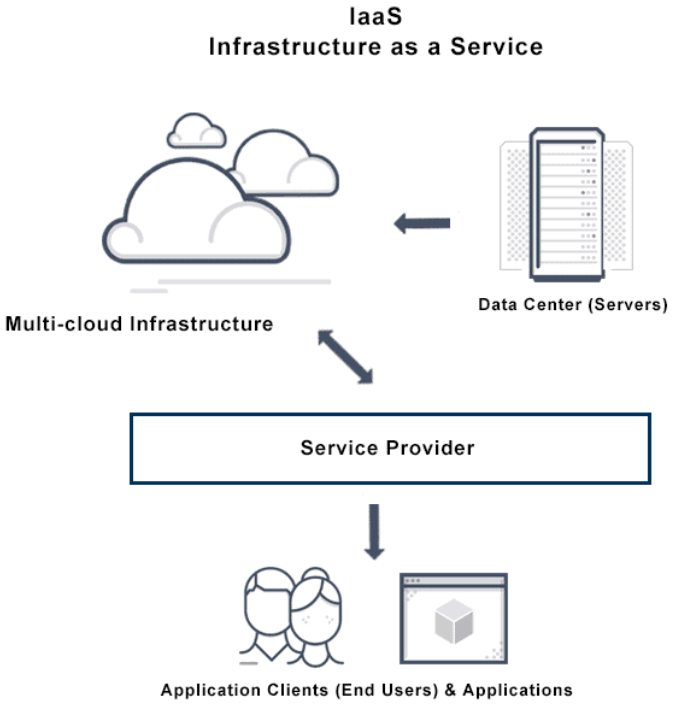
1. Describe IaaS



#Infrastructure as a Service (IaaS)

Definition:
Infrastructure as a Service (IaaS) is a form of cloud computing that provides virtualized computing resources over the internet. It offers fundamental infrastructure such as virtual machines, storage, and networking on a pay-as-you-go basis, enabling businesses to rent rather than own physical hardware.

Key Features:

1. Virtualized Computing Resources:
- Users can provision and manage virtual machines (VMs) and other resources through a web-based interface or API, giving them control over computing power, storage, and networking.

2. Scalability:

- IaaS platforms allow for easy scaling of resources up or down based on demand, ensuring that businesses can handle varying workloads without overprovisioning.

3. Cost-Efficiency:
- IaaS eliminates the need for upfront capital expenditure on physical hardware. Instead, users pay for what they use, typically on an hourly, weekly, or monthly basis.

4. Flexibility and Customization:
- Users have the freedom to choose operating systems, install custom software, and configure settings to meet specific requirements, providing a high degree of flexibility.

5. Automated Administrative Tasks:
- Many IaaS providers offer automation tools for administrative tasks like backups, monitoring, and load balancing, helping to reduce the burden on IT staff.

Components:

1. Compute:
- Virtual servers, or instances, that can run applications, host websites, or perform other computing tasks.

2. Storage:
- Various types of storage options, such as block storage, object storage, and file storage, to meet different data storage needs.

3. Networking:
- Virtual networks, load balancers, and other networking infrastructure to manage traffic and ensure connectivity between resources.

4. Other Services:
- Additional services such as databases, identity management, and security features that complement the core infrastructure.

Examples of IaaS Providers:

1. Amazon Web Services (AWS):
   - AWS offers a wide range of IaaS services, including EC2 for virtual servers, S3 for storage, and VPC for networking.

2. Microsoft Azure:
   - Azure provides a comprehensive set of IaaS offerings, such as Virtual Machines, Blob Storage, and Virtual Networks.

3. Google Cloud Platform (GCP):
   - GCP offers compute services like Compute Engine, storage services like Cloud Storage, and networking services like Virtual Private Cloud.

4. IBM Cloud:
   - IBM Cloud offers IaaS solutions including virtual servers, block storage, and advanced networking options.

5. Oracle Cloud Infrastructure (OCI):
   - OCI provides IaaS services such as compute instances, object storage, and virtual cloud networks.

Benefits:

1. Cost Savings:
   - Reduced capital expenditure and operational costs by eliminating the need for physical hardware and related maintenance.

2. Agility and Speed:
   - Rapid provisioning of resources enables businesses to quickly launch new applications and respond to changes in demand.

3. Focus on Core Business:
   - By outsourcing infrastructure management to the IaaS provider, businesses can focus on their core activities and innovation.

4. Disaster Recovery and Business Continuity:
   - Built-in redundancy and backup options enhance resilience and ensure business continuity in case of hardware failures.

Use Cases:

1. Development and Testing:
   - IaaS allows developers to quickly set up and tear down environments for development and testing purposes.

2. Web Hosting:
   - Hosting websites and web applications with scalable resources to handle varying levels of traffic.

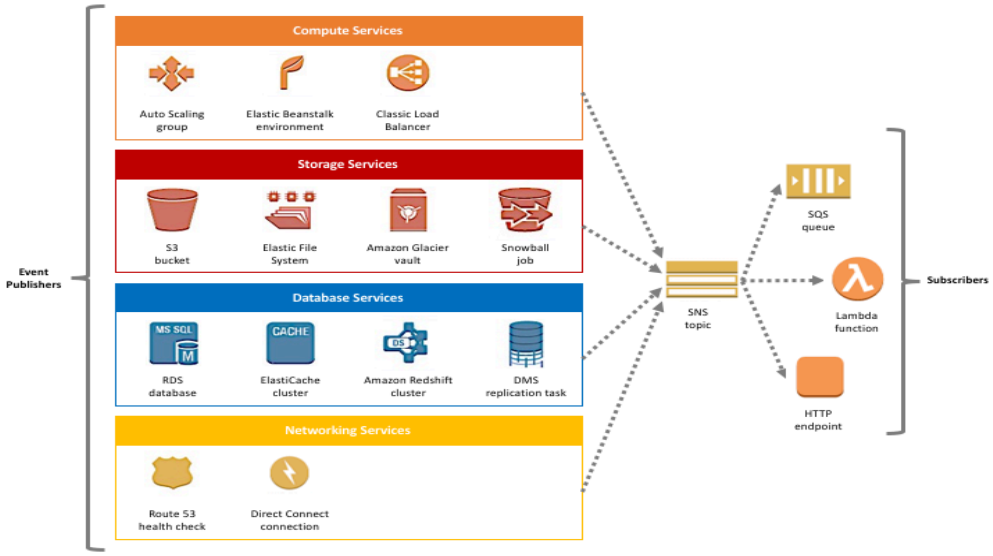
3. Big Data Analysis:
   - Processing and analyzing large datasets using scalable compute and storage resources.

4. Backup and Storage:
   - Storing and backing up data securely in the cloud with easy retrieval options.

Conclusion:
IaaS provides a flexible, scalable, and cost-effective way for businesses to manage their IT infrastructure, enabling them to focus on growth and innovation without the burden of maintaining physical hardware.

2. List the Compute and Storage services available in AWS and GCP.

>>> Amazon Web Services (AWS)



Compute Services:

1. Amazon EC2 (Elastic Compute Cloud):
   - Provides resizable compute capacity in the cloud.

2. AWS Lambda:
   - A serverless compute service that runs code in response to events without provisioning or managing servers.

3. Amazon ECS (Elastic Container Service):
   - A fully managed container orchestration service.

4. Amazon EKS (Elastic Kubernetes Service):
   - A managed service to run Kubernetes on AWS.

5. AWS Fargate:
   - A serverless compute engine for containers that works with ECS and EKS.

6. Amazon Lightsail:
   - Simplified virtual private servers (VPS) and easy-to-use cloud platform.

7. AWS Batch:
   - A fully managed batch processing service that dynamically provisions the optimal quantity and type of compute resources.

8. AWS Elastic Beanstalk:
   - An easy-to-use service for deploying and scaling web applications and services.

9. Amazon Outposts:
   - Brings native AWS services, infrastructure, and operating models to virtually any data center or on-premises facility.

10. AWS App Runner:
   - A fully managed service that makes it easy for developers to quickly deploy containerized web applications and APIs.

Storage Services:

1. Amazon S3 (Simple Storage Service):

- Scalable object storage service with industry-leading scalability, data availability, security, and performance.

2. Amazon EBS (Elastic Block Store):
- Provides block-level storage volumes for use with EC2 instances.

3. Amazon EFS (Elastic File System):
- A scalable file storage service for use with AWS Cloud services and on-premises resources.

4. Amazon FSx:
- Provides fully managed third-party file systems (e.g., FSx for Windows File Server, FSx for Lustre).

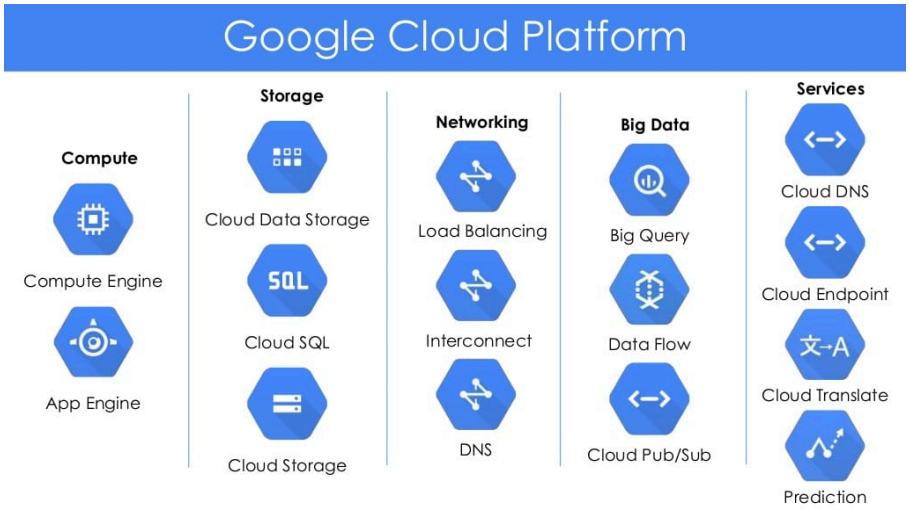
5. Amazon S3 Glacier:
- Low-cost storage service for data archiving and long-term backup.

6. AWS Storage Gateway:
- Hybrid cloud storage service that gives on-premises access to virtually unlimited cloud storage.

7. AWS Snow Family:
- Offers a range of physical devices to transfer large amounts of data into and out of AWS.

8. Amazon Backup:
- Centralized backup service to automate and manage backups across AWS services.

>>> Google Cloud Platform (GCP)



<u>Compute Services:</u>

1. Google Compute Engine:
   - Provides virtual machines running in Google's data centers.

2. Google Kubernetes Engine (GKE):
   - A managed Kubernetes service for running containerized applications.

3. Google App Engine:
   - A fully managed serverless platform for building and deploying applications.

4. Google Cloud Functions:
   - A serverless execution environment for building and connecting cloud services.

5. Google Cloud Run:
   - A managed compute platform that enables you to run containers directly on top of Google's scalable infrastructure.

6. Google Anthos:
   - A modern application management platform that provides a consistent development and operations experience for hybrid and multi-cloud environments.

7. Google Cloud Batch:
   - A fully managed batch processing service.

Storage Services:

1. Google Cloud Storage:
   - Object storage service for storing and accessing data at scale.

2. Google Persistent Disk:
   - Durable and high-performance block storage for Google Compute Engine.

3. Google Cloud Filestore:
   - Fully managed file storage service for applications that require a file system interface and a shared file system.

4. Google Cloud Storage Nearline:
   - Low-cost, highly durable storage service for storing infrequently accessed data.

5. Google Cloud Storage Coldline:
   - Storage for data that is accessed less than once a year.

6. Google Cloud Storage Archive:
   - Lowest-cost storage for data archiving and long-term backup.

7. Google Cloud Bigtable:
   - A fully managed, scalable NoSQL database designed for large analytical and operational workloads.

8. Google Cloud SQL:
   - Managed relational database service for MySQL, PostgreSQL, and SQL Server.

9. Google Cloud Spanner:
   - A scalable, globally-distributed database that combines the benefits of relational database structure with non-relational horizontal scale.

10. Google Cloud Firestore:
    - NoSQL document database built for automatic scaling, high performance, and ease of application development.

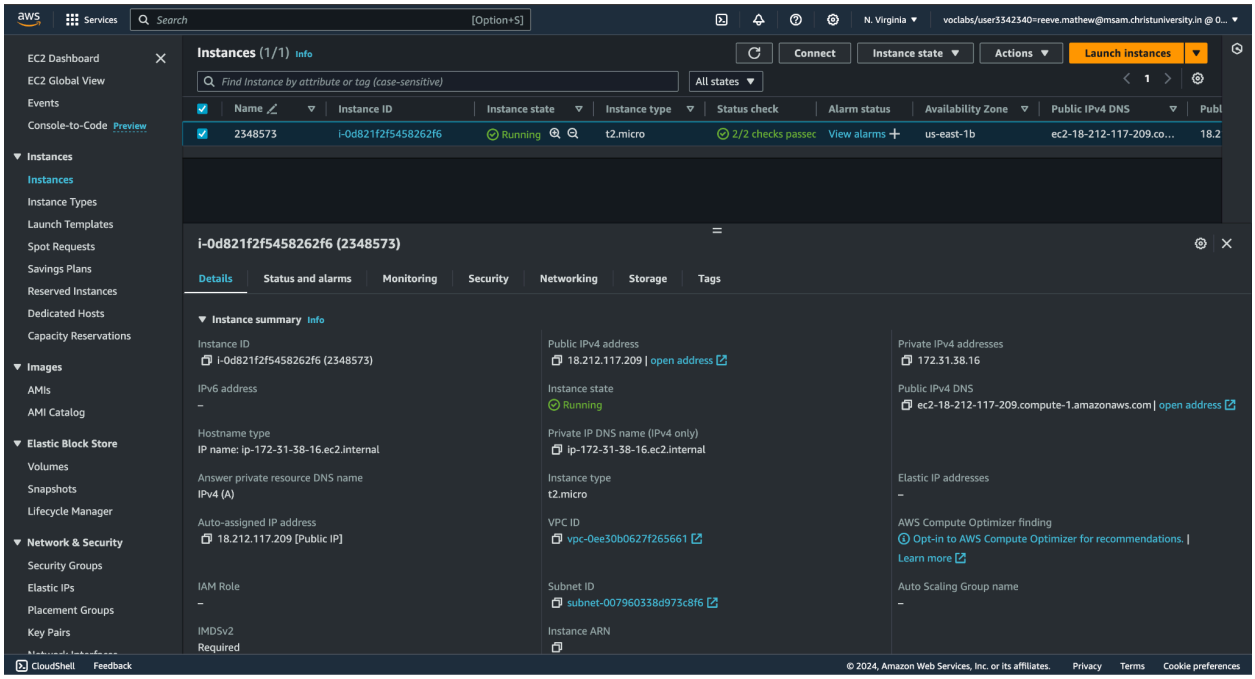
Summary

Both AWS and GCP provide a comprehensive suite of compute and storage services to cater to a wide range of applications and use cases. AWS offers services such as EC2, Lambda, S3, and EBS, while GCP offers services like Compute Engine, Cloud Functions, Cloud Storage, and Persistent Disk. These services allow users to build, deploy, and manage applications and data with flexibility and scalability.

3. Create 2 Identical AWS EC2 Instances (Instance Name: Regno_EC2_VM1, Regno_EC2_VM2) and install the necessary packages to execute a program of your choice in 'Regno_EC2_VM1'.

ANS :

Creating an instance:



IN TERMINAL :

```
(base) kristyjs@Reeve Downloads % cd ~/Downloads
(base) kristyjs@Reeve Downloads % chmod 400 Pemkey.pem
(base) kristyjs@Reeve Downloads % ssh -i /Users/kristyjs/Downloads/Pemkey.pem ec2-user@ec2-18-212-117-209.compute-1.amazonaws.com

   ,     #_
   ~\_  ####_        Amazon Linux 2023
  ~~  \_#####\
  ~~     \###|
  ~~       \#/ ___   https://aws.amazon.com/linux/amazon-linux-2023
   ~~       V~' '->
    ~~~         /
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[ec2-user@ip-172-31-38-16 ~]$ sudo yum update -y
Last metadata expiration check: 2:21:16 ago on Tue Jul  2 16:56:48 2024.
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-172-31-38-16 ~]$ sudo yum install gcc -y
Last metadata expiration check: 2:21:26 ago on Tue Jul  2 16:56:48 2024.
Dependencies resolved.
================================================================================
 Package                 Arch       Version                   Repository      Size
================================================================================
Installing:
 gcc                     x86_64     11.4.1-2.amzn2023.0.2     amazonlinux     32 M
Installing dependencies:
 annobin-docs            noarch     10.93-1.amzn2023.0.1      amazonlinux     92 k
 annobin-plugin-gcc      x86_64     10.93-1.amzn2023.0.1      amazonlinux    887 k
 cpp                     x86_64     11.4.1-2.amzn2023.0.2     amazonlinux     10 M
 gc                      x86_64     8.0.4-5.amzn2023.0.2      amazonlinux    105 k
 glibc-devel             x86_64     2.34-52.amzn2023.0.10     amazonlinux     36 k
 glibc-headers-x86       noarch     2.34-52.amzn2023.0.10     amazonlinux    436 k
 guile22                 x86_64     2.2.7-2.amzn2023.0.3      amazonlinux    6.4 M
 kernel-headers          x86_64     6.1.94-99.176.amzn2023    amazonlinux    1.4 M
 libmpc                  x86_64     1.2.1-2.amzn2023.0.2      amazonlinux     62 k
 libtool-ltdl            x86_64     2.4.7-1.amzn2023.0.3      amazonlinux     38 k
 libxcrypt-devel         x86_64     4.4.33-7.amzn2023         amazonlinux     32 k
 make                    x86_64     1:4.3-5.amzn2023.0.2      amazonlinux    534 k

Transaction Summary
================================================================================
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Installed size: 168 M
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(2/13): annobin-plugin-gcc-10.93-1.amzn2023.0.1 9.8 MB/s | 887 kB     00:00
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(4/13): glibc-devel-2.34-52.amzn2023.0.10.x86_6 1.3 MB/s |  36 kB     00:00
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(10/13): libtool-ltdl-2.4.7-1.amzn2023.0.3.x86_ 1.9 MB/s |  38 kB     00:00
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(13/13): gcc-11.4.1-2.amzn2023.0.2.x86_64.rpm    44 MB/s |  32 MB     00:00
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Running transaction test
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  libxcrypt-devel-4.4.33-7.amzn2023.x86_64
  make-1:4.3-5.amzn2023.0.2.x86_64

Complete!
[ec2-user@ip-172-31-38-16 ~]$ nano hello.c
```

```
 GNU nano 5.8                                  hello.c                                       Modified
#include <stdio.h>

int main() {
    printf("Hello, World!\n");
    return 0;
}
```

```
File Name to Write: hello.c
^G Help                    M-D DOS Format          M-A Append              M-B Backup File
^C Cancel                  M-M Mac Format          M-P Prepend             ^T Browse
```

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Downloading Packages:
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(13/13): gcc-11.4.1-2.amzn2023.0.2.x86_64.rpm    44 MB/s |  32 MB     00:00
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Running transaction
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  Verifying        : glibc-headers-x86-2.34-52.amzn2023.0.10.noarch        7/13
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  Verifying        : libmpc-1.2.1-2.amzn2023.0.2.x86_64                   10/13
  Verifying        : libtool-ltdl-2.4.7-1.amzn2023.0.3.x86_64             11/13
  Verifying        : libxcrypt-devel-4.4.33-7.amzn2023.x86_64             12/13
  Verifying        : make-1:4.3-5.amzn2023.0.2.x86_64                     13/13

Installed:
  annobin-docs-10.93-1.amzn2023.0.1.noarch
  annobin-plugin-gcc-10.93-1.amzn2023.0.1.x86_64
  cpp-11.4.1-2.amzn2023.0.2.x86_64
  gc-8.0.4-5.amzn2023.0.2.x86_64
  gcc-11.4.1-2.amzn2023.0.2.x86_64
  glibc-devel-2.34-52.amzn2023.0.10.x86_64
  glibc-headers-x86-2.34-52.amzn2023.0.10.noarch
  guile22-2.2.7-2.amzn2023.0.3.x86_64
  kernel-headers-6.1.94-99.176.amzn2023.x86_64
  libmpc-1.2.1-2.amzn2023.0.2.x86_64
  libtool-ltdl-2.4.7-1.amzn2023.0.3.x86_64
  libxcrypt-devel-4.4.33-7.amzn2023.x86_64
  make-1:4.3-5.amzn2023.0.2.x86_64

Complete!
[ec2-user@ip-172-31-38-16 ~]$ nano hello.c
[ec2-user@ip-172-31-38-16 ~]$ gcc hello.c -o hello
[ec2-user@ip-172-31-38-16 ~]$ ./hello
Hello, World!
[ec2-user@ip-172-31-38-16 ~]$
```

DETAILED STEPS:

1. Open Terminal:
- Open a terminal on your local machine.
2. Navigate to the Directory Containing the PEM File:
- Use the `cd` command to navigate to the directory where your PEM file is located. For example:
```sh
cd ~/Downloads
```
3. Change the Permissions of the PEM File:
- Use the `chmod` command to change the permissions of the PEM file:
```sh
chmod 400 PemKey.pem
```
- This command sets the file permissions to `400`, which means the file is readable only by the owner.
4. Connect to the EC2 Instance:
- Now, attempt to connect to your EC2 instance again using the `ssh` command:
```sh
ssh -i “~/Downloads/PemKey.pem” ec2-user@ec2-3-91-244-153.compute-1.amazonaws.com
```
1. Set correct permissions:
- Use `chmod 400` on the PEM file to restrict its access to the owner only.
2. Reconnect using SSH:
- Use the `ssh -i` command with the corrected PEM file permissions.

By following these steps, you should be able to securely connect to your EC2 instance without encountering the permission error.
To execute a simple "Hello, World! program on an EC2 instance after installing the necessary packages, follow these detailed steps:
Step 1: Connect to Your EC2 Instance
1. Get Public DNS/IPv4:
- Go to the EC2 Dashboard in the AWS Management Console.
- Locate your instance (`Regno_EC2_VM1`) and note down its Public DNS (or Public IPv4 address).

STEPS IN TERMINAL :

2. Open Terminal and Connect via SSH:
- Open a terminal on your local machine.
- Navigate to the directory where your key pair file (`.pem`) is located.
- Use the following command to connect to your instance:
```sh
ssh -i "path/to/your-key-pair.pem" ec2-user@your-instance-public-dns
```
Replace `path/to/your-key-pair.pem` with the actual path to your `.pem` file and `your-instance-public-dns` with the public DNS of your instance.
Step 2: Install Necessary Packages
1. Update the Package List:
- Once connected to your EC2 instance, update the package list:
```sh
sudo yum update -y
```
2. Install GCC Compiler:
- Install the GCC compiler to compile your C program:

```sh
sudo yum install gcc -y
```
Step 3: Create and Execute a Simple "Hello, World!" Program
1. Create a C File:
- Create a new C file named `hello.c` using a text editor like `nano`:
```sh
nano hello.c
```
2. Write the C Program:
- Type the following simple C program into the file:
```c
#include &lt;stdio.h&gt;
int main() {
printf("Hello, World!\n");
return 0;
}
```
- Save the file and exit the editor (in `nano`, press `Ctrl+X`, then `Y`, then `Enter`).

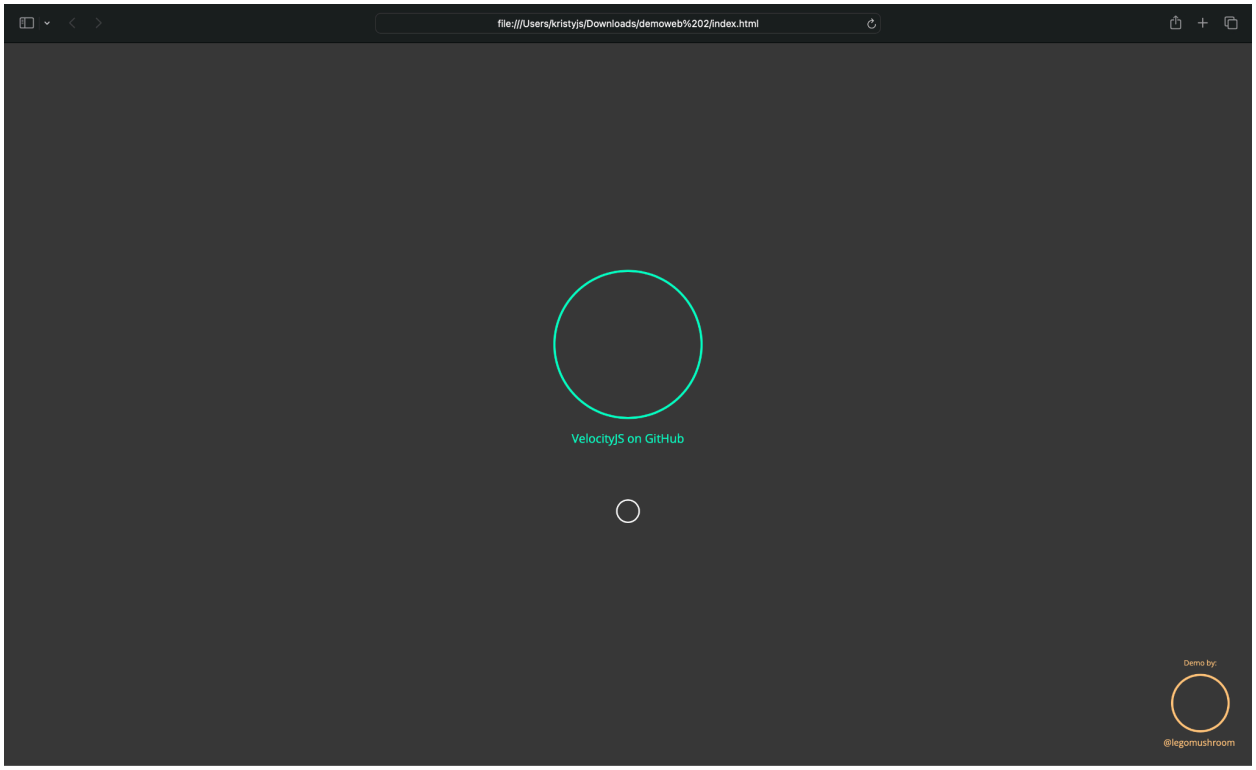
3. Compile the C Program:
- Compile the program using GCC:
```sh
gcc hello.c -o hello
```
4. Run the Compiled Program:
- Execute the compiled program:

```sh
./hello
```
- You should see the output:
```sh
Hello, World!
```
Summary
1. Connect to the EC2 instance: Use SSH to connect to your instance using the key pair.
2. Update and install packages: Update the package list and install the GCC compiler.
3. Create and compile the program: Write a simple "Hello, World!" program, compile it, and run it.
4. EC2 instance is using a distribution(Linux) that use yum as its package manager
This process ensures you have set up your environment, installed necessary tools, and successfully executed a simple C program on your EC2 instance.

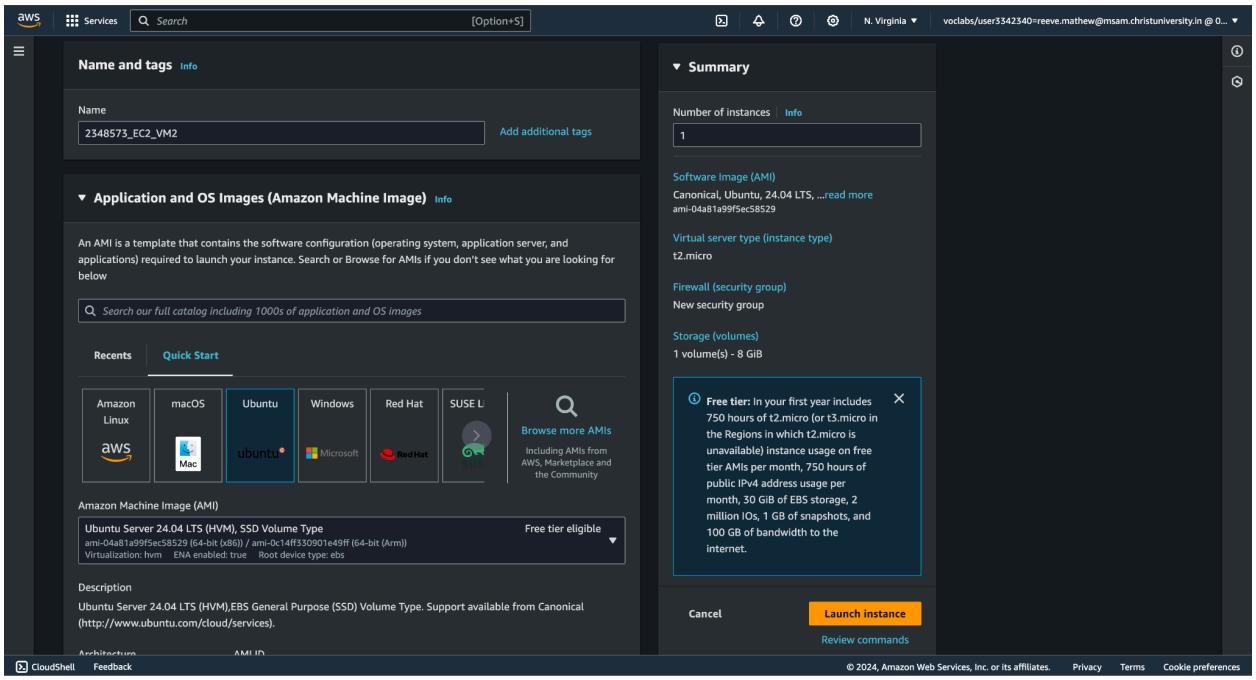
4. Configure a Webserver on ‘Regno_EC2_VM2’ Instance and host your organizations website (Static Website) and provide access only to your machine.

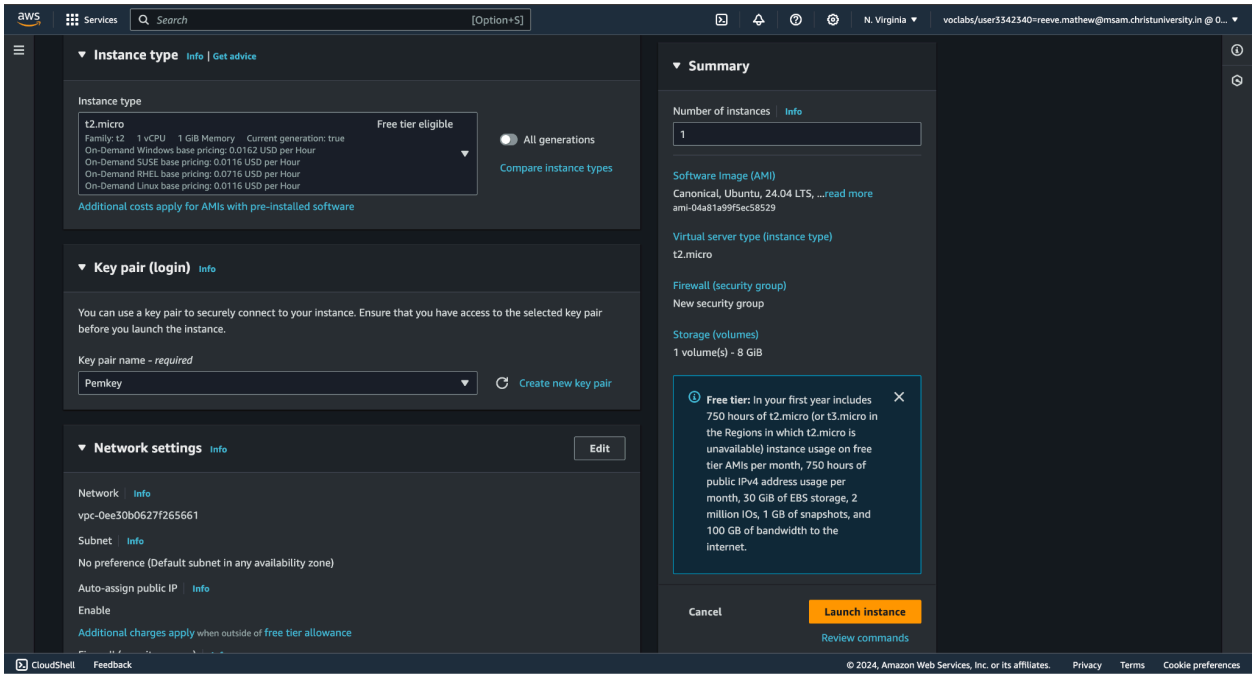
OUTPUT:

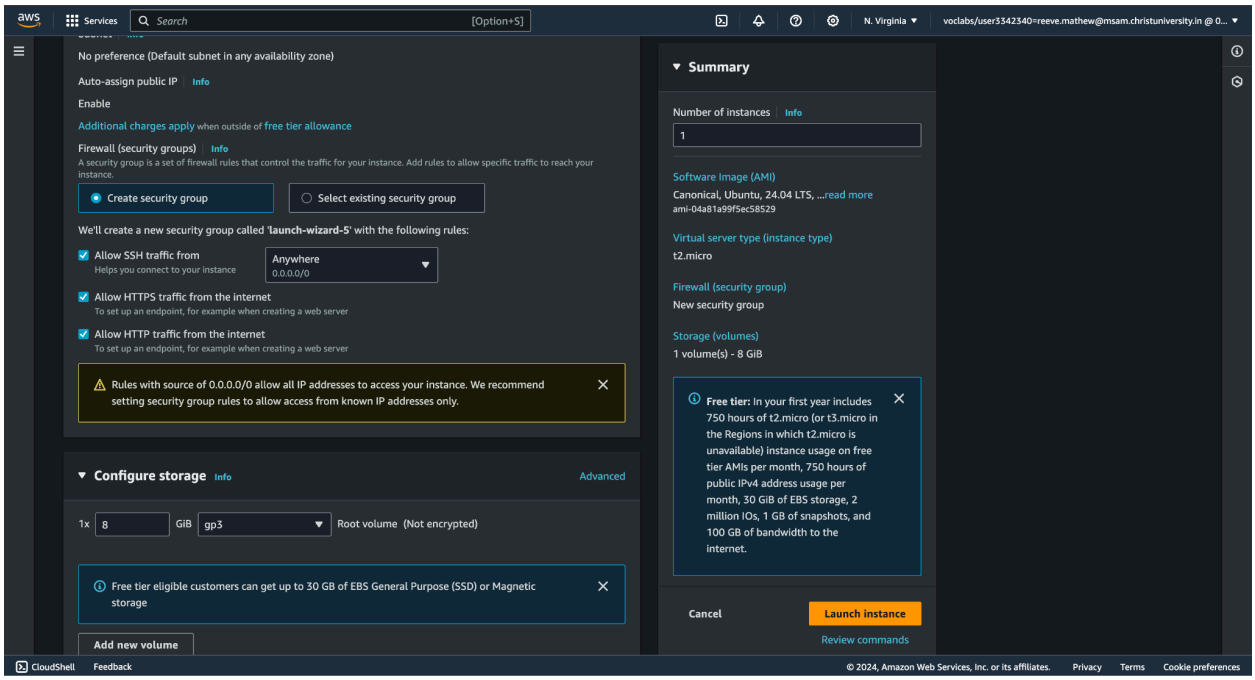
file:///Users/kristyjs/Downloads/demoweb%202/index.html

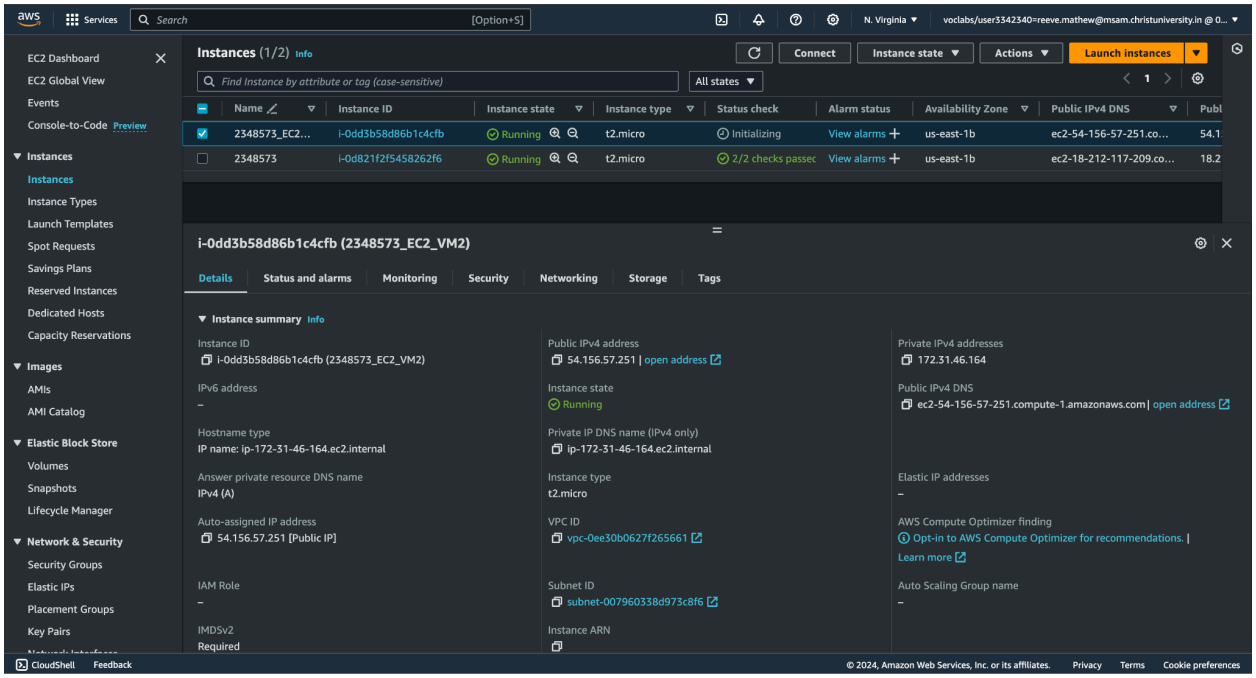


STEPS IN CONSOLE:




aws
Services
Search
[Option+S]
N. Virginia
voclabs/user3342340=reeve.mathew@msam.christuniversity.in @ 0...
Instance type Info | Get advice
Instance type
t2.micro
Free tier eligible
Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Windows base pricing: 0.0162 USD per Hour
On-Demand SUSE base pricing: 0.0116 USD per Hour
On-Demand RHEL base pricing: 0.0716 USD per Hour
On-Demand Linux base pricing: 0.0116 USD per Hour
All generations
Compare instance types
Additional costs apply for AMIs with pre-installed software
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
Pemkey
Create new key pair
Network settings Info
Edit
Network Info
vpc-0ee30b0627f265661
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
Summary
Number of instances Info
1
Software Image (AMI)
Canonical, Ubuntu, 24.04 LTS, ...read more
ami-04a81a99f5ec58529
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
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences


aws
Services
Search
[Option+S]
N. Virginia
voclabs/user3342340=reeve.mathew@msam.christuniversity.in @ 0...
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-5' with the following rules:
Allow SSH traffic from
Helps you connect to your instance
Anywhere
0.0.0.0/0
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 setting security group rules to allow access from known IP addresses only.
Configure storage Info
Advanced
1x
8
GiB
gp3
Root volume (Not encrypted)
Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage
Add new volume
Summary
Number of instances Info
1
Software Image (AMI)
Canonical, Ubuntu, 24.04 LTS, ...read more
ami-04a81a99f5ec58529
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
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences



IN TERMINAL

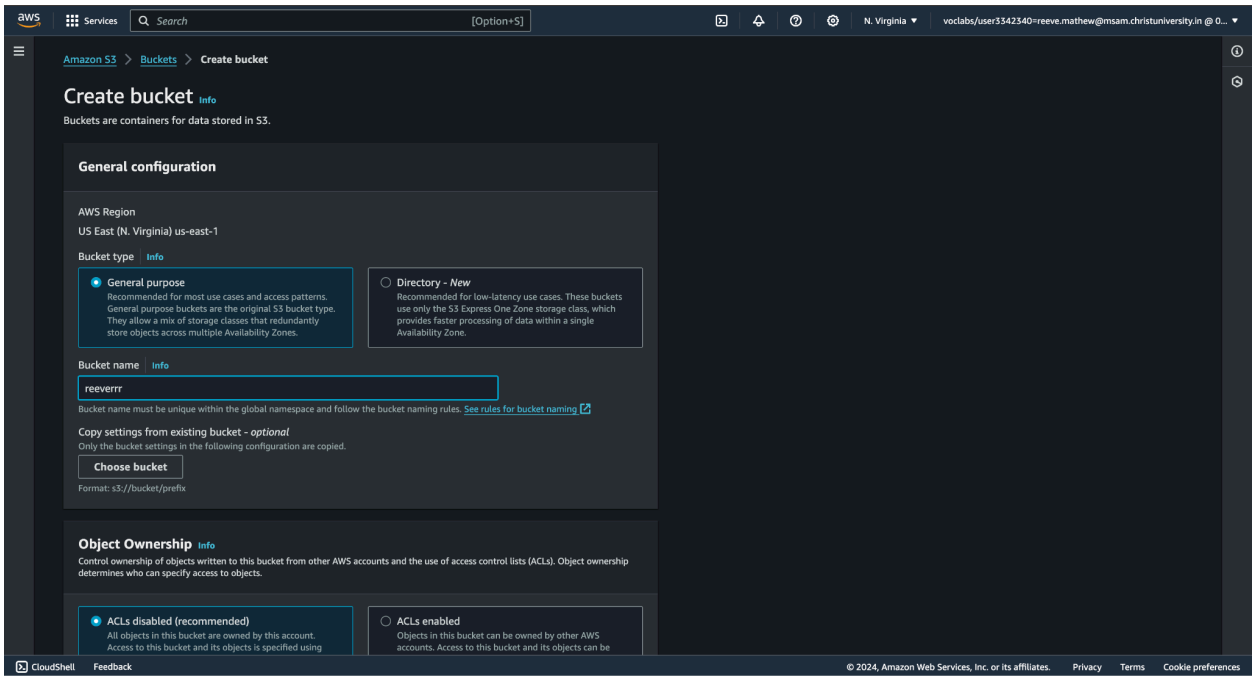
cd ~/Downloads
chmod 400 PemKey.pem
ssh -i /path/to/your-key.pem ubuntu@your-instance-public-dns
sudo apt update -y
sudo apt upgrade -y
sudo apt install apache2 -y
sudo ufw allow 'Apache Full'

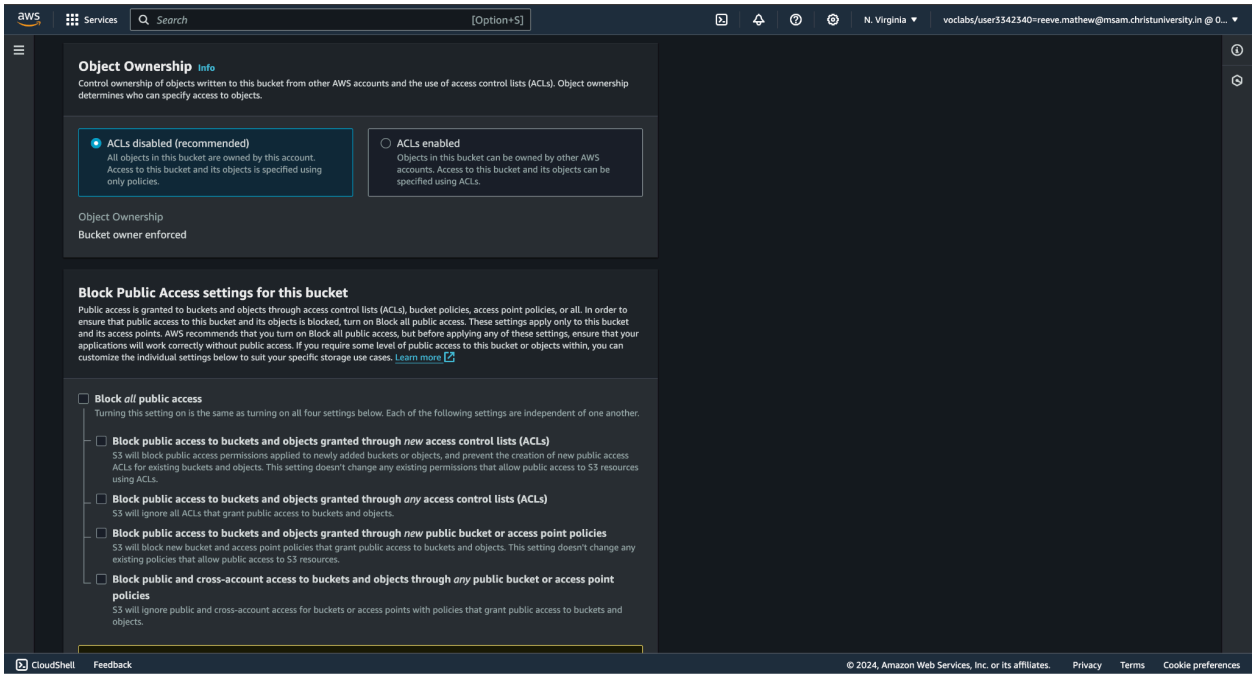
```
(base) kristyjs@Reeve Downloads % cd ~/Downloads
(base) kristyjs@Reeve Downloads % chmod 400 PemKey.pem
(base) kristyjs@Reeve Downloads % ssh -i /Users/kristyjs/Downloads/Pemkey.pem ubuntu@ec2-54-156-57-251.compute-1.amazonaws.com
The authenticity of host 'ec2-54-156-57-251.compute-1.amazonaws.com (54.156.57.251)' can't be established.
ED25519 key fingerprint is SHA256:23T1bPZvIz0HpGyBLetVBmw1xTqiSh83QMoH7eHGag8.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-54-156-57-251.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-1009-aws x86_64)

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

 System information as of Tue Jul  2 19:26:58 UTC 2024

  System load:  0.24               Processes:             105
  Usage of /:   22.7% of 6.71GB    Users logged in:       0
  Memory usage: 19%                IPv4 address for enX0: 172.31.46.164
  Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

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



The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-46-164:~$ sudo apt update -y
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [189 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:8 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [48.6 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [62.3 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [21.7 kB]
Get:11 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [8632 B]
Get:12 http://security.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [112 B]
Get:13 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [139 kB]
Get:14 http://security.ubuntu.com/ubuntu noble-security/restricted Translation-en [27.0 kB]
Get:15 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [10.6 kB]
Get:16 http://security.ubuntu.com/ubuntu noble-security/multiverse Translation-en [2808 B]
Get:17 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Get:18 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 c-n-f Metadata [116 B]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:22 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:23 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:24 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:25 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [215 kB]
Get:26 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [58.9 kB]
Get:27 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [112 kB]
Get:28 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [40.8 kB]
Get:29 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [45.0 kB]
Get:30 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [112 B]
Get:31 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [14.1 kB]
```

```
Get:31 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [14.1 kB]
Get:32 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse Translation-en [3600 B]
Get:33 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [212 B]
Get:34 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Metadata [116 B]
Get:35 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]
Get:36 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/main amd64 c-n-f Metadata [112 B]
Get:37 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [8728 B]
Get:38 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe Translation-en [10.0 kB]
Get:39 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [17.6 kB]
Get:40 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/universe amd64 c-n-f Metadata [116 B]
Get:41 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 B]
Get:42 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 c-n-f Metadata [116 B]
Get:43 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Get:44 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 c-n-f Metadata [116 B]
Fetched 27.0 MB in 6s (4877 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
ubuntu@ip-172-31-46-164:~$ sudo apt upgrade -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
#
# OpenSSH CVE-2024-6387 has been fixed for 22.04 LTS, 23.10 and 24.04 LTS.
# RegreSSHion: Possible RCE Due To A Race Condition In Signal Handling.
# For more details see: https://ubuntu.com/security/notices/USN-6859-1.
#
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-31-46-164:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 liblua5.4-0 ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1t64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 liblua5.4-0 ssl-cert
0 upgraded, 10 newly installed, 0 to remove and 0 not upgraded.
Need to get 2080 kB of archives.
After this operation, 8091 kB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libapr1t64 amd64 1.7.2-3.1build2 [107 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1t64 amd64 1.6.3-1.1ubuntu7 [91.9 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.3-1.1ubuntu7 [11.2 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libaprutil1-ldap amd64 1.6.3-1.1ubuntu7 [9116 B]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 liblua5.4-0 amd64 5.4.6-3build2 [166 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-bin amd64 2.4.58-1ubuntu8.1 [1327 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-data all 2.4.58-1ubuntu8.1 [163 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2-utils amd64 2.4.58-1ubuntu8.1 [96.2 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 apache2 amd64 2.4.58-1ubuntu8.1 [98.2 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 ssl-cert all 1.1.2ubuntu1 [17.8 kB]
Fetched 2080 kB in 0s (15.8 MB/s)
Preconfiguring packages ...
Selecting previously unselected package libapr1t64:amd64.
(Reading database ... 67739 files and directories currently installed.)
Preparing to unpack .../0-libapr1t64_1.7.2-3.1build2_amd64.deb ...
Unpacking libapr1t64:amd64 (1.7.2-3.1build2) ...
Selecting previously unselected package libaprutil1t64:amd64.
Preparing to unpack .../1-libaprutil1t64_1.6.3-1.1ubuntu7_amd64.deb ...
Unpacking libaprutil1t64:amd64 (1.6.3-1.1ubuntu7) ...
Selecting previously unselected package libaprutil1-dbd-sqlite3:amd64.
Preparing to unpack .../2-libaprutil1-dbd-sqlite3_1.6.3-1.1ubuntu7_amd64.deb ...
Unpacking libaprutil1-dbd-sqlite3:amd64 (1.6.3-1.1ubuntu7) ...
Selecting previously unselected package libaprutil1-ldap:amd64.
Preparing to unpack .../3-libaprutil1-ldap_1.6.3-1.1ubuntu7_amd64.deb ...
Unpacking libaprutil1-ldap:amd64 (1.6.3-1.1ubuntu7) ...
Selecting previously unselected package liblua5.4-0:amd64.
Preparing to unpack .../4-liblua5.4-0_5.4.6-3build2_amd64.deb ...
Unpacking liblua5.4-0:amd64 (5.4.6-3build2) ...
Selecting previously unselected package apache2-bin.
```

```
Selecting previously unselected package apache2-bin.
Preparing to unpack .../5-apache2-bin_2.4.58-1ubuntu8.1_amd64.deb ...
Unpacking apache2-bin (2.4.58-1ubuntu8.1) ...
Selecting previously unselected package apache2-data.
Preparing to unpack .../6-apache2-data_2.4.58-1ubuntu8.1_all.deb ...
Unpacking apache2-data (2.4.58-1ubuntu8.1) ...
Selecting previously unselected package apache2-utils.
Preparing to unpack .../7-apache2-utils_2.4.58-1ubuntu8.1_amd64.deb ...
Unpacking apache2-utils (2.4.58-1ubuntu8.1) ...
Selecting previously unselected package apache2.
Preparing to unpack .../8-apache2_2.4.58-1ubuntu8.1_amd64.deb ...
Unpacking apache2 (2.4.58-1ubuntu8.1) ...
Selecting previously unselected package ssl-cert.
Preparing to unpack .../9-ssl-cert_1.1.2ubuntu1_all.deb ...
Unpacking ssl-cert (1.1.2ubuntu1) ...
Setting up ssl-cert (1.1.2ubuntu1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/ssl-cert.service → /usr/lib/systemd/system/ssl-cert.service.
Setting up libapr1t64:amd64 (1.7.2-3.1build2) ...
Setting up liblua5.4-0:amd64 (5.4.6-3build2) ...
Setting up apache2-data (2.4.58-1ubuntu8.1) ...
Setting up libaprutil1t64:amd64 (1.6.3-1.1ubuntu7) ...
Setting up libaprutil1-ldap:amd64 (1.6.3-1.1ubuntu7) ...
Setting up libaprutil1-dbd-sqlite3:amd64 (1.6.3-1.1ubuntu7) ...
Setting up apache2-utils (2.4.58-1ubuntu8.1) ...
Setting up apache2-bin (2.4.58-1ubuntu8.1) ...
Setting up apache2 (2.4.58-1ubuntu8.1) ...
Enabling module mpm_event.
Enabling module authz_core.
Enabling module authz_host.
Enabling module authn_core.
Enabling module auth_basic.
Enabling module access_compat.
Enabling module authn_file.
Enabling module authz_user.
Enabling module alias.
Enabling module dir.
Enabling module autoindex.
Enabling module env.
Enabling module mime.
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /usr/lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /usr/lib/systemd/system/apache-htcacheclean.service.
Processing triggers for ufw (0.36.2-6) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.2) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-46-164:~$ sudo ufw allow 'Apache Full'
Rules updated
Rules updated (v6)
ubuntu@ip-172-31-46-164:~$
```

STEPS IN S3 BUCKET - CONSOLE




Services
Search
[Option+S]
N. Virginia
voclabs/user3342340=reeve.mathew@msam.christuniversity.in @ 0...
Object Ownership Info
Control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership determines who can specify access to objects.
ACLs disabled (recommended)
All objects in this bucket are owned by this account. Access to this bucket and its objects is specified using only policies.
ACLs enabled
Objects in this bucket can be owned by other AWS accounts. Access to this bucket and its objects can be specified using ACLs.
Object Ownership
Bucket owner enforced
Block Public Access settings for this bucket
Public access is granted to buckets and objects through access control lists (ACLs), bucket policies, access point policies, or all. In order to ensure that public access to this bucket and its objects is blocked, turn on Block all public access. These settings apply only to this bucket and its access points. AWS recommends that you turn on Block all public access, but before applying any of these settings, ensure that your applications will work correctly without public access. If you require some level of public access to this bucket or objects within, you can customize the individual settings below to suit your specific storage use cases. Learn more
Block all public access
Turning this setting on is the same as turning on all four settings below. Each of the following settings are independent of one another.
Block public access to buckets and objects granted through new access control lists (ACLs)
S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.
Block public access to buckets and objects granted through any access control lists (ACLs)
S3 will ignore all ACLs that grant public access to buckets and objects.
Block public access to buckets and objects granted through new public bucket or access point policies
S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.
Block public and cross-account access to buckets and objects through any public bucket or access point policies
S3 will ignore public and cross-account access for buckets or access points with policies that grant public access to buckets and objects.
CloudShell
Feedback
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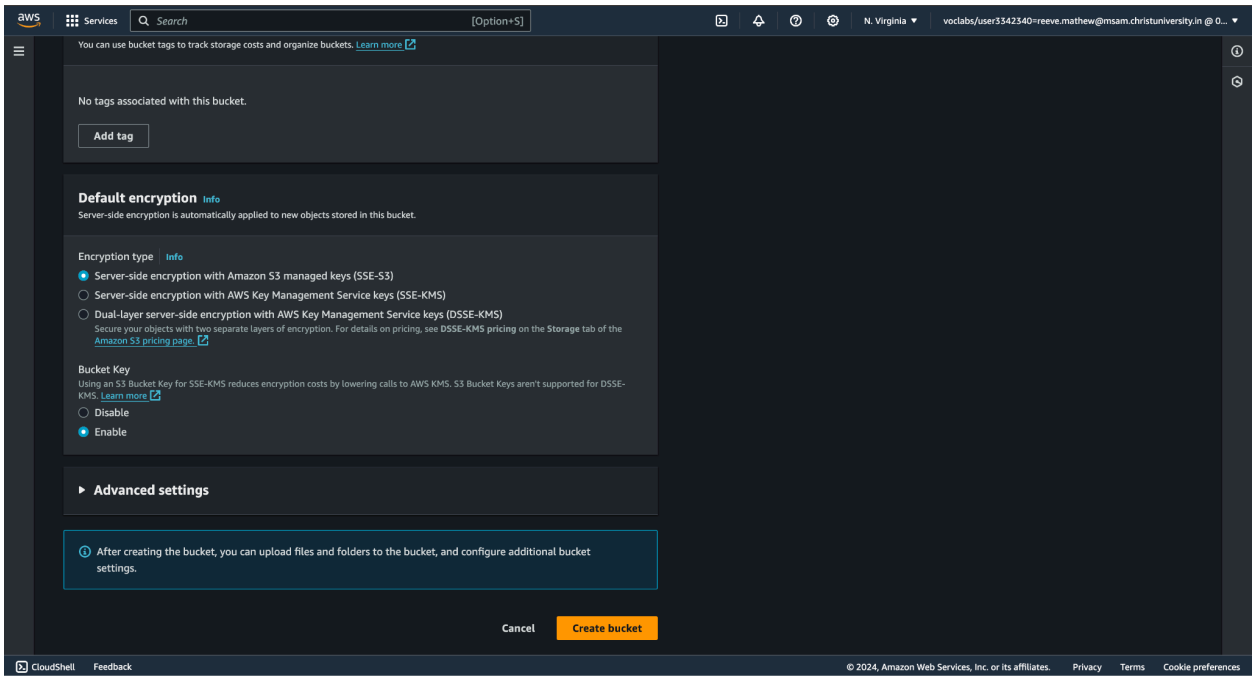
Privacy
Terms
Cookie preferences


Services
Search
[Option+S]
N. Virginia
voclabs/user3342340=reeve.mathew@msam.christuniversity.in @ 0...
You can use bucket tags to track storage costs and organize buckets. Learn more
No tags associated with this bucket.
Add tag
Default encryption Info
Server-side encryption is automatically applied to new objects stored in this bucket.
Encryption type Info
Server-side encryption with Amazon S3 managed keys (SSE-S3)
Server-side encryption with AWS Key Management Service keys (SSE-KMS)
Dual-layer server-side encryption with AWS Key Management Service keys (DSSE-KMS)
Secure your objects with two separate layers of encryption. For details on pricing, see DSSE-KMS pricing on the Storage tab of the Amazon S3 pricing page.
Bucket Key
Using an S3 Bucket Key for SSE-KMS reduces encryption costs by lowering calls to AWS KMS. S3 Bucket Keys aren't supported for DSSE-KMS. Learn more
Disable
Enable
Advanced settings
After creating the bucket, you can upload files and folders to the bucket, and configure additional bucket settings.
Cancel
Create bucket
CloudShell
Feedback
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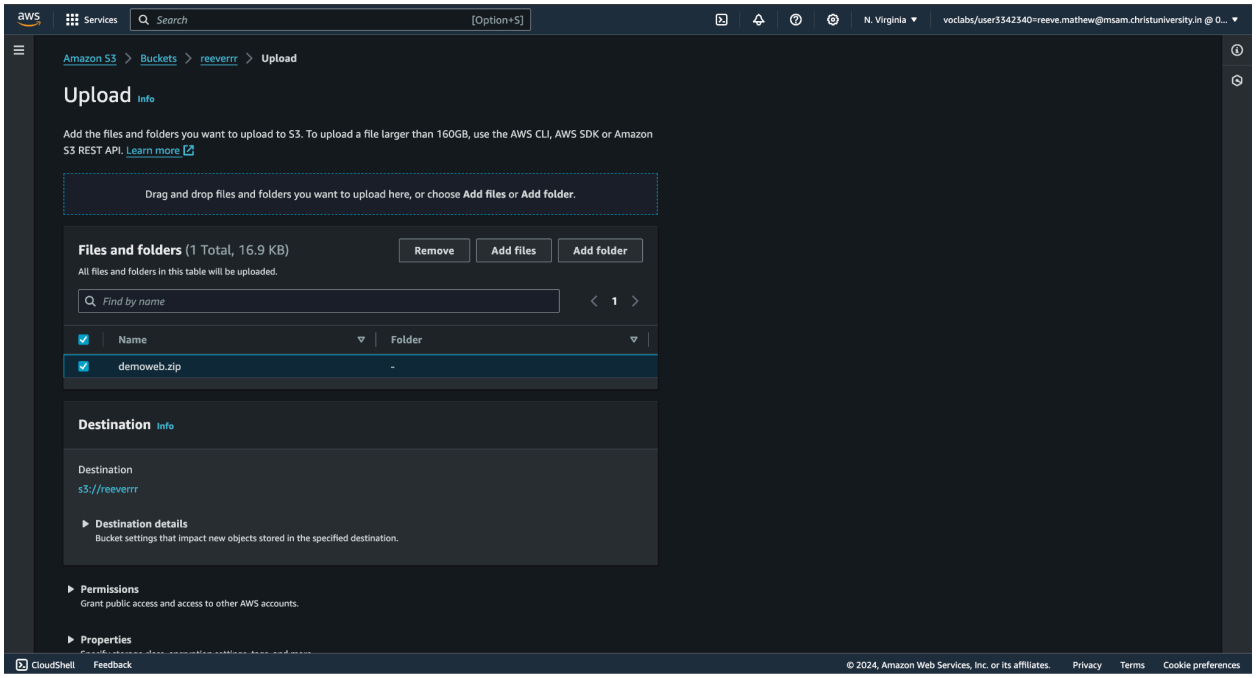
Cookie preferences


Services
Search
[Option+S]
N. Virginia
Amazon S3 > Buckets > reeverrr > Upload
Upload Info
Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. Learn more
Drag and drop files and folders you want to upload here, or choose Add files or Add folder.
Files and folders (1 Total, 16.9 KB)
Remove
Add files
Add folder
All files and folders in this table will be uploaded.
Find by name
Name
Folder
demoweb.zip
Destination Info
Destination
s3://reeverrr
Destination details
Bucket settings that impact new objects stored in the specified destination.
Permissions
Grant public access and access to other AWS accounts.
Properties
CloudShell
Feedback
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Privacy
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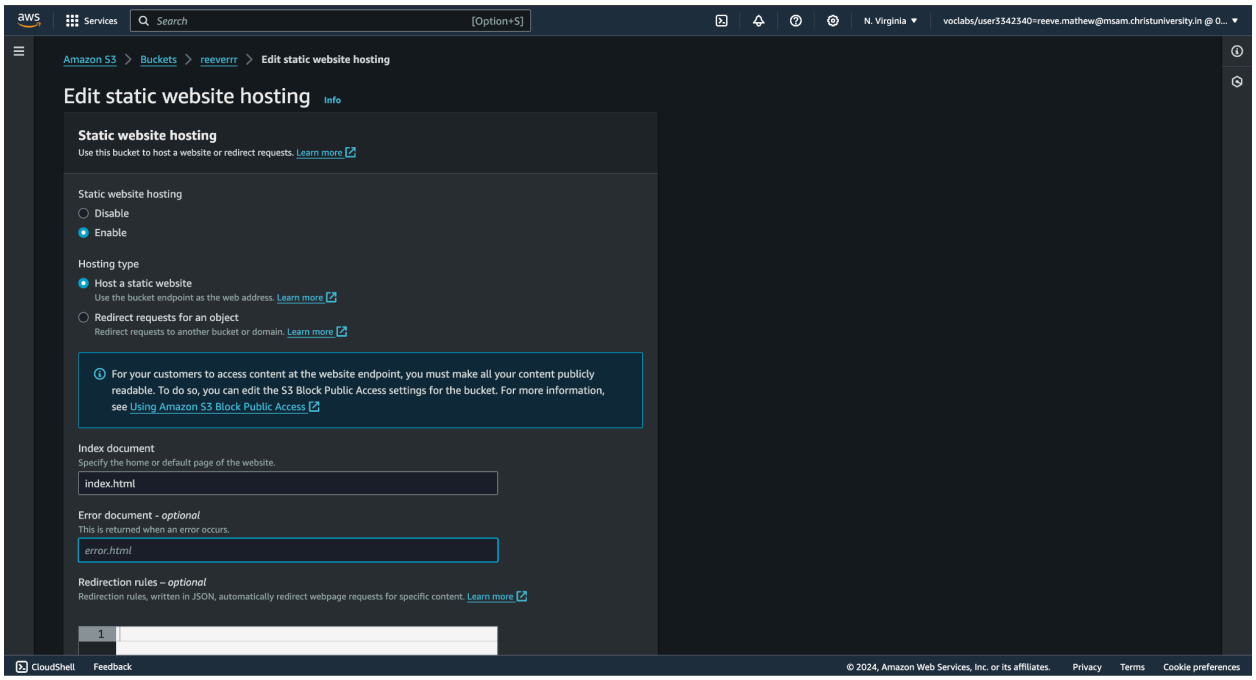
Services
Search
[Option+S]
N. Virginia
Amazon S3 > Buckets > reeverrr > Edit static website hosting
Edit static website hosting Info
Static website hosting
Use this bucket to host a website or redirect requests. Learn more
Static website hosting
Disable
Enable
Hosting type
Host a static website
Use the bucket endpoint as the web address. Learn more
Redirect requests for an object
Redirect requests to another bucket or domain. Learn more
For your customers to access content at the website endpoint, you must make all your content publicly readable. To do so, you can edit the S3 Block Public Access settings for the bucket. For more information, see Using Amazon S3 Block Public Access
Index document
Specify the home or default page of the website.
index.html
Error document - optional
This is returned when an error occurs.
error.html
Redirection rules - optional
Redirection rules, written in JSON, automatically redirect webpage requests for specific content. Learn more
1
CloudShell
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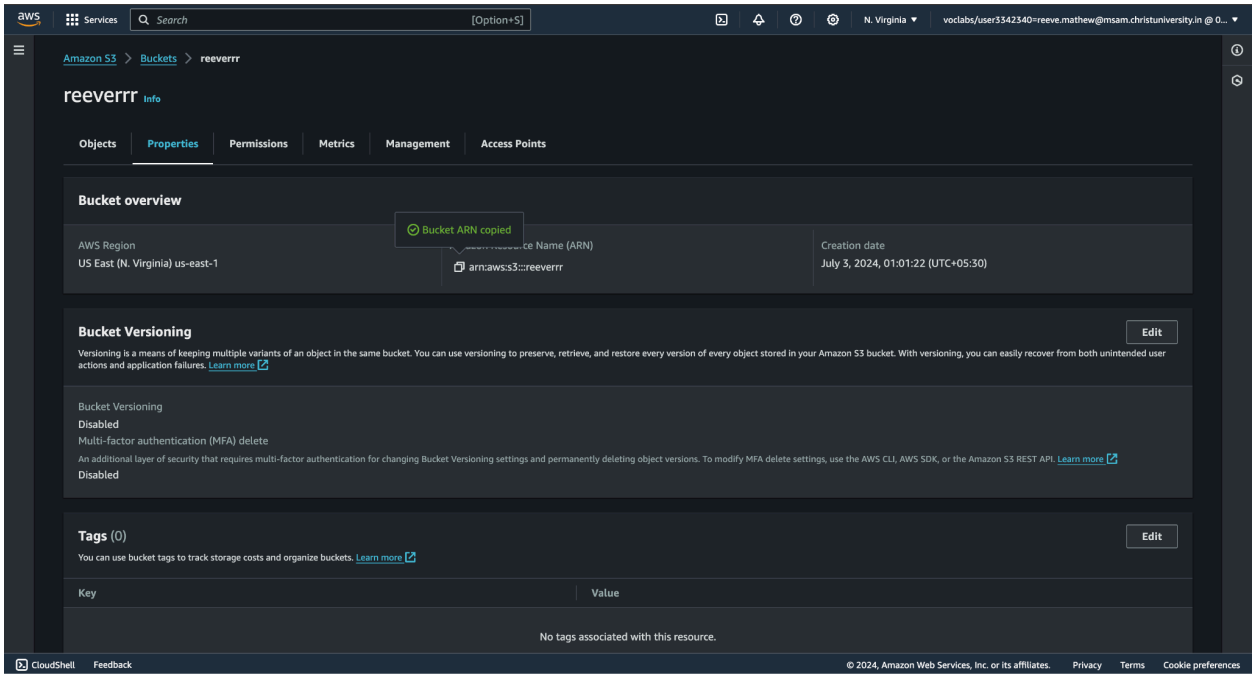

amazon web services

AWS Policy Generator

The AWS Policy Generator is a tool that enables you to create policies that control access to Amazon Web Services (AWS) products and resources. For more information about creating policies, see key concepts in Using AWS Identity and Access Management. Here are sample policies.

Step 1: Select Policy Type

A Policy is a container for permissions. The different types of policies you can create are an IAM Policy, an S3 Bucket Policy, an SNS Topic Policy, a VPC Endpoint Policy, and an SQS Queue Policy.

Select Type of Policy S3 Bucket Policy

Step 2: Add Statement(s)

A statement is the formal description of a single permission. See a description of elements that you can use in statements.

Effect Allow Deny

Principal *

Use a comma to separate multiple values.

AWS Service Amazon S3 All Services ('*')

Use multiple statements to add permissions for more than one service.

Actions 1 Action(s) Selected All Actions ('*')

Amazon Resource Name (ARN) arn:aws:s3:::reeverrr

ARN should follow the following format: arn:aws:s3:::${BucketName}/${KeyName}.
Use a comma to separate multiple values.

Add Conditions (Optional)

Add Statement

Step 3: Generate Policy

A *policy* is a document (written in the Access Policy Language) that acts as a container for one or more statements.

Add one or more statements above to generate a policy.

Step 2: Add Statement(s)

A statement is the formal description of a single permission. See a description of elements that you can use in statements.

Effect ◉ Allow ○ Deny

Principal

Use a comma to separate multiple values.

AWS Service

Amazon S3 ☐ All Services ('*')

Use multiple statements to add permissions for more than one service.

Actions -- Select Actions -- ☐ All Actions ('*')

Amazon Resource Name (ARN)

ARN should follow the following format: arn:aws:s3:::${BucketName}/${KeyName}.
Use a comma to separate multiple values.

Add Conditions (Optional)

Add Statement

You added the following statements. Click the button below to Generate a policy.

Principal(s)	Effect	Action	Resource	Conditions
• *	Allow	• s3:GetObject	arn:aws:s3:::reeverrr	*None*

Step 3: Generate Policy

A *policy* is a document (written in the Access Policy Language) that acts as a container for one or more statements.

Generate Policy Start Over

Step 2: Add Statement(s)

A statement is the formal description of a single permission. See a description of elements that you can use in statements.

Effect ◉ Allow ○ Deny

Principal

Use a comma to separate multiple values.

AWS Service

Amazon S3 Services ('*')

Amazon Resou

You added the follow

Principal(s)
• *

Step 3: Gene

A *policy* is a docume

Policy JSON Document

Click below to edit. To save the policy, copy the text below to a text editor.
Changes made below will **not be reflected in the policy generator tool.**

```
{
  "Id": "Policy1719949103740",
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "Stmt1719949088624",
      "Action": [
        "s3:GetObject"
      ],
      "Effect": "Allow",
      "Resource": "arn:aws:s3:::reeverrr",
      "Principal": "*"
    }
  ]
}
```

This AWS Policy Generator is provided for informational purposes only, you are still responsible for your use of Amazon Web Services technologies and ensuring that

Close

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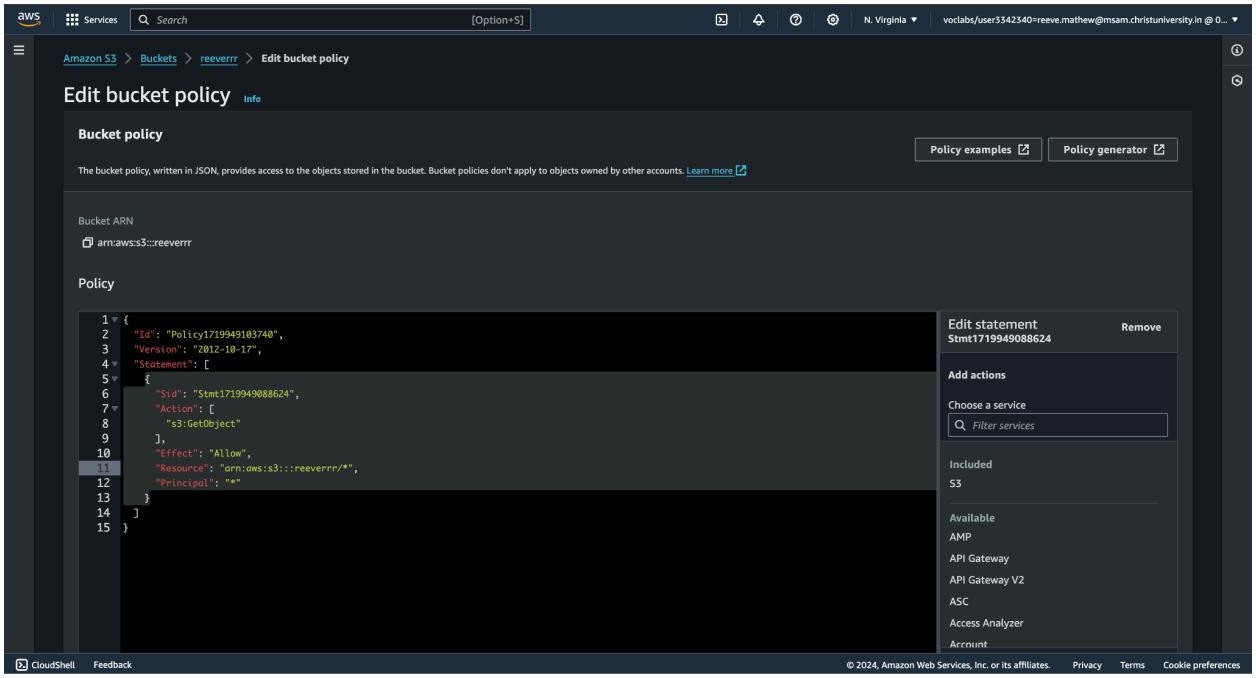
aws
Services
Search
[Option+S]
N. Virginia
voclabs/user3342340=reeve.mathew@msam.christuniversity.in @ 0...
Amazon S3 > Buckets > reeverrr > Edit bucket policy
Edit bucket policy Info
Bucket policy
Policy examples
Policy generator
The bucket policy, written in JSON, provides access to the objects stored in the bucket. Bucket policies don't apply to objects owned by other accounts. Learn more
Bucket ARN
arn:aws:s3:::reeverrr
Policy
{
"Id": "Policy1719949103740",
"Version": "2012-10-17",
"Statement": [
{
"Sid": "Stmt1719949088624",
"Action": [
"s3:GetObject"
],
"Effect": "Allow",
"Resource": "arn:aws:s3:::reeverrr/*",
"Principal": "*"
}
]
}
Edit statement
Stmt1719949088624
Remove
Add actions
Choose a service
Filter services
Included
S3
Available
AMP
API Gateway
API Gateway V2
ASC
Access Analyzer
Account
CloudShell
Feedback
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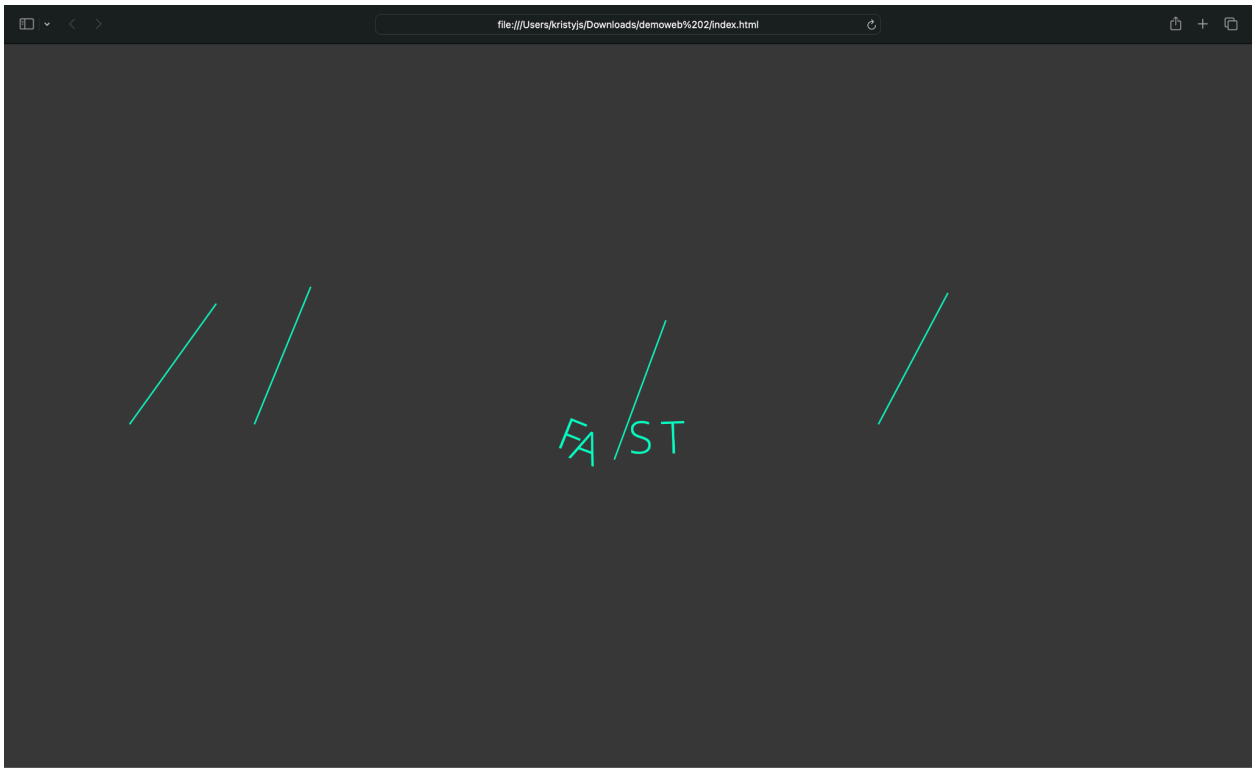
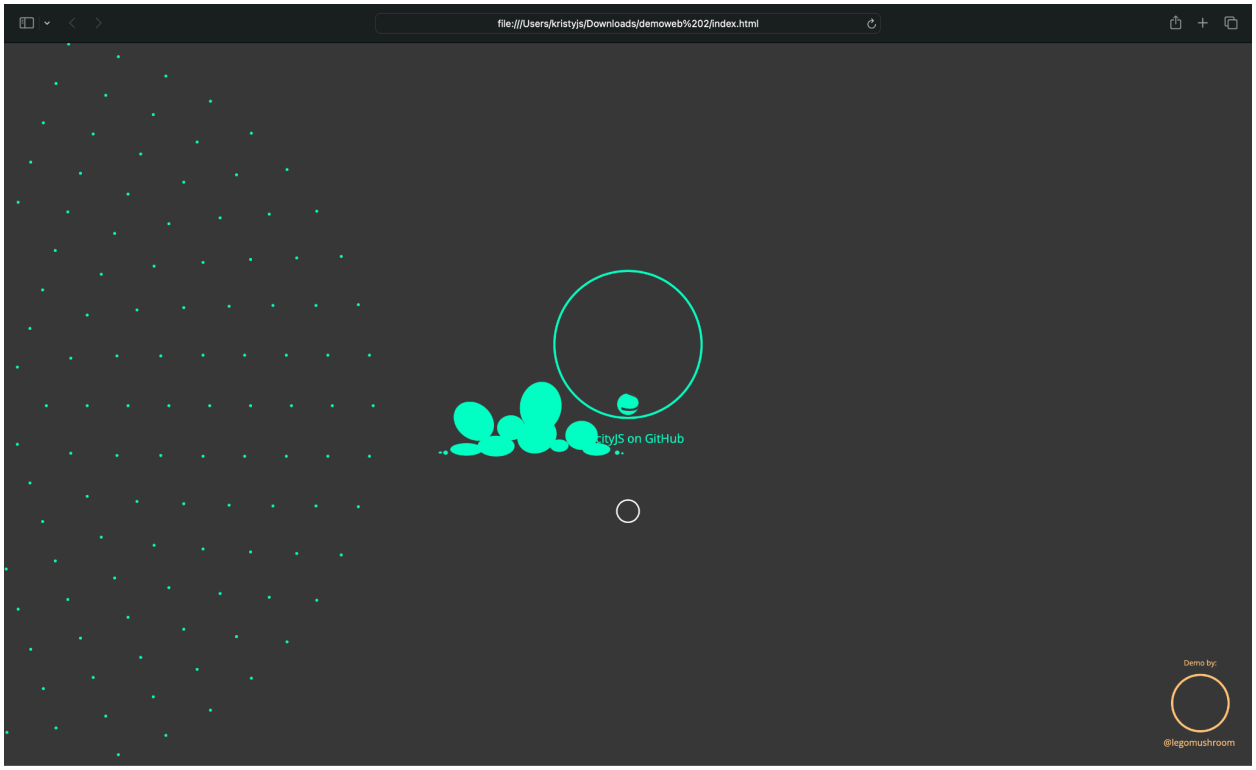
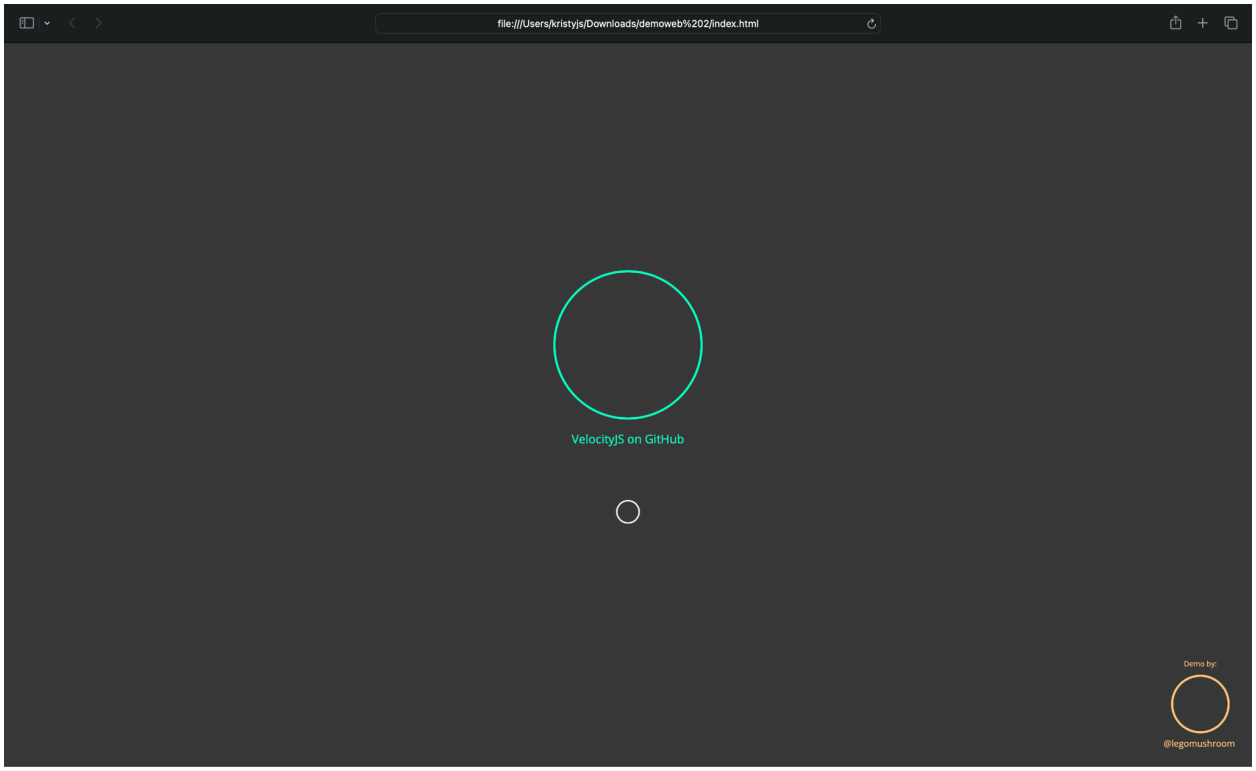

file:///Users/kristyjs/Downloads/demoweb%202/index.html
FAST


file:///Users/kristyjs/Downloads/demoweb%202/index.html
ityJS on GitHub
Demo by:
@legomushroom


file:///Users/kristyjs/Downloads/demoweb%202/index.html
VelocityJS on GitHub
Demo by:
@legomushroom