

COS20019 - Cloud Computing Architecture Assignment 2

Developing a highly available Photo Album website.

Name : Hridoy Ahmed

Student Id : 103798793

Lab Section : Friday 2:30- 4:30Pm

Due date: 9 AM (AEST) - Monday of Week 10

I. INTRODUCTION

Assignment 2 in COS20019 focuses on enhancing the Photo Album website infrastructure created in Assignment 1b. Key goals include setting up IAM roles, securing S3 access, creating a Lambda function, custom AMI, launch template, auto-scaling group, Elastic Load Balancer, and enforcing access control via AWS NACLs. The assignment builds on the existing website, improving its infrastructure and functionality. Students' proficiency in AWS and cloud architecture will be assessed, emphasizing security and best practices. This hands-on exercise equips students with valuable real-world cloud skills.

II. PHOTO ALBUM & PHOTO UPLOADER

The Photo Album website is actively hosted on an AWS "Hridoyahmed" EC2 instance and can be accessed using an Elastic IP. Users can easily upload images through a user-friendly interface, and these images are stored in the "bucket3445" S3 bucket.

Website URL: <http://3.224.206.11/photoalbum/album.php>

VPC configured with 2 public subnets and 2 private subnets with the NAT gateway and the IGW

The screenshot displays the AWS Management Console interface for VPC management. At the top, the navigation bar shows the user's account and region (N. Virginia). The main section is titled "Your VPCs (1/2)" and includes a search bar and a "Create VPC" button. Below this is a table listing the VPCs:

Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR
HAmcd	vpc-03c9e585200bf230f	Available	10.0.0.0/16	-
-	vpc-0983b3223471a6618	Available	172.31.0.0/16	-

Below the table, a network diagram illustrates the VPC configuration. It shows two availability zones: us-east-1a and us-east-1b. Each zone contains two subnets: public 1 and private 1 in us-east-1a, and public 2 and private 2 in us-east-1b. The public subnets are connected to a central "public" block, which is linked to a "private" block. The private block is connected to a "mygateway" block, which is further connected to a "prinatgate" block. The diagram also shows a "rtb-01b7957ccf3a4e8a4" block connected to the private block.

At the bottom of the console, the footer displays the copyright notice: "© 2023, Amazon Web Services, Inc. or its affiliates." and links to "Privacy", "Terms", and "Cookie preferences".

Figure 1 VPC Creation

Security Group Configuration

rch

[Alt+S]

N. Virginia

voclabs/user2682974=103798793@student.swin.edu.au @ 6969-3415

Security Groups (1/7) Info

Actions

Export security groups to CSV

Create security group

Filter security groups

< 1 >

	Name	Security group ID	Security group name	VPC ID	Description
<input type="checkbox"/>	-	sg-05f8090aee5999cd1	NATServerSG	vpc-03c9e585200bf230f	NATServerSG
<input type="checkbox"/>	-	sg-0088efe6aaafdb1f7	default	vpc-0983b3223471a6618	default VPC s
<input type="checkbox"/>	-	sg-0b0a4bf285791c6e1	WebServerSG	vpc-03c9e585200bf230f	WebServerSG
<input type="checkbox"/>	-	sg-016340207d108eeae	DBServerSG	vpc-03c9e585200bf230f	DBServerSG
<input checked="" type="checkbox"/>	-	sg-06001af6bde1ab01a	DevServerSG	vpc-03c9e585200bf230f	DevServerSG

Inbound rules (3)

Manage tags

Edit inbound rules

Filter security group rules

< 1 >

	Name	Security group rule...	IP version	Type	Protocol
<input type="checkbox"/>	-	sgr-0e273739b4204e...	IPv4	SSH	TCP
<input type="checkbox"/>	-	sgr-04cf631049200aabb	IPv4	HTTP	TCP
<input type="checkbox"/>	-	sgr-01042436db7d3b...	IPv4	All traffic	All

Close

Security Groups (1/7) Info

Actions

Export security groups to CSV

Create security group

Filter security groups

< 1 >

Inbound rules (3)

Manage tags

Edit inbound rules

Filter security group rules

< 1 >

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Figure 2 Security Group Creation

Auto Scaling Group Configuration

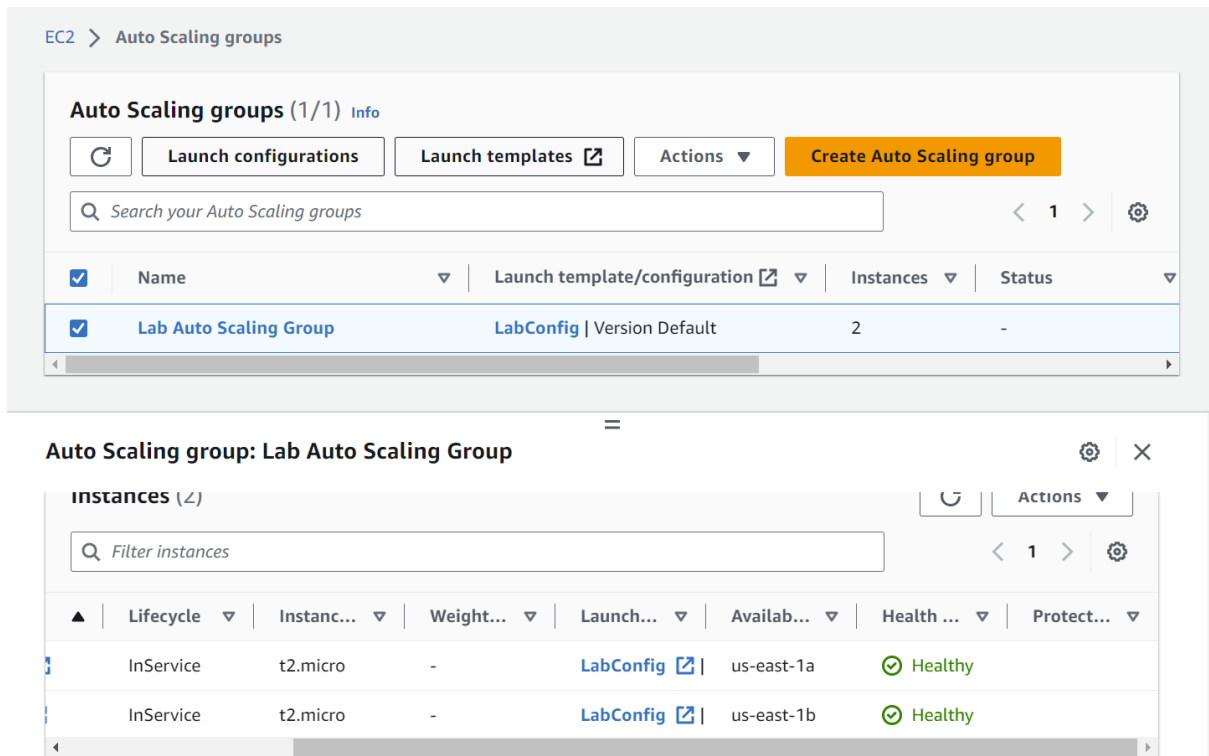


Figure 3 Auto Scaling Creation

Load Balancer Configuration

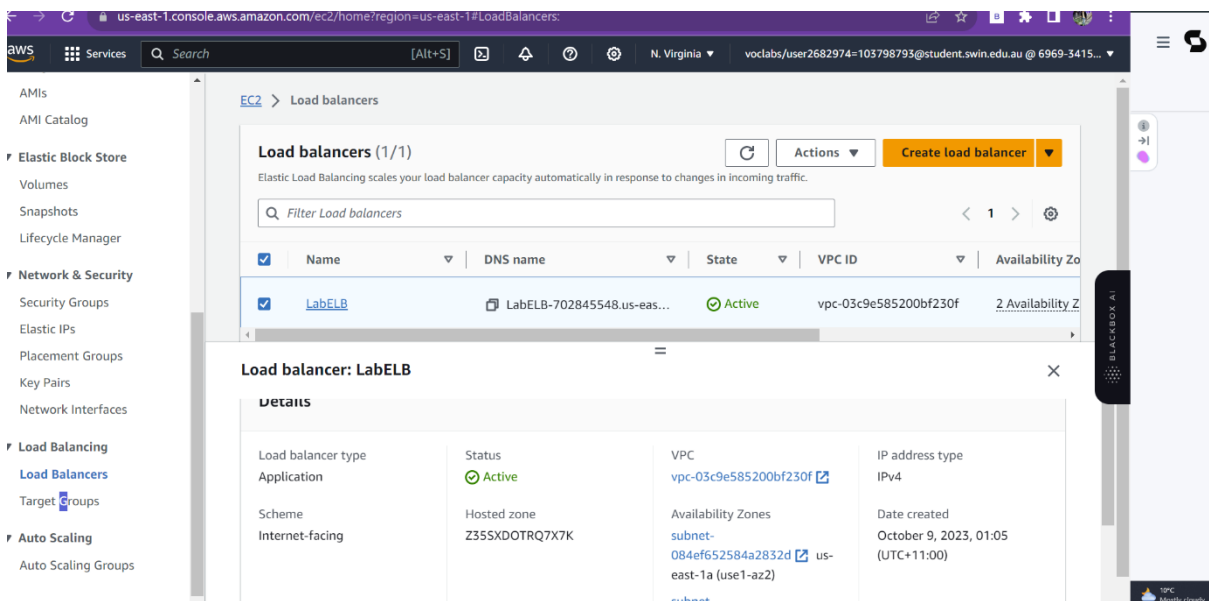


Figure 4 Load Balancer Creation

IAM Configuration

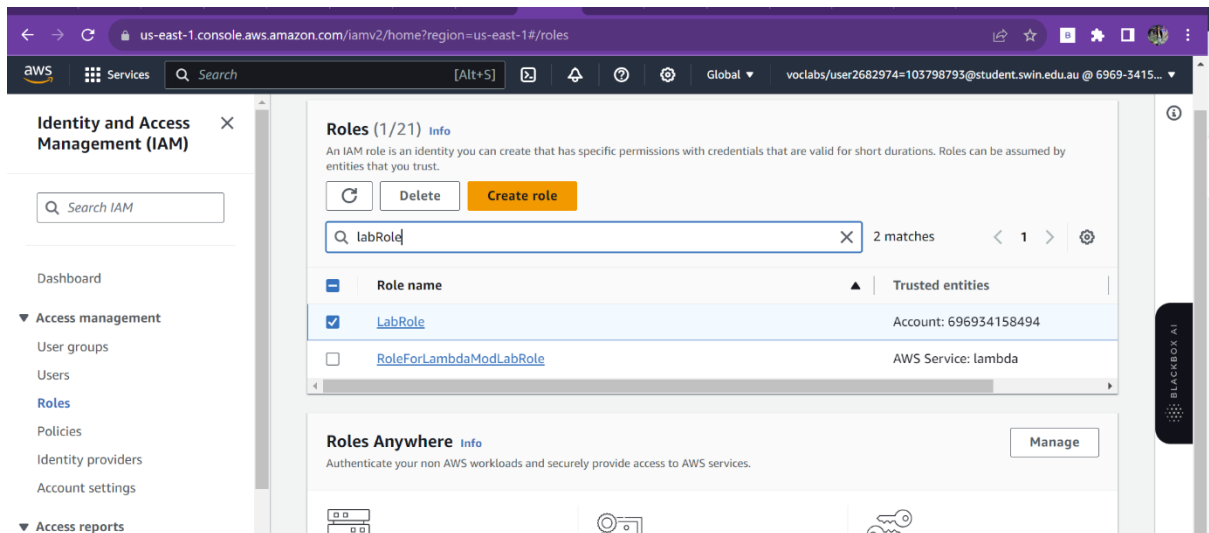


Figure 5 IAM Role Creation

NACL Configuration

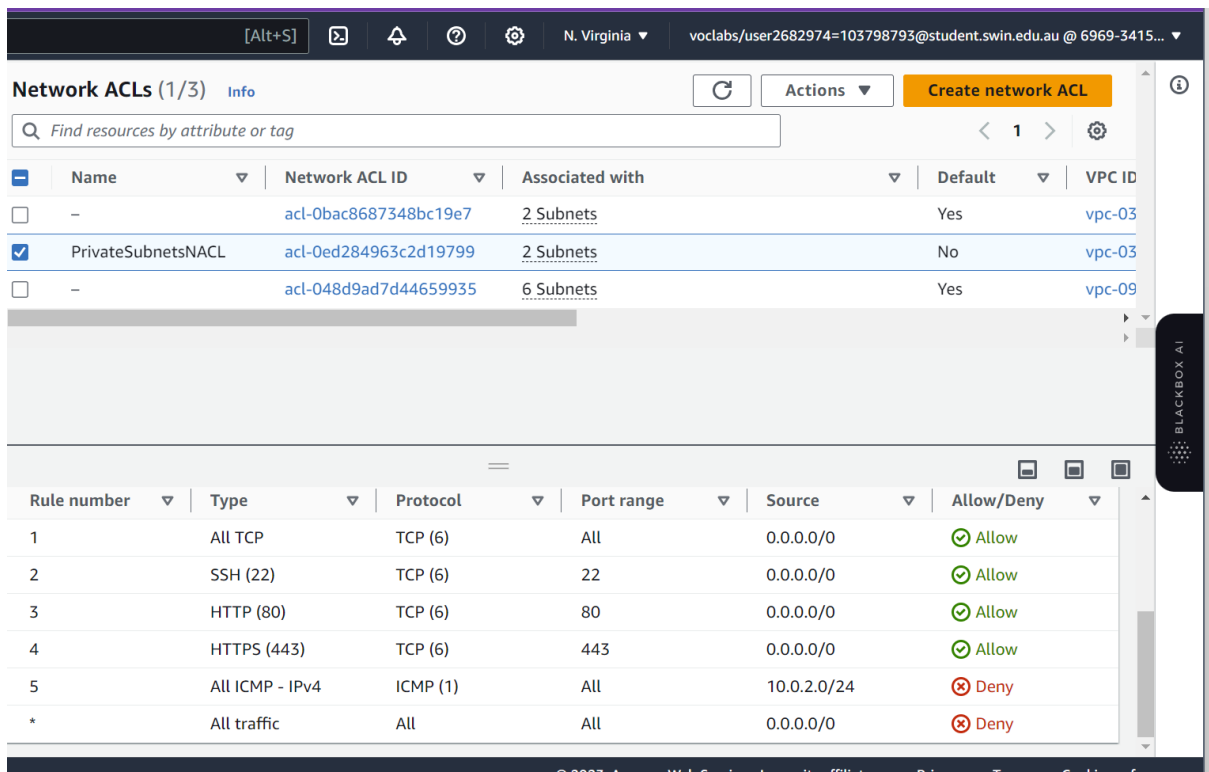


Figure 6 NACL Creation

Database configuration

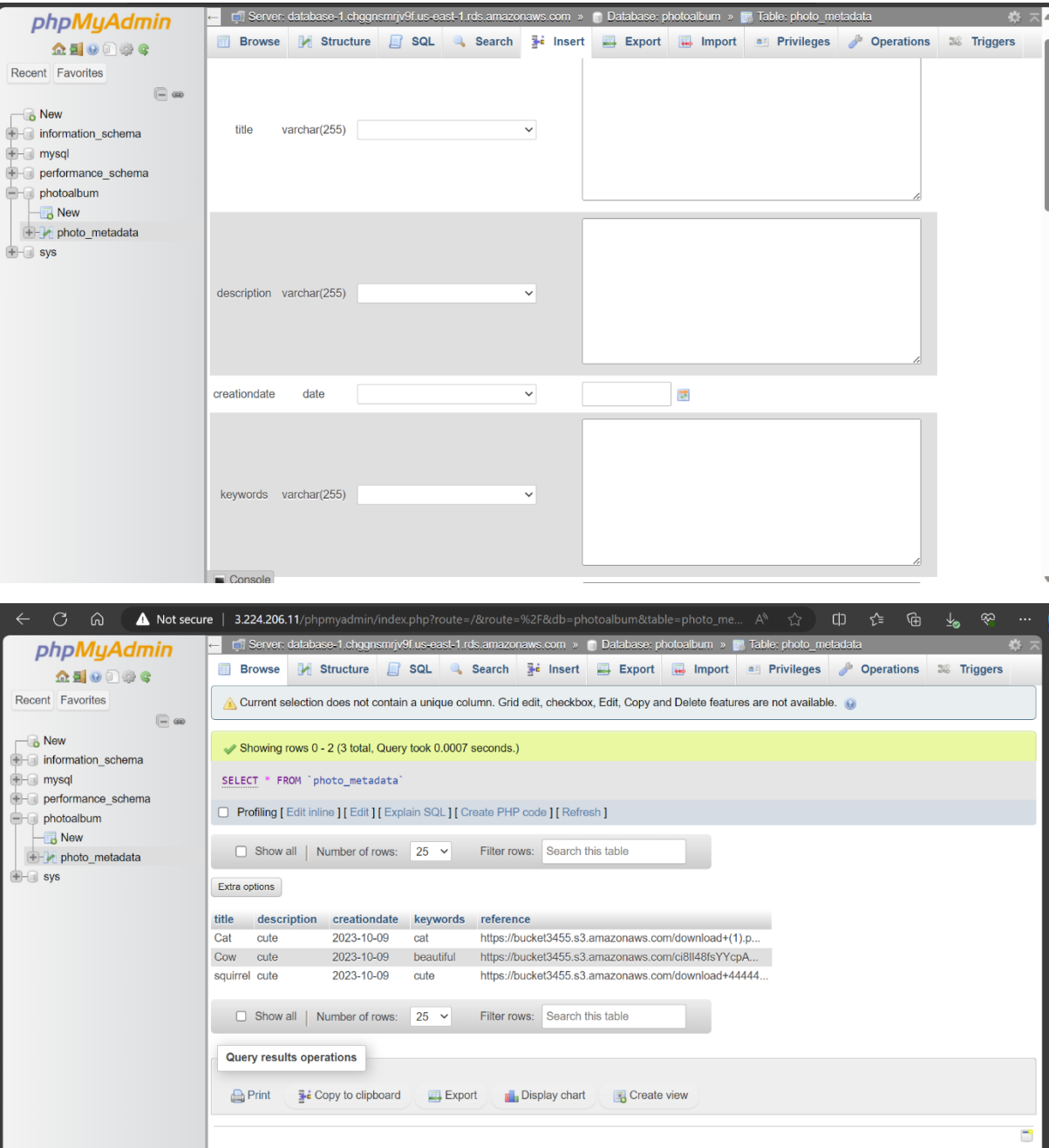


Figure 7 Database configuration

NAT Gateway Configuration

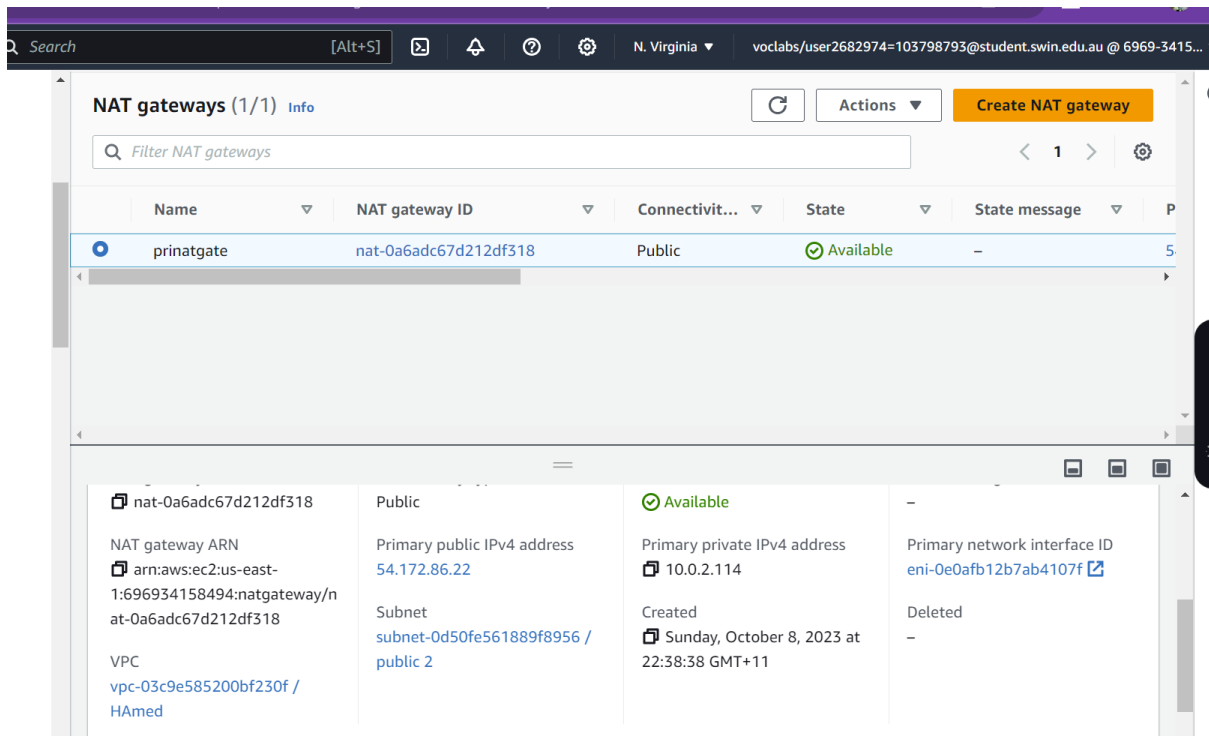


Figure 8 Creating the NAT Gateway

Creating the Internet Gateway

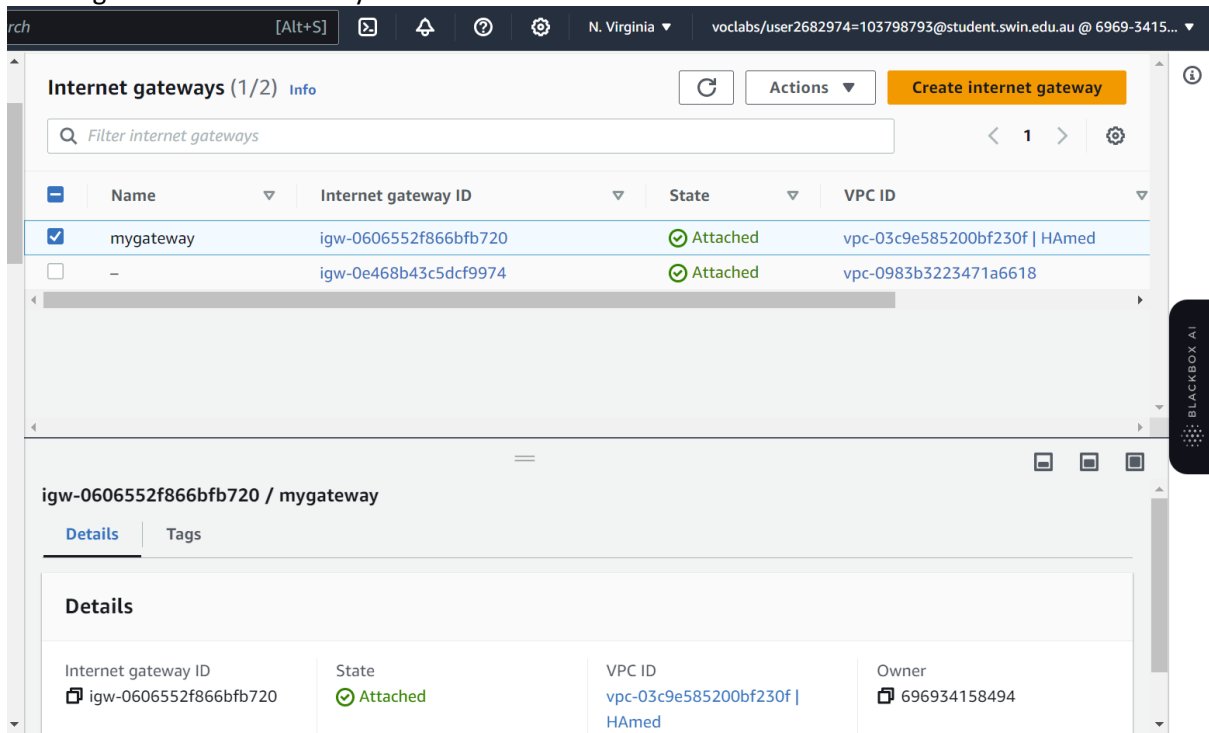
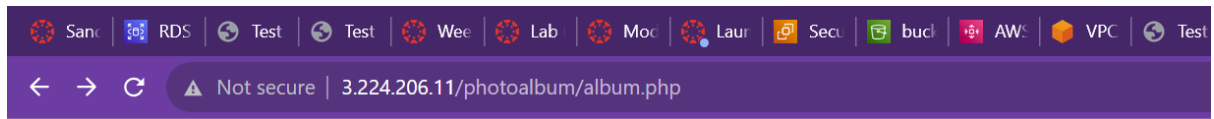


Figure 9 Creating the IGW

Functional Website




Student name: Hridoy Ahmed

Student ID: 103798793

Tutorial session: Fridoy 2:30 pm

Uploaded photos:

[Upload more photos](#)

Photo	Name	Description	Creation date	Keywords
	Cat	cute	2023-10-09	cat

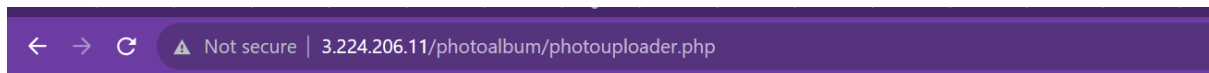


Photo uploader

Photo title:

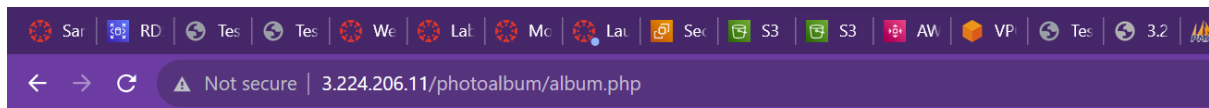
Select a photo (Select PNG file for best result): ci8ll48fsYYcpAdhFBSr.jpg

Description:

Date:

Keywords (comma-delimited, e.g. keyword1, keyword2, ...):

[Photo Album](#)



Student name: Hridoy Ahmed

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Tutorial session: Friday 2:30 pm

Uploaded photos:

[Upload more photos](#)



Photo	Name	Description	Creation date	Keywords
	Cat	cute	2023-10-09	cat
	Cow	cute	2023-10-09	beautiful

Figure 10 Functional Website

Elastic Ip address configuration

N. Virginia ▼

voclabs/user2682974=103798793@student.swin.edu.au @ 6969-3415... ▼

ect




Instance state ▼

Actions ▼

Launch instances ▼

< 1 >


⚙

Instance state ▼	Instance type ▼	Status check	Alarm status	A
g 	t2.micro	✔ 2/2 checks passed	No alarms +	u
g 	t2.micro	✔ 2/2 checks passed	No alarms +	u
g 	t2.micro	✔ 2/2 checks passed	No alarms +	u


=



⚙

×

0bf230f (HAMED) 

2.internal

Elastic IP addresses
 3.224.206.11 [Public IP]

AWS Compute Optimizer finding
 Opt-in to AWS Compute Optimizer for recommendations.
[Learn more](#) 

Auto Scaling Group name

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Figure 10 Elastic Ip address

S3 Bucket and Bucket Policy

[Alt+S]

Global

voclabs/user2682974=103798793@student.swin.edu.au @ 6969-3415...

Amazon S3

Buckets

▼ Account snapshot

Last updated: Oct 4, 2023 by Storage Lens. Metrics are generated every 24 hours. [Learn more](#)

Total storage

7.4 KB

Object count

2

Average object size

3.7 KB

You can enable advanced metrics in the "default-account-dashboard" configuration.

View Storage Lens dashboard

Buckets (1) Info

Buckets are containers for data stored in S3. [Learn more](#)

↺

Copy ARN

Empty

Delete

Create bucket

Find buckets by name

< 1 > ⚙

Name	AWS Region	Access	Creation date
<div>bucket3455</div>	US East (N. Virginia) us-east-1	<div>Public</div>	October 8, 2023, 22:57:29 (UTC+11:00)

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Privacy

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Cookie preferences

[Alt+S]

Global

voclabs/user2682974=103798793@student.swin.edu.au @ 6969-3415...

Block all public access

Off

Individual Block Public Access settings for this bucket

Bucket policy

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](#)

EditDelete

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Principal": "*",
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::bucket3455/*"
    }
  ]
}
```

Copy

Figure 12 S3 bucket and Bucket Policy