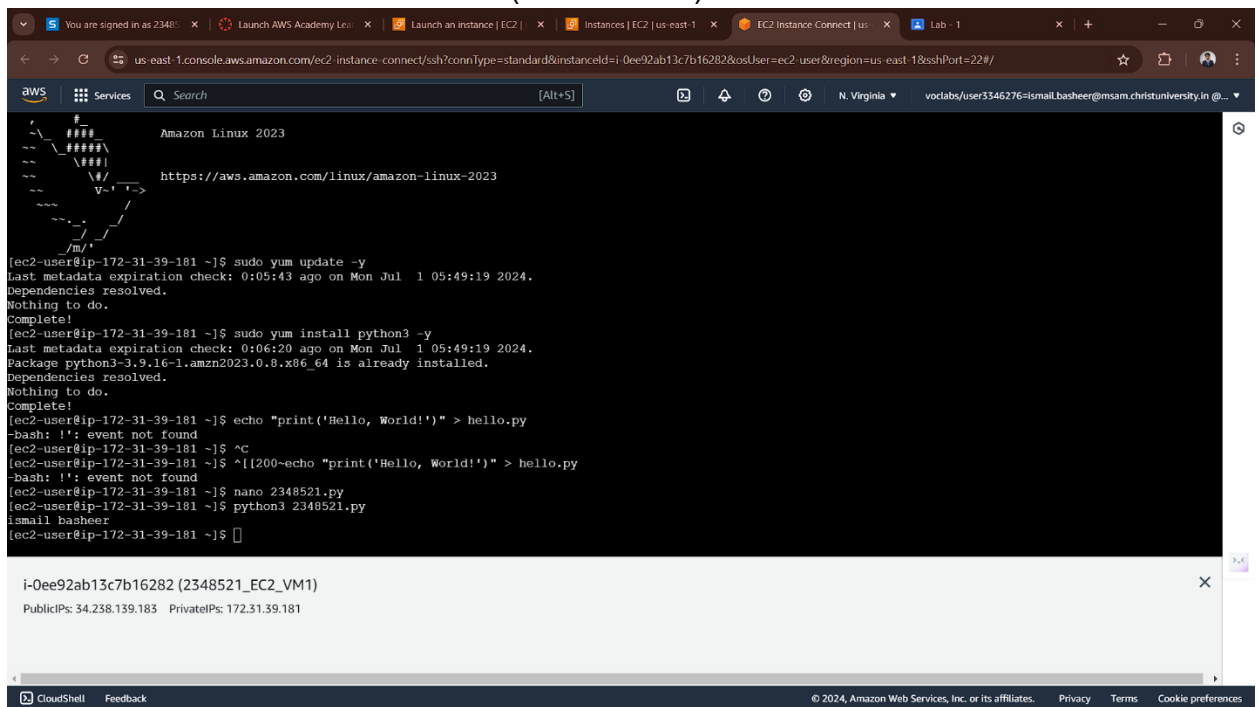
3. Filestore: Managed file storage.
4. Google Cloud Storage Archive: Long-term storage for rarely accessed data.
5. Cloud Bigtable: Fully managed, scalable NoSQL database for large analytical and operational workloads.
6. Google Cloud Datastore: NoSQL document database built for automatic scaling, high performance, and ease of application development.
7. Google Cloud Spanner: Globally distributed and strongly consistent database.
8. Local SSD: High-performance temporary storage for virtual machine instances.

3) CREATED AN INSTANCE - 2348521_EC2_VM1:

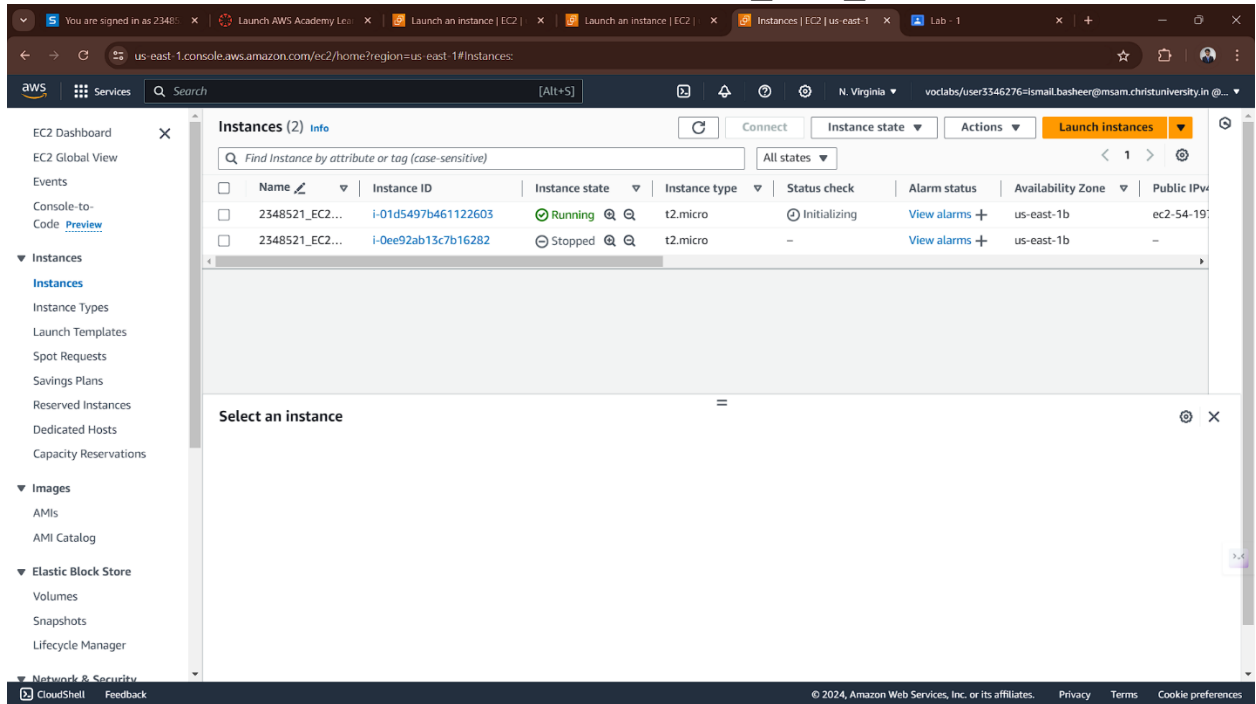




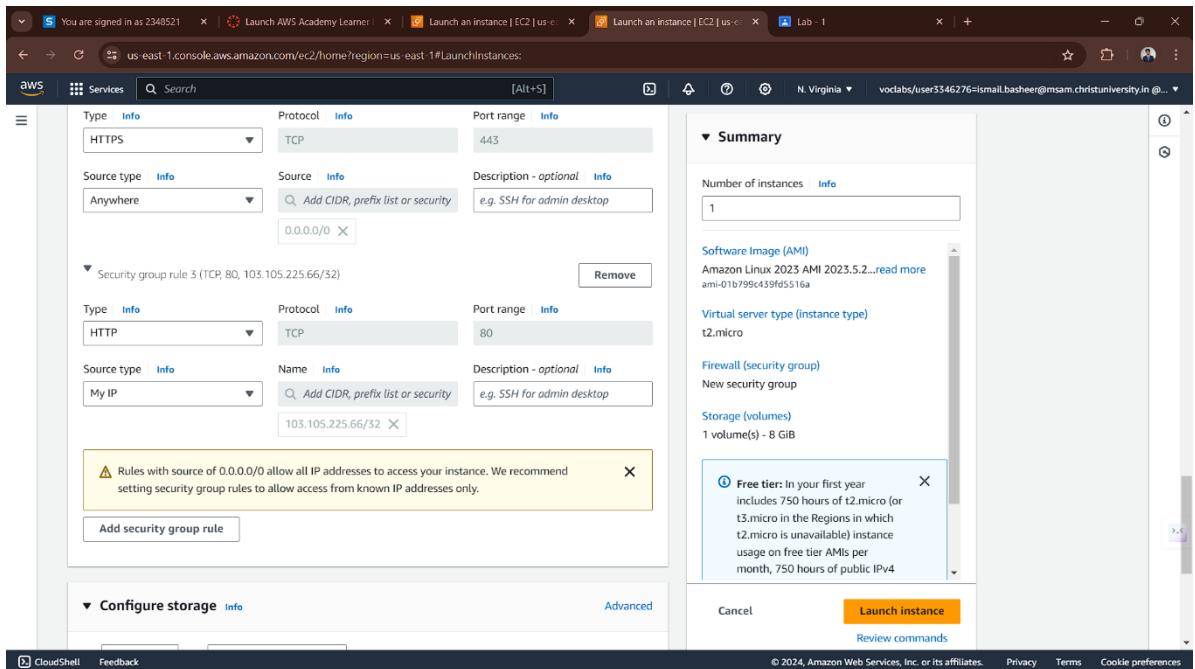
- CONNECTING TO THE LINUX INSTANCE AND WRITING THE CODE FOR THE PROGRAM (“hello world”)



4) CREATED ANOTHER INSTANCE - 2348521_EC2_VM2:



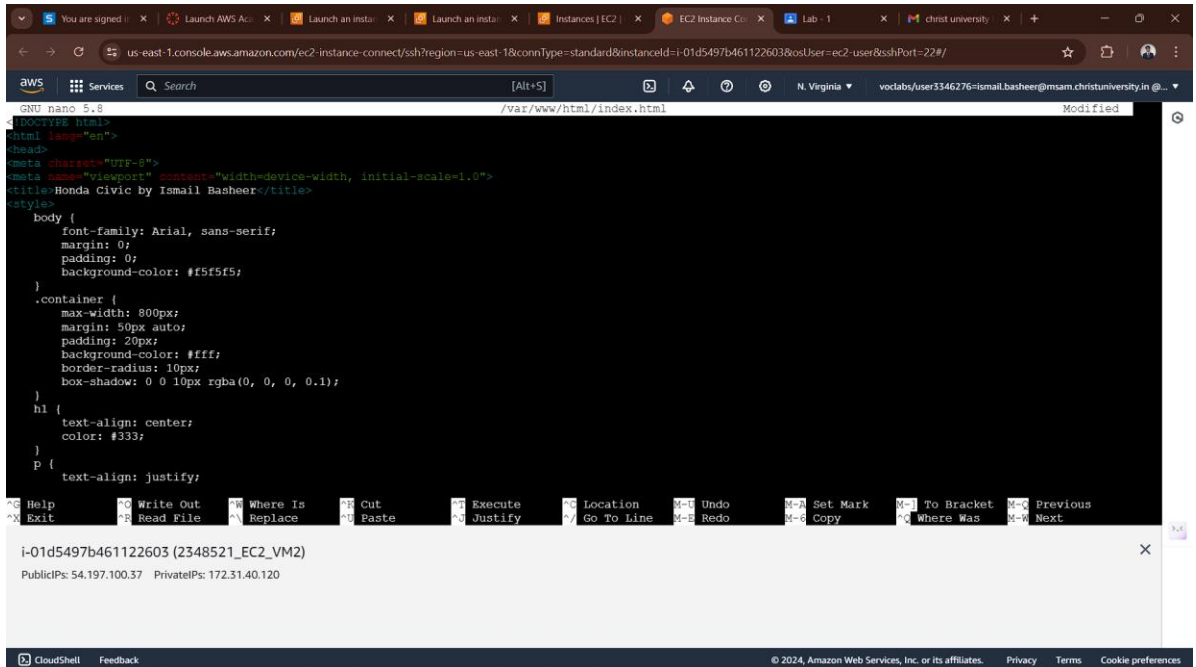
- MODIFYING ITS SECURITY GROUP TO PROVIDE ACCESS ONLY TO MY MACHINE



● INSTALLING PACKAGES AND APACHE SERVER

```
us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-01d5497b461122603&osUser=ec2-user&sshPort=22#/  
aws Services Search [Alt+S] N. Virginia voclabs/user3346276=ismail.basheer@msam.christuniversity.in @...  
Installing : httpd-filessystem-2.4.59-2.amzn2023.noarch 7/12  
Installing : httpd-core-2.4.59-2.amzn2023.x86_64 8/12  
Installing : mod_http2-2.0.27-1.amzn2023.0.2.x86_64 9/12  
Installing : mod_lua-2.4.59-2.amzn2023.x86_64 10/12  
Installing : generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch 11/12  
Installing : httpd-2.4.59-2.amzn2023.x86_64 12/12  
Running scriptlet: httpd-2.4.59-2.amzn2023.x86_64 12/12  
Verifying : apr-1.7.2-2.amzn2023.0.2.x86_64 1/12  
Verifying : apr-util-1.6.3-1.amzn2023.0.1.x86_64 2/12  
Verifying : apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64 3/12  
Verifying : generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch 4/12  
Verifying : httpd-2.4.59-2.amzn2023.x86_64 5/12  
Verifying : httpd-core-2.4.59-2.amzn2023.x86_64 6/12  
Verifying : httpd-filessystem-2.4.59-2.amzn2023.noarch 7/12  
Verifying : httpd-tools-2.4.59-2.amzn2023.x86_64 8/12  
Verifying : libbrotli-1.0.9-4.amzn2023.0.2.x86_64 9/12  
Verifying : mailcap-2.1.49-3.amzn2023.0.3.noarch 10/12  
Verifying : mod_http2-2.0.27-1.amzn2023.0.2.x86_64 11/12  
Verifying : mod_lua-2.4.59-2.amzn2023.x86_64 12/12  
  
Installed:  
apr-1.7.2-2.amzn2023.0.2.x86_64 apr-util-1.6.3-1.amzn2023.0.1.x86_64 apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64  
generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch httpd-2.4.59-2.amzn2023.x86_64 httpd-core-2.4.59-2.amzn2023.x86_64  
httpd-filessystem-2.4.59-2.amzn2023.noarch httpd-tools-2.4.59-2.amzn2023.x86_64 libbrotli-1.0.9-4.amzn2023.0.2.x86_64  
mailcap-2.1.49-3.amzn2023.0.3.noarch mod_http2-2.0.27-1.amzn2023.0.2.x86_64 mod_lua-2.4.59-2.amzn2023.x86_64  
  
Complete!  
[ec2-user@ip-172-31-40-120 ~]$ sudo systemctl start httpd  
[ec2-user@ip-172-31-40-120 ~]$ sudo systemctl enable httpd  
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service -> /usr/lib/systemd/system/httpd.service.  
[ec2-user@ip-172-31-40-120 ~]$  
  
i-01d5497b461122603 (2348521_EC2_VM2)  
PublicIPs: 54.197.100.37 PrivateIPs: 172.31.40.120  
CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences
```

CREATING THE HTML PAGE FOR WEBSITE



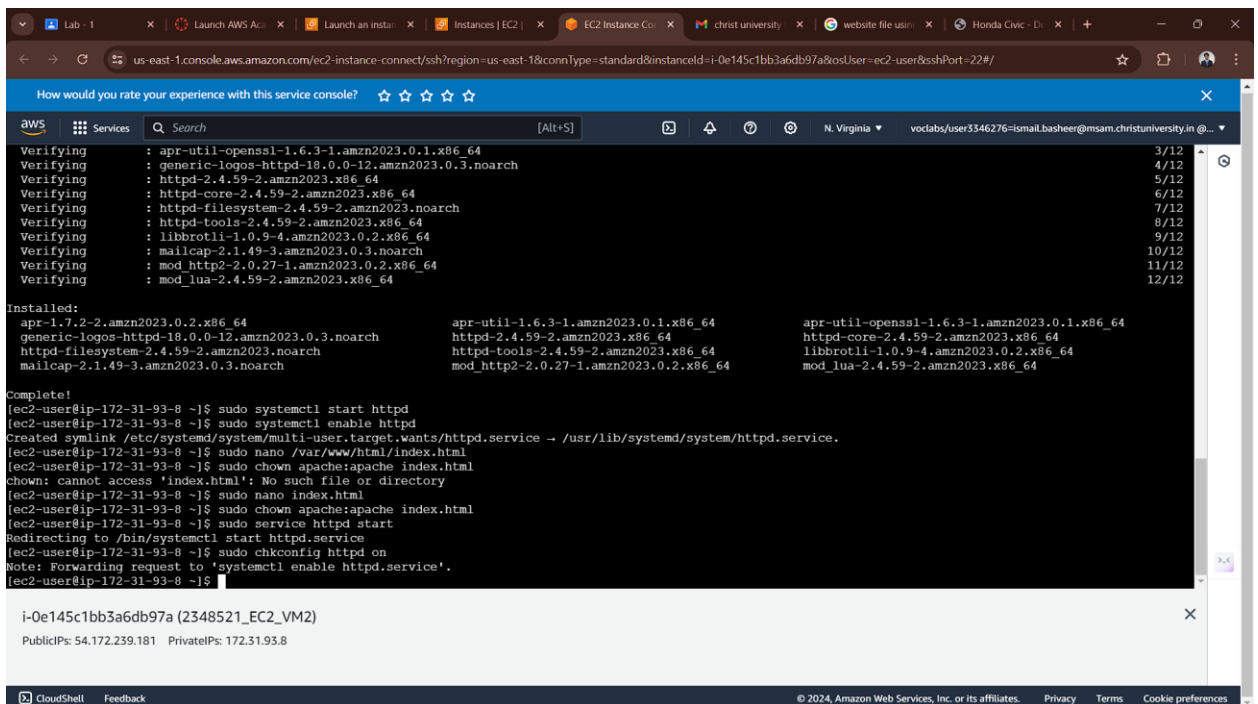
```
GNU nano 5.8 /var/www/html/index.html
DOCTYPE html
<html lang="en">
<head>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<title>Honda Civic by Ismail Basheer</title>
<style>
body {
font-family: Arial, sans-serif;
margin: 0;
padding: 0;
background-color: #f5f5f5;
}
.container {
max-width: 800px;
margin: 50px auto;
padding: 20px;
background-color: #fff;
border-radius: 10px;
box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);
}
h1 {
text-align: center;
color: #333;
}
p {
text-align: justify;
}

```

i-01d5497b461122603 (2348521_EC2_VM2)

PublicIPs: 54.197.100.37 PrivateIPs: 172.31.40.120

- HOSTING THE WEBSITE ON APACHE SERVER



```
How would you rate your experience with this service console? ☆☆☆☆
aws Services [Alt+S] N. Virginia voclabs/user3346276=ismail.basheer@msam.christuniversity.in @...
Verifying : apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64 3/12
Verifying : generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch 4/12
Verifying : httpd-2.4.59-2.amzn2023.x86_64 5/12
Verifying : httpd-core-2.4.59-2.amzn2023.x86_64 6/12
Verifying : httpd-filesystem-2.4.59-2.amzn2023.noarch 7/12
Verifying : httpd-tools-2.4.59-2.amzn2023.x86_64 8/12
Verifying : libbrotli-1.0.9-4.amzn2023.0.2.x86_64 9/12
Verifying : mailcap-2.1.49-3.amzn2023.0.3.noarch 10/12
Verifying : mod_http2-2.0.27-1.amzn2023.0.2.x86_64 11/12
Verifying : mod_lua-2.4.59-2.amzn2023.x86_64 12/12
Installed:
apr-1.7.2-2.amzn2023.0.2.x86_64 apr-util-1.6.3-1.amzn2023.0.1.x86_64 apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64
generic-logos-httpd-18.0.0-12.amzn2023.0.3.noarch httpd-2.4.59-2.amzn2023.x86_64 httpd-core-2.4.59-2.amzn2023.x86_64
httpd-filesystem-2.4.59-2.amzn2023.noarch httpd-tools-2.4.59-2.amzn2023.x86_64 libbrotli-1.0.9-4.amzn2023.0.2.x86_64
mailcap-2.1.49-3.amzn2023.0.3.noarch mod_http2-2.0.27-1.amzn2023.0.2.x86_64 mod_lua-2.4.59-2.amzn2023.x86_64
Complete!
[ec2-user@ip-172-31-93-8 ~]$ sudo systemctl start httpd
[ec2-user@ip-172-31-93-8 ~]$ sudo systemctl enable httpd
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /usr/lib/systemd/system/httpd.service.
[ec2-user@ip-172-31-93-8 ~]$ sudo nano /var/www/html/index.html
chown: cannot access 'index.html': No such file or directory
[ec2-user@ip-172-31-93-8 ~]$ sudo nano index.html
[ec2-user@ip-172-31-93-8 ~]$ sudo chown apache:apache index.html
[ec2-user@ip-172-31-93-8 ~]$ sudo service httpd start
Redirecting to /bin/systemctl start httpd.service
[ec2-user@ip-172-31-93-8 ~]$ sudo chkconfig httpd on
Note: Forwarding request to 'systemctl enable httpd.service'.
[ec2-user@ip-172-31-93-8 ~]$
```

i-0e145c1bb3a6db97a (2348521_EC2_VM2)

PublicIPs: 54.172.239.181 PrivateIPs: 172.31.93.8

- ACCESSING THE WEBSITE VIA THE PUBLIC IP ADDRESS OF THE INSTANCE THROUGH MY MACHINE

