

ASSIGNMENT 2

Name: Nguyen Gia Binh

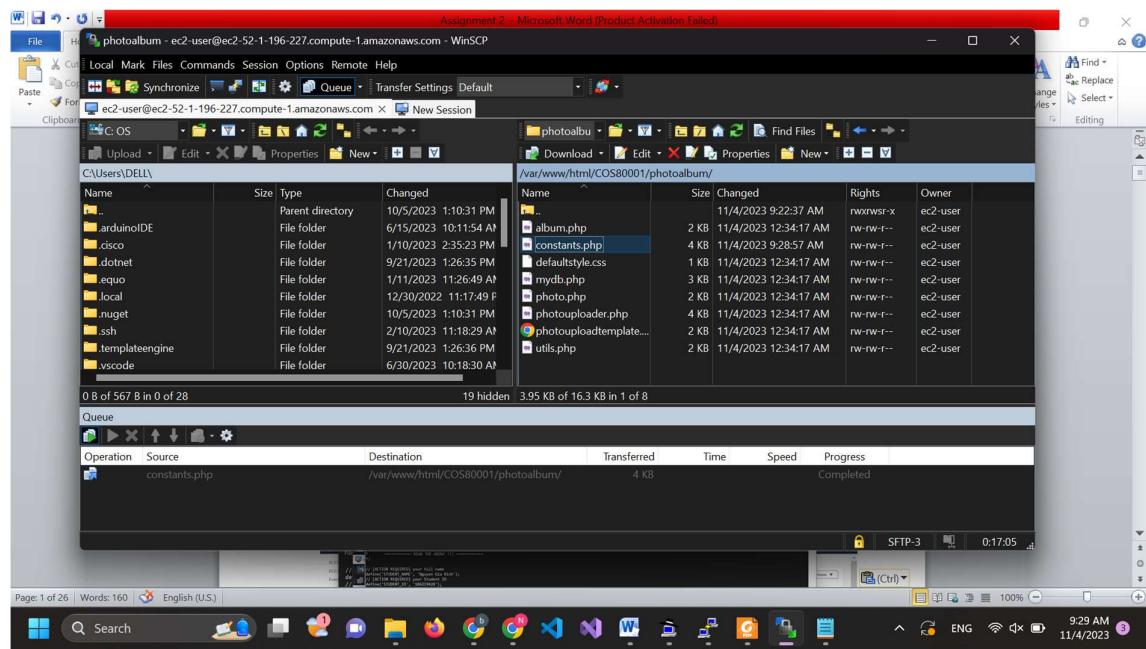
StudentID: 104219428

Tutorial time: Saturday 10:00AM

Date of Submission: 04/11/2023

Task 1: Functional requirements of Photo Album website

1.1: Modify constant.php



```
// ----- READ THE ABOVE !!! -----
// ----- READ THE ABOVE !!! -----
```

```
/*
 * // [ACTION REQUIRED] your full name
 * define('STUDENT_NAME', 'Nguyen Gia Binh');
 * // [ACTION REQUIRED] your student ID
 * define('STUDENT_ID', '104219428');
 */
// [ACTION REQUIRED] your tutorial session
define('TUTORIAL_SESSION', 'Saturday 12:00AM');
// [ACTION REQUIRED] name of the S3 bucket that stores images
define('BUCKET_NAME', 'asmphoto');
// [ACTION REQUIRED] region of the above bucket
define('REGION', 'us-east-1');
// [ACTION REQUIRED] endpoint of the S3 bucket
define('S3_BASE_URL', 'https://'.BUCKET_NAME.'.s3.amazonaws.com/');
// [ACTION REQUIRED] name of the database that stores photo meta-data (note that this is not the DB identifier of the RDS instance)
define('DB_NAME', 'photo');
// [ACTION REQUIRED] endpoint of RDS instance
define('DB_ENDPOINT', 'assignment1-db.rds.amazonaws.com');
// [ACTION REQUIRED] username of your RDS instance
define('DB_USERNAME', 'root');
// [ACTION REQUIRED] password of your RDS instance
define('DB_PWD', 'lucky707');
// [ACTION REQUIRED] name of the DB table that stores photo's meta-data
define('DB_PHOTO_TABLE_NAME', 'photo');
// The table above has 5 columns:
// [ACTION REQUIRED] name of the column in the above table that stores photo's titles
define('DB_PHOTO_TITLE_COL_NAME', 'titles');
// [ACTION REQUIRED] name of the column in the above table that stores photo's descriptions
define('DB_PHOTO_DESCRIPTION_COL_NAME', 'description');
// [ACTION REQUIRED] name of the column in the above table that stores photo's creation dates
define('DB_PHOTO_CREATED_DATE_COL_NAME', 'date');
// [ACTION REQUIRED] name of the column in the above table that stores photo's keywords
define('DB_PHOTO_KEYWORDS_COL_NAME', 'keywords');
// [ACTION REQUIRED] name of the column in the above table that stores photo's links in S3
define('DB_PHOTO_REFERENCE_COL_NAME', 'reference');
// [ACTION REQUIRED] name (can also be used) of the Lambda function that is used to create thumbnails
define('LAMBDA_FUNCTION_NAME', 'CreateThumbnail');
```

Line: 35/84 Column: 89 Character: 115 (0x73) Encoding: 1252 (ANSI - L - Modified)

Sat Nov 04 2023 08:49:32 GMT+0700 (Indochina Time) (37 minutes)

amazon/amzn2-ami-kernel-5.10-hvm-2.0.20230926.0-x86_64-gp2

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CloudFront Feedback

1.2: Download the zip file that contain AWS SDK PHP and unzip it

The screenshot shows a WinSCP session window titled "Assignment 2 - Microsoft Word (Product Activation Failed)". The address bar indicates the session is connected to "/var/www/html/COS80001/photoalbum/constants.php" on "ec2-user@ec2-52-1-196-227.compute-1.amazonaws.com". The main pane displays a terminal session with the following command and output:

```
aws-sdk-php/v3/download/aws.zip
2023-11-04 02:29:53-- https://docs.aws.amazon.com/aws-sdk-php/v3/download/aws.zip
Resolving docs.aws.amazon.com (docs.aws.amazon.com) ... 99.84.108.120, 99.84.108.49, 99.84.108.81, ...
Connecting to docs.aws.amazon.com (docs.aws.amazon.com) |99.84.108.120|:80... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://docs.aws.amazon.com/aws-sdk-php/v3/download/aws.zip [following]
1. Download the zip file that contains AWS
wget -P /var/www/html http://docs.aws.amazon.com/aws-sdk-php/v3/download/aws.zip
2023-11-04 02:29:53-- https://docs.aws.amazon.com/aws-sdk-php/v3/download/aws.zip
2. Unzip the downloaded file onto a new directory
unzip /var/www/html/aws.zip -d /var/www/html/
Connecting to docs.aws.amazon.com (docs.aws.amazon.com) |99.84.108.120|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 5526264 (5.3M) [application/zip]
Saving to: '/var/www/html/aws.zip'

[Progress Bar] 100%[=====] 5,526,264 5.51MB/s in 1.0s
2023-11-04 02:29:54 (5.51 MB/s) - '/var/www/html/aws.zip' saved [5526264/5526264]

[ec2-user@ip-10-0-2-196 html]$
```

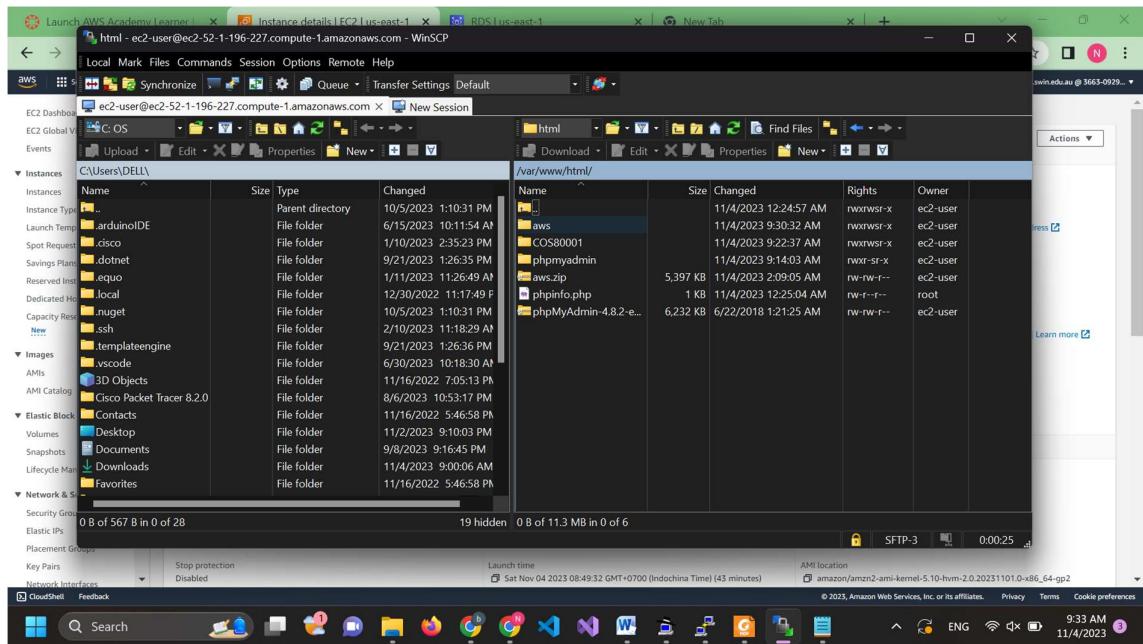
The status bar at the bottom shows "Line: 13/84" and "Column: 89". The toolbar includes standard Microsoft Word icons like Cut, Copy, Paste, etc.

The screenshot shows a WinSCP session window titled "Assignment 2 - Microsoft Word (Product Activation Failed)". The address bar indicates the session is connected to "/var/www/html/COS80001/photoalbum/constants.php" on "ec2-user@ec2-52-1-196-227.compute-1.amazonaws.com". The main pane displays a terminal session with the following command and output:

```
inflating: /var/www/html/aws/GuzzleHttp/Promise/Coroutine.php
inflating: /var/www/html/aws/GuzzleHttp/Promise/AggregateException.php
inflating: /var/www/html/aws/GuzzleHttp/Promise/RejectedPromise.php
inflating: /var/www/html/aws/GuzzleHttp/Promise/Create.php
inflating: /var/www/html/aws/GuzzleHttp/Promise/RejectionException.php
inflating: /var/www/html/aws/GuzzleHttp/Promise/Utils.php
inflating: /var/www/html/aws/GuzzleHttp/Promise/Is.php
creating: /var/www/html/aws/Psr/Http/Message/UriInterface.php
creating: /var/www/html/aws/Psr/Http/Message/Message.php
inflating: /var/www/html/aws/Psr/Http/Message/MessageInterface.php
inflating: /var/www/html/aws/Psr/Http/Message/UploadedFileInterface.php
inflating: /var/www/html/aws/Psr/Http/Message/ServerRequestInterface.php
inflating: /var/www/html/aws/Psr/Http/Message/StreamInterface.php
inflating: /var/www/html/aws/Psr/Http/Message/RequestInterface.php
inflating: /var/www/html/aws/Psr/Http/Message/ResponseInterface.php
creating: /var/www/html/aws/Psr/Http/Client/
inflating: /var/www/html/aws/Psr/Http/Client/NetworkExceptionInterface.php
inflating: /var/www/html/aws/Psr/Http/Client/ClientInterface.php
inflating: /var/www/html/aws/Psr/Http/Client/ClientExceptionInterface.php
inflating: /var/www/html/aws/Psr/Http/Client/RequestExceptionInterface.php
inflating: /var/www/html/aws/Psr/Http/Client/AwsAutoLoader.php
[ec2-user@ip-10-0-2-196 html]$
```

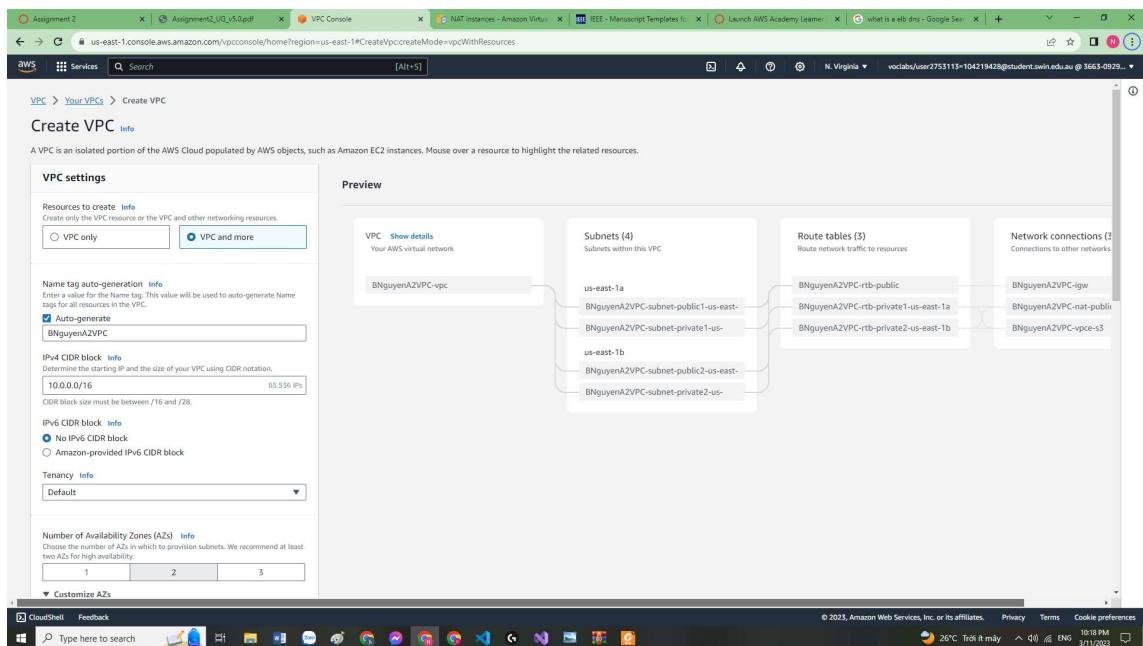
The status bar at the bottom shows "Line: 15/84" and "Column: 57". The toolbar includes standard Microsoft Word icons like Cut, Copy, Paste, etc.

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Task 2:

2.1: Create a VPC and NAT Gateway



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The screenshot shows the AWS VPC console interface for creating a new VPC. The 'Preview' section displays a network diagram with the following components:

- Subnets (4):** BNguyenA2VPC-vpc/us-east-1a, BNguyenA2VPC-subnet-public1-us-east-1a, BNguyenA2VPC-subnet-private1-us-east-1a, BNguyenA2VPC-subnet-public2-us-east-1b, BNguyenA2VPC-subnet-private2-us-east-1b.
- Route tables (3):** BNguyenA2VPC-rtb-public, BNguyenA2VPC-rtb-private1-us-east-1a, BNguyenA2VPC-rtb-private2-us-east-1b.
- Network connections (3):** BNguyenA2VPC-igw, BNguyenA2VPC-nat-public, BNguyenA2VPC-vpc-e-s3.

On the left, configuration options include:

- Customize AZs:** First availability zone: us-east-1a; Second availability zone: us-east-1b.
- Number of public subnets:** 2.
- Number of private subnets:** 2.
- Customize subnets CIDR blocks:** Public subnet CIDR block in us-east-1a: 10.0.1.0/24 (256 IPs); Public subnet CIDR block in us-east-1b: 10.0.2.0/24 (256 IPs); Private subnet CIDR block in us-east-1a: 10.0.3.0/24 (256 IPs); Private subnet CIDR block in us-east-1b: 10.0.4.0/24 (256 IPs).
- NAT gateways (0):** None.
- VPC endpoints:** None.
- DNS options:** Enable DNS hostnames (checked), Enable DNS resolution (checked).

At the bottom right is a large orange 'Create VPC' button.

This screenshot shows the continuation of the VPC creation process. The 'Preview' section remains identical to the previous one. The configuration options on the left now include:

- NAT gateways (0):** None.
- VPC endpoints:** S3 Gateway.
- DNS options:** Enable DNS hostnames (checked), Enable DNS resolution (checked).

At the bottom right is a large orange 'Create VPC' button.

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The screenshot shows the AWS VPC Console with the 'Preview' tab selected. It displays the following details:

- VPC:** BNguyenA2VPC-vpc
- Subnets (4):** Subnets within this VPC
 - us-east-1a: BNguyenA2VPC-subnet-public1-us-east-1a, BNguyenA2VPC-subnet-private1-us-east-1a
 - us-east-1b: BNguyenA2VPC-subnet-public2-us-east-1b, BNguyenA2VPC-subnet-private2-us-east-1b
- Route tables (3):** Route network traffic to resources
 - BNguyenA2VPC-rtb-public
 - BNguyenA2VPC-rtb-private1-us-east-1a
 - BNguyenA2VPC-rtb-private2-us-east-1b
- Network connections (3):** Connections to other networks
 - BNguyenA2VPC-igw
 - BNguyenA2VPC-nat-public1-us-east-1a
 - BNguyenA2VPC-vpcse-s3

Below the preview, there are sections for **Info**, **Tags**, and a **Create VPC** button.

The screenshot shows the 'Create VPC workflow' summary page. It lists the following steps:

- Success
- Details
 - Create VPC: vpc-0995ac76487dabcc6
 - Enable DNS hostnames
 - Enable DNS resolution
 - Verifying VPC creation: vpc-0995ac76487dabcc6
 - Create S3 endpoint: s3e-0260a0526099c543d
 - Create subnet: subnet-014dd6a3ed9df1bf8
 - Create subnet: subnet-0521ffed4ad093488
 - Create subnet: subnet-0eb4bdc125b74f8669
 - Create subnet: subnet-03c95b3875f59597a
 - Create Internet gateway: igw-0718942fcf672c4b3
 - Attach Internet gateway to the VPC
 - Create route table: rtb-0daa97592b1f72ff
 - Create route
 - Associate route table
 - Associate route table
 - Allocate elastic IP: eipalloc-06ab5b2f22772047
 - Create NAT gateway: nat-0cc4816268dd010d56
 - Wait for NAT Gateways to activate
 - Create route table: rtb-029chbb596ff95260
 - Create route
 - Associate route table
 - Create route table: rtb-05274b8adabfa76d0
 - Create route
 - Associate route table
 - Verifying route table creation
 - Associate S3 endpoint with private subnet route tables: vpc-0260a0526099c543d

A **View VPC** button is located at the bottom right of the summary area.

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2.2: S3 bucket (re-use the one from asm1b)

Put the photo into your RDS database using the object URL and SQL

<https://asm1bphoto.s3.amazonaws.com/dark-cosmic-jhin-splash-art-lol-4K-87.jpg>

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The screenshot shows the phpMyAdmin interface for the 'photo' database. In the SQL tab, the following SQL query was run:

```
1 INSERT INTO photo (title, description, date, keywords, refference)
2 VALUES ('Jhin', 'Jhin wallpaper', '2023-11-04', 'Jhin, darkstar, wallpaper', 'https://asm1bphoto.s3.amazonaws.com/dark-cosmic-jhin-splash-art-lol-4K-87.jpg')
```

The results show a success message: "1 row inserted. (Query took 0.00090 seconds.)".

The screenshot shows the phpMyAdmin interface for the 'photo' database. The results page displays the inserted row:

ID	Title	Description	Date	Keywords	Refference
1	Jhin	Jhin wallpaper	2023-11-04	Jhin, darkstar, wallpaper	https://asm1bphoto.s3.amazonaws.com/dark-cosmic-jhin-splash-art-lol-4K-87.jpg

2.2.1: Change bucket policy to restricts access to a specific HTTP referrer

```

{
    "Version": "2012-10-17",
    "Id": "HTTP referer policy example",
    "Statement": [
        {
            "Sid": "Allow only GET requests originating from www.example.com and example.com",
            "Effect": "Allow",
            "Principal": "*",
            "Action": [
                "s3:GetObject",
                "s3:GetObjectVersion"
            ],
            "Resource": "arn:aws:s3:::asm1bphoto/*",
            "Condition": {
                "StringLike": {
                    "aws:Referer": [
                        "http://www.example.com/*",
                        "http://example.com/*"
                    ]
                }
            }
        }
    ]
}
  
```

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.

Object Ownership
Bucket owner enforced
ACLs are disabled: All objects in this bucket are owned by this account. Access to this bucket and its objects is specified using only policies.

2.2.2: Tetsing photo resize

Name	Type	Last modified	Size	Storage class
photo.php	php	November 4, 2023, 10:02:54 (UTC+07:00)	1.2 KB	Standard
photouploader.php	php	November 4, 2023, 10:02:55 (UTC+07:00)	4.0 KB	Standard
photouploadtemplate.html	html	November 4, 2023, 10:02:56 (UTC+07:00)	1.4 KB	Standard
resized-jhn-dark-cosmic-lol-art-0-hd-wallpaper-1920x1080-uhdpaper.com-390_0_a.jpg	jpg	November 4, 2023, 11:15:12 (UTC+07:00)	52.2 KB	Standard
resized-jhn-empyrean-lol-hd-wallpaper-uhdpaper.com-245@1.jpg	jpg	November 4, 2023, 11:18:30 (UTC+07:00)	72.5 KB	Standard
utils.php	php	November 4, 2023, 10:02:57 (UTC+07:00)	1.7 KB	Standard

2.3: Load balancer

2.3.1: Create custom AMI

The screenshot shows the AWS EC2 Instances page. The left sidebar navigation includes: EC2 Dashboard, EC2 Global View, Events, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, New, Images (AMIs), AMI Catalog, Elastic Block Store (Volumes, Snapshots, Lifecycle Manager), Network & Security (Security Groups, Elastic IPs, Placement Groups, Key Pairs), and Network Interfaces. The main content area displays three instances:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
Bastion/Web s...	i-0264c88efc3959f0f	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	ec2-52-202-86-40.com...
Dev Server	i-02525c87ecb5e4e54	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	ec2-52-1-196-227.com...
TestInstance	i-0367e3234fd6b2719	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	-

A context menu is open over the 'Dev Server' instance, with options: Connect, Instance state, Actions (Launch instances, View details, Manage instance state, Instance settings, Networking, Security, Image and templates, Monitor and troubleshoot), Create image, Create template from instance, and Launch more like this.

The screenshot shows the 'Create Image' dialog for the instance i-02525c87ecb5e4e54 (Dev Server). The 'Image name' field is set to 'DevServerAMI'. The 'Image description - optional' field contains 'assignmentn 2 AMI'. Under 'Instance volumes', there is one EBS volume (/dev/xvda) with size 8, IOPS 100, Throughput 500, Delete on termination checked, and Encrypted unchecked. A note states: 'During the image creation process, Amazon EC2 creates a snapshot of each of the above volumes.' Under 'Tags - optional', there are two radio button options: 'Tag image and snapshots together' (selected) and 'Tag image and snapshots separately'. A note explains: 'A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.' At the bottom, it says 'No tags associated with the resource.'

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2.3.3: Create target group

The screenshot shows the AWS CloudShell interface with two browser windows open:

- Top Window (EC2 Instance Creation):** The URL is us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateImage:instanceId=i-02525c87ecb5e4e54. The instance is named "DevServerAMI". The "Image description - optional" field contains "assignment 2 AMI". Under "Instance volumes", there is one EBS volume of size 8 GiB, type General Purpose SSD, IOPS 100, and throughput 1 GiB/s. The "Delete on termination" checkbox is checked. A note says "During the image creation process, Amazon EC2 creates a snapshot of each of the above volumes." Under "Tags - optional", the "Tag image and snapshots together" option is selected.
- Bottom Window (Target Group Creation):** The URL is us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTargetGroup. The target group name is "TargetgroupA2". The protocol is set to "HTTP" and port is "80". The "IP address type" section shows "IPv4" selected. The "VPC" section lists "BNguyenA2VPC-vcpc" with "Subnet ID: subnet-00000000" and "IP range: 10.0.0.0/16". The "Protocol version" section has "HTTP1" selected. The "Health checks" section is currently empty.

Target group name is: TargetgroupA2

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The screenshot shows a Windows desktop environment with a taskbar at the bottom containing various application icons. Two browser windows are open in the center:

- Top Browser Window:** The URL is `us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTargetGroup`. This window is titled "Create target group" and is on "Step 1: Specify group details". It includes sections for "Health checks" (Protocol: HTTP, Path: `/photogallery_album.php`) and "Attributes" (Note: Certain default attributes will be applied). A "Next" button is visible.
- Bottom Browser Window:** The URL is `us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTargetGroup`. This window is titled "Register targets" and is on "Step 2: Register targets". It shows a table of "Available instances" with one entry: "i-02525c87ecb5e454" (Name: Dev Server, State: Running, Security groups: DevServerSG_A2, Zone: us-east-1b, Private IPv4 address: 10.0.2.196). Below the table, it says "0 selected" and "Ports for the selected instances" (Port: 80, Range: 1-65535). A "Review targets" section below shows a table with zero entries. The taskbar also shows other open tabs like Launch, Assign, Step 1, Create, etc.

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2.3.4: Create load balancer

The screenshot shows the AWS CloudShell interface with two windows open, both titled "Create Application Load Balancer".

Top Window: Basic configuration

- Load balancer name:** ELBaz
- Scheme:** Internet-facing (selected)
- IP address type:** IPv4 (selected)

Bottom Window: Network mapping

- VPC:** BNguenA2VPC-vpc-0995ac1c9487dabc6
- Mappings:**
 - us-east-1a (use1-az2):** Subnet subnet-0eb4bdcc125b74f869 BNguenA2VPC-subnet-private1-us-east-1a
 - us-east-1b (use1-az4):** Subnet subnet-03c95b3875fb5957a BNguenA2VPC-subnet-private2-us-east-1b

Both windows include a note about selecting subnets without internet gateways, which will prevent receiving internet traffic.

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The screenshot shows the AWS CloudShell interface. On the left, a sidebar lists various AWS services. The main pane is titled "CreateALBWizard:" and shows the configuration of a new Application Load Balancer (ALB). The "Security groups" section lists "ELBGA2" with VPC "sg-0ard87d4cc356047fe". The "Listeners and routing" section shows a single listener on port 80 forwarding to "TargetgroupA2". The status bar at the bottom shows the session is running on a Windows 10 machine.

The screenshot shows the AWS CloudShell interface. On the left, a sidebar lists various AWS services. The main pane is titled "LoadBalancers:search=ELBa2" and shows the results for a search. One load balancer, "ELBa2", is listed with its DNS name and other details. The status bar at the bottom shows the session is running on a Windows 10 machine.

2.4: Auto Scaling

2.4.1: Create launch template

The screenshot shows the AWS CloudShell interface with two windows open, illustrating the process of creating a launch template.

Top Window: Create launch template

- Summary:**
 - Software Image (AMI): assignemtn2 AMI ami-0f577d51f69334f14
 - Virtual server type (instance type): t2.micro
 - Firewall (security group): DevServerSG_A2
 - Storage (volumes): 1 volume(s) - 8 GiB
- Launch template name and description:**
 - Launch template name - required: DevServerTemplate
 - Template version description: launch temp for dev server
 - Auto Scaling guidance info: Select this if you intend to use this template with EC2 Auto Scaling (checkbox checked)
 - Provide guidance to help me set up a template that I can use with EC2 Auto Scaling (checkbox checked)
- Launch template contents:**
 - Application and OS Images (Amazon Machine Image) - required: Info
- Create button:** Create launch template

Bottom Window: Application and OS Images (Amazon Machine Image) - required

- Summary:**
 - Software Image (AMI): assignemtn2 AMI ami-0f577d51f69334f14
 - Virtual server type (instance type): t2.micro
 - Firewall (security group): DevServerSG_A2
 - Storage (volumes): 1 volume(s) - 8 GiB
- Search and Filter:**
 - Search bar: Search our full catalog including 1000s of application and OS images
 - Filter buttons: Recents, My AMIs (selected), Quick Start
 - Owned by me: Owned by me
 - Shared with me: Shared with me
 - Browse more AMIs: Including AMIs from AWS, Marketplace and the Community
- Amazon Machine Image (AMI):**
 - DevServerAMI: ami-0f577d51f69334f14
 - Created: 2023-11-04T04:30:10.000Z
 - Description: assignemtn 2 AMI
 - Architecture: x86_64
 - AMI ID: ami-0f577d51f69334f14
- Instance type:** Info
- Create button:** Create launch template

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The screenshot shows the AWS CloudShell interface with multiple tabs open. The active tab is titled "us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTemplate:". The page displays the configuration for creating a new launch template. Key settings include:

- Instance type:** t2.micro (selected)
- Software Image (AMI):** assignmentmtn 2 AMI (ami-0f577d51f68334f14)
- Virtual server type (instance type):** t2.micro
- Firewall (security group):** DevServerSG_A2
- Storage (volumes):** 1 volume(s) - 8 GiB

A summary box provides details about the free tier for t2.micro instances. At the bottom right, there is a "Create launch template" button.

This screenshot shows the continuation of the EC2 launch template creation process. The "Network settings" section is expanded, showing:

- Subnet Info:** Don't include in launch template (selected)
- Firewall (security groups) Info:** Select existing security group (radio button selected)
- Security groups Info:** DevServerSG_A2

The "Storage (volumes)" section is also expanded, showing:

- EBS Volumes:** Volume 1 (AMI Root) (8 GiB, EBS, General purpose SSD (gp2))
- A note: "AMI Volumes are not included in the template unless modified"
- A message: "Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage"

At the bottom right, there is a "Create launch template" button.

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The screenshot shows the AWS CloudShell interface with multiple tabs open. The active tab is titled "us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTemplate". The page displays the "Advanced details" section of a launch template configuration. Key settings include:

- IAM instance profile:** LabInstanceProfile (arn:aws:iam::365309293917:instance-profile/LabInstanceProfile)
- Hostname type:** Don't include in launch template
- DNS Hostname:** Enable resource-based IPv4 (A record) DNS requests
- Instance auto-recovery:** Don't include in launch template
- Shutdown behavior:** Don't include in launch template
- Stop - Hibernate behavior:** Don't include in launch template
- Termination protection:** Don't include in launch template
- Stop protection:** Don't include in launch template
- Detailed CloudWatch monitoring:** Enable

The "Summary" section on the right provides information about the selected AMI (assignemtn 2 AMI ami-0f577d51f6334f14), instance type (t2.micro), security group (DevServerSG_A2), and storage (1 volume(s) - 8 GiB). A "Free tier" callout indicates 750 hours of t2.micro (or t3.micro in Regions where it's unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

At the bottom right of the window, there are buttons for "Cancel" and "Create launch template". The status bar at the bottom of the screen shows the date and time as 11:46 AM 11/4/2023.

This screenshot shows the continuation of the EC2 launch template creation process. The "User data (optional)" field contains the following shell script:

```
#!/bin/bash
yum update -y
amazon-linux-extras install -y lamp-mariadb10.2-php7.2 php7.2
service httpd start
yum install -y httpd mariadb-server php-mbstring perl
systemctl start httpd
systemctl enable httpd
usermod -a -G apache ec2-user
chown -R ec2-user:apache /var/www
chmod 2775 /var/www
find /var/www -type d -exec sudo chmod 2775 {} \;
find /var/www -type f -exec sudo chmod 6644 {} \;
echo "<?php echo <h2>Welcome to COS80001. Installed PHP version:</h2>?>" > /var/www/html/phpinfo.php
```

A note below the user data states: "User data has already been base64 encoded".

The rest of the interface and status bar are identical to the first screenshot, showing the same summary information and the date/time 11:47 AM 11/4/2023.

Nguyen Gia Binh - 104219428

The screenshot shows the AWS CloudShell interface. The title bar indicates the URL is us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTemplate. The main content area shows a success message: "Successfully created DevServerTemplate lt-0cb99ade9cfa1a7c0". Below this, there are sections for "Next Steps" and "Launch an instance". The "Launch an instance" section includes links for "Launch instance from this template", "Create an Auto Scaling group from your template", and "Create a Spot Fleet". A "View launch templates" button is located at the bottom right of the main content area. The bottom of the screen shows the Windows taskbar with various pinned icons.

2.4.2: Create auto scaling group

The screenshot shows the AWS CloudShell interface. The title bar indicates the URL is us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchTemplateDetails:launchTemplateId=lt-0cb99ade9cfa1a7c0. The main content area displays the "DevServerTemplate (lt-0cb99ade9cfa1a7c0)" details. Under the "Launch template details" section, there is a "Create Auto Scaling group" button highlighted with a blue border. The "Launch template version details" section shows a single version (1) with the AMI ID "ami-0f577d51f69334f14". The bottom of the screen shows the Windows taskbar with various pinned icons.

Nguyen Gia Binh - 104219428

The screenshot shows the AWS CloudShell interface at the bottom and the EC2 console at the top. The EC2 console displays the 'Create Auto Scaling Group' wizard, Step 4: Configure group size and scaling policies. The 'Name' field contains 'Dev server A2 auto scaling group'. The 'Launch template' dropdown is set to 'DevServerTemplate'. The 'Version' dropdown is set to 'Default (1)'. The 'Description' section shows 'launch temp for dev server'. The 'AMI ID' is 'ami-0f577d31f69334f14'. The 'Key pair name' is 'assignment1b'. The 'Launch template' section shows 'Launch template DevServerTemplate It-0cb99ade9cf1a17c0'. The 'Instance type' is 't2.micro'. The 'Security groups' and 'Request Spot Instances' fields are empty.

The screenshot shows the AWS CloudShell interface at the bottom and the EC2 console at the top. The EC2 console displays the 'Create Auto Scaling Group' wizard, Step 5: Configure advanced options. The 'Choose instance launch options' step is selected. Under 'Instance type requirements', the 'Launch template' is 'DevServerTemplate', 'Version' is 'Default', and 'Description' is 'launch temp for dev server'. Under 'Network', the 'VPC' dropdown is set to 'vpc-0995aa54a67dabc5 (BjNgw4kZPC-904)' with '10.0.0.0/16'. Under 'Availability Zones and subnets', two subnets are selected: 'us-east-1a [subnet-0db4fb0d125074f869 (BjNgw4kZPC-subnet-private1-us-east-1a)]' and 'us-east-1b [subnet-03e95a8737898902 (BjNgw4kZPC-subnet-private2-us-east-1b)]'. Both have '10.0.0.0/16'. The 'Next Step' button is visible at the bottom.

Nguyen Gia Binh - 104219428

The screenshot shows the AWS CloudShell interface with multiple tabs open. The active tab is titled "us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateAutoScalingGroup". The page displays the "Configure advanced options - optional" step of the "Create Auto Scaling group" wizard. The "Load balancing" section is visible, showing three options: "No load balancer" (selected), "Attach to an existing load balancer", and "Attach to a new load balancer". Below this, the "Attach to an existing load balancer" section shows a dropdown menu with "Choose from your load balancer target groups" selected. A dropdown menu also lists "TargetgroupA2 | HTTP Application Load Balancer ELBv2". The "Health checks" section is expanded, showing "EC2 health checks" with "Always enabled" selected. It also includes sections for "Additional health check types - optional" (with "Turn on Elastic Load Balancing health checks" recommended), "Health check grace period" (set to 300 seconds), and "Additional settings" (with "Monitoring" and "Default instance warmup" options). At the bottom, there are "Cancel", "Skip to review", "Previous", and "Next" buttons. The status bar at the bottom right shows "CloudShell Feedback" and the date/time "11/4/2023 11:54 AM".

Nguyen Gia Binh - 104219428

The screenshot shows the AWS Auto Scaling group creation wizard at Step 4: **Configure group size and scaling policies - optional**. The page is titled "Create Auto Scaling group". It includes sections for "Group size - optional" and "Scaling policies - optional". In the "Group size - optional" section, Desired capacity is set to 2, Minimum capacity is 2, and Maximum capacity is 3. In the "Scaling policies - optional" section, the "Target tracking scaling policy" is selected, and the "None" option is also present. The "Scaling policy name" field contains "Target Tracking Policy". The "Metric type" dropdown is set to "Application Load Balancer request count per target". The "Target group" dropdown is set to "TargetgroupA2". The "Target value" is 30. The "Instance warmup" is 300 seconds. A checkbox for "Disable scale in to create only a scale-out policy" is unchecked.

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The screenshot shows the AWS Auto Scaling group creation wizard at Step 5: **Configure advanced options**. It includes sections for "Configure group size and scaling policies" and "Add notifications". The "Configure group size and scaling policies" section is expanded, showing the configuration from the previous step. The "Add notifications" section is collapsed. The "Add tags" section is also collapsed. The "Review" button is visible at the bottom.

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The screenshot shows the AWS Auto Scaling group creation wizard at Step 6: **Add tags**. It includes sections for "Configure group size and scaling policies" and "Add notifications". The "Configure group size and scaling policies" section is collapsed. The "Add notifications" section is collapsed. The "Add tags" section is expanded, showing a table with one row: "Tag key" (Name) and "Tag value" (Value). The "Review" button is visible at the bottom.

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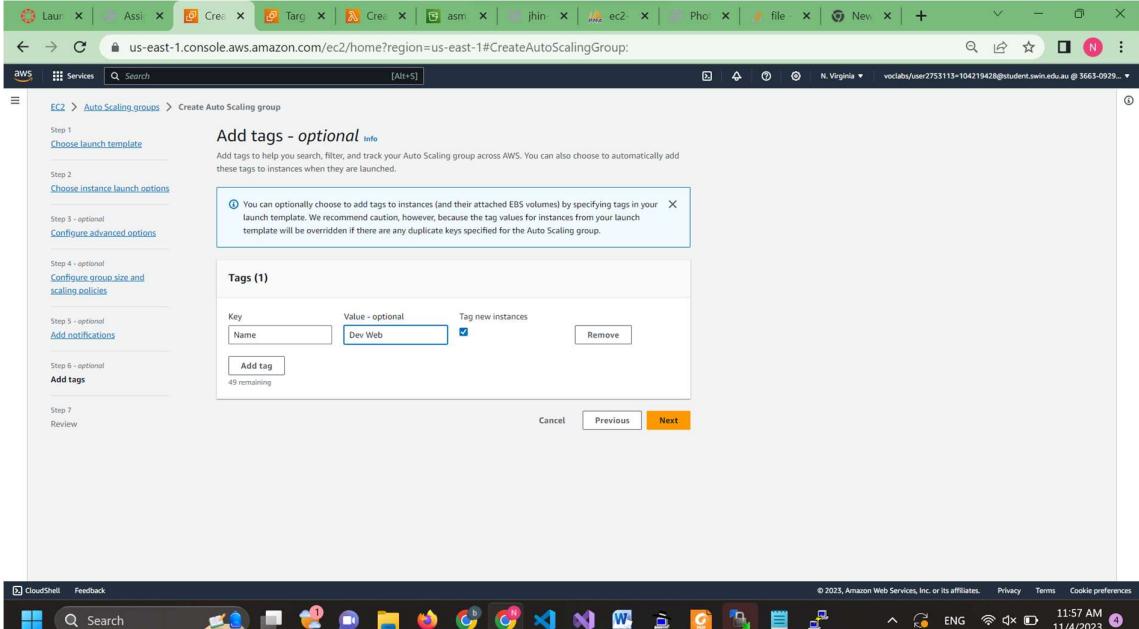
The screenshot shows the AWS Auto Scaling group creation wizard at Step 7: **Review**. It displays the summary of the configuration steps taken so far. The "Scaling policies - optional" section is expanded, showing the target tracking policy configuration. The "Instance scale-in protection - optional" section is collapsed. The "Review" button is visible at the bottom.

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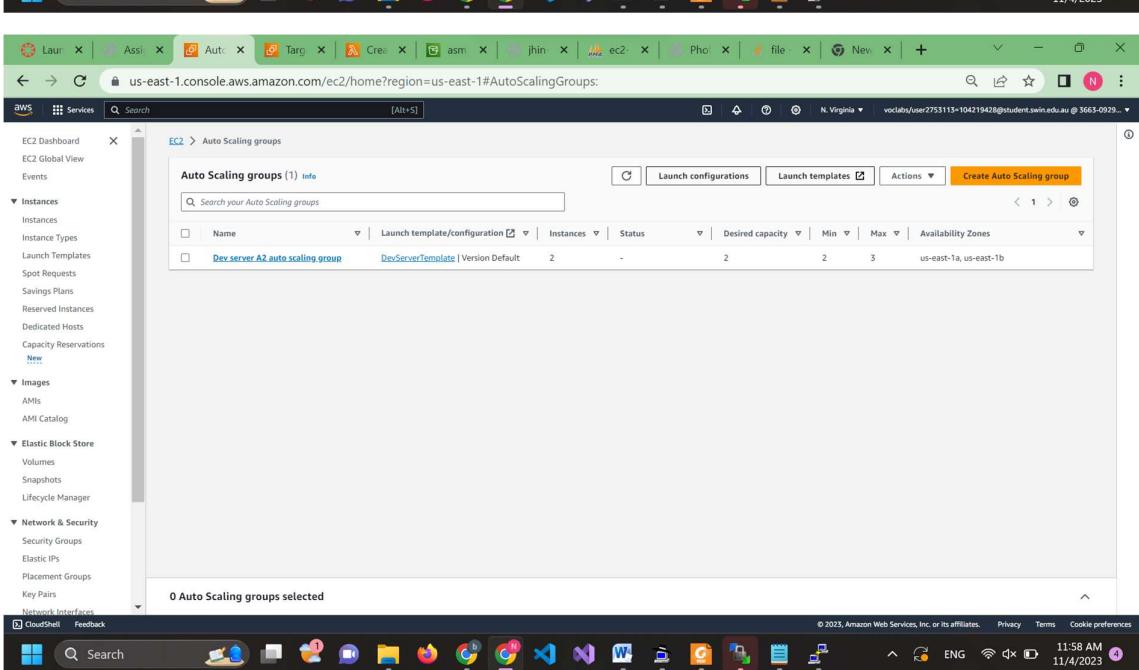
A screenshot of the Windows Snipping Tool application. The window title is "Snipping Tool". The content area shows a screenshot of the AWS Auto Scaling group creation wizard, specifically the "Scaling policies - optional" section. The text in the screenshot says: "Choose whether to use a scaling policy to dynamically resize your Auto Scaling group to meet changes in demand. Info". Below it, there are two radio buttons: "Target tracking scaling policy" (selected) and "None". The "Scaling policy name" field contains "Target Tracking Policy". The "Metric type" dropdown is set to "Application Load Balancer request count per target". The "Target group" dropdown is set to "TargetgroupA2". The "Target value" is 30. The "Instance warmup" is 300 seconds. A checkbox for "Disable scale in to create only a scale-out policy" is unchecked. The message "Screenshot copied to clipboard and saved" is displayed at the bottom of the Snipping Tool window.

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Nguyen Gia Binh - 104219428



The screenshot shows the AWS CloudShell interface with several tabs open, including Lambda, CloudWatch Metrics, CloudWatch Logs, Create, Target, Create, asm, jhin, ec2, Photo, file, New, and a blank tab. The main window displays the 'Create Auto Scaling group' wizard, Step 4: Add tags - optional. It shows a single tag named 'Dev Web' being added. The wizard has 6 steps, and the 'Next' button is highlighted.



The screenshot shows the 'Auto Scaling groups' page in the AWS EC2 service. The sidebar includes links for EC2 Dashboard, EC2 Global View, Events, Instances, Images, Elastic Block Store, Network & Security, and more. The main table lists one Auto Scaling group: 'Dev server A2 auto scaling group' with a launch template 'DevServerTemplate'. The table includes columns for Name, Launch template/configuration, Instances, Status, Desired capacity, Min, Max, and Availability Zones (us-east-1a, us-east-1b). The status bar at the bottom indicates the time is 11:58 AM on 11/4/2023.

Nguyen Gia Binh - 104219428

The screenshot shows the AWS EC2 Instances page. On the left, there's a navigation sidebar with options like EC2 Dashboard, EC2 Global View, Events, Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images, AMIs, AMI Catalog, Elastic Block Store, Volumes, Snapshots, Lifecycle Manager, Network & Security, Security Groups, Elastic IPs, Placement Groups, Key Pairs, and Network Interfaces. The main area displays a table titled 'Instances (5) Info' with columns: Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, Public IPv4 DNS, Public IPv4 IP, and Elastic IP. Five instances are listed:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 IP	Elastic IP
Bastion/Web s...	i-0264c88efc395940f	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	ec2-52-202-66-40.com...	52.202.86.40	-
Dev Server	i-02525c87ecb5e4e54	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	ec2-52-1-196-227.com...	52.1.196.227	-
Dev Web	i-0f19ea0054c53ddf	Running	t2.micro	0 Initializing	No alarms	us-east-1b	-	-	-
Testinstance	i-0f67e3254fd6b2719	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	-	-	-
Dev Web	i-04eb5e1b231d32798	Running	t2.micro	0 Initializing	No alarms	us-east-1a	-	-	-

A modal window titled 'Select an instance' is open, showing a dropdown menu with the option 'LabInstanceProfile'. The bottom of the screen shows a Windows taskbar with various icons.

Modify both of the Dev Web instance IAM

To LabInstanceProfile

The screenshot shows the 'Modify IAM role' page for the instance i-04eb5e1b231d32798. The URL is us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#ModifyIAMRole:instanceId=i-04eb5e1b231d32798. The page title is 'Modify IAM role' and it says 'Info' at the top. It asks to 'Attach an IAM role to your instance.' Below that is a section for 'IAM role' which says 'Select an IAM role to attach to your instance or create a new role if you haven't created any. The role you select replaces any roles that are currently attached to your instance.' A dropdown menu is open, showing 'LabInstanceProfile' as the selected option. There are 'Cancel' and 'Update IAM role' buttons at the bottom. The bottom of the screen shows a Windows taskbar with various icons.

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2.5: DevServer EC2 Instance

The screenshot shows the AWS CloudShell interface with two tabs open: "Assignment 1a" and "Assignment2_U05_v5.0.pdf". The user is navigating through the AWS console to create a new EC2 instance.

Step 1: Launch an instance

The user has selected the "Launch an instance" option under the EC2 service. They have chosen the "t2.micro" instance type, assigned it the name "Dev Server", and selected the "Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type" AMI. The instance will be launched into the "DevServerSG_A2" security group and receive 1 volume(s) of 8 GiB storage.

Step 2: Configure instance details

The user has specified the "ami-0e8a34246278c21e4" AMI ID and selected the "64-bit (x86)" architecture. They have chosen the "t2.micro" instance type again. The "Launch instance" button is highlighted.

Step 3: Set key pair

The user has selected the "assignment1b" key pair for securing the connection to the instance.

Step 4: Configure network settings

The user has selected the VPC "vpc-0995ac76487dabcc6 (BNGuyenA2VPC-vpc)" for the instance.

Nguyen Gia Bin - 104219428

The screenshot shows the AWS Lambda console interface. A new function named "Assignment1" is being created. The "Code" tab is selected, displaying the following code:

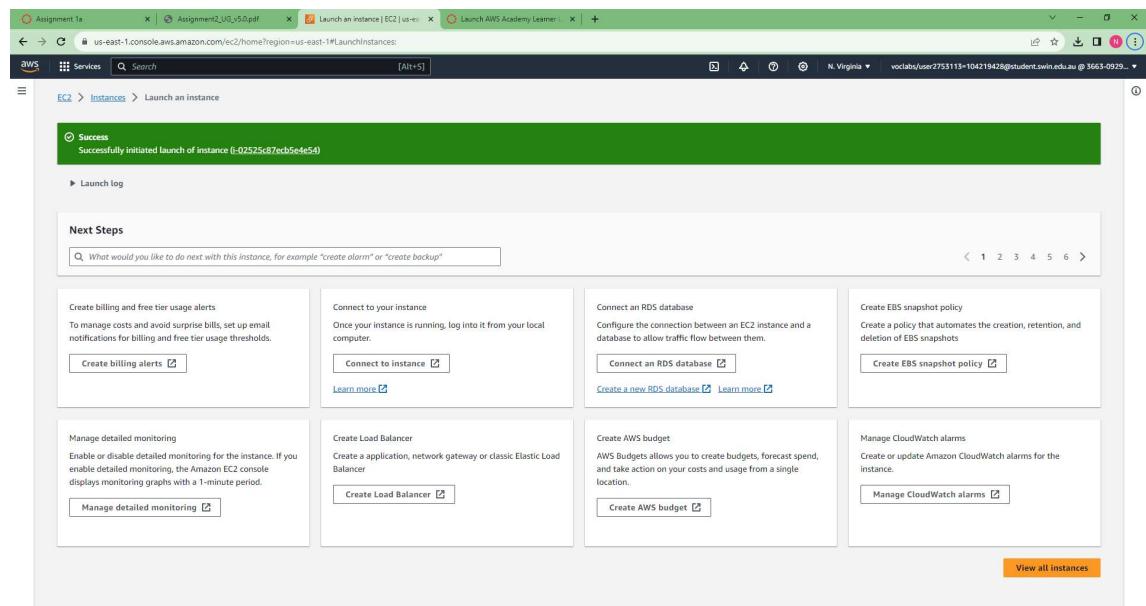
```
#!/bin/bash
yum update -y
amazon-linux-extras install -y php7.2 php7.2
service httpd start
yum install -y httpd mariadb-server php-mariadb php-mysql
systemctl start httpd
systemctl enable httpd
usermod -a -G apache ec2-user
chown -R ec2-user:apache /var/www
chmod 2775 /var/www
find /var/www -type d -exec sudo chmod 2775 {} \;
find /var/www -type f -exec sudo chmod 664 {} \;
sudo <>php echo <h2>Welcome to C0580000! Installed PHP version:</h2>> > /var/www/html/phpinfo.php
phpversion
```

Re-use the script from assignment 1

The screenshot shows the AWS Lambda console interface. A new function named "Assignment2" is being created. The "Code" tab is selected, displaying the same code as in Assignment1:

```
#!/bin/bash
yum update -y
amazon-linux-extras install -y php7.2 php7.2
service httpd start
yum install -y httpd mariadb-server php-mariadb php-mysql
systemctl start httpd
systemctl enable httpd
usermod -a -G apache ec2-user
chown -R ec2-user:apache /var/www
chmod 2775 /var/www
find /var/www -type d -exec sudo chmod 2775 {} \;
find /var/www -type f -exec sudo chmod 664 {} \;
sudo <>php echo <h2>Welcome to C0580000! Installed PHP version:</h2>> > /var/www/html/phpinfo.php
phpversion
```

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The screenshot shows the AWS CloudWatch Metrics console. A graph displays CPU Utilization over a period of 1 hour. The Y-axis ranges from 0% to 100%, and the X-axis shows time intervals. The utilization fluctuates between 0% and 100% throughout the hour.

Success
Successfully initiated launch of instance (i-02525c87eb5e4e54)

Next Steps

Q. 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](#)

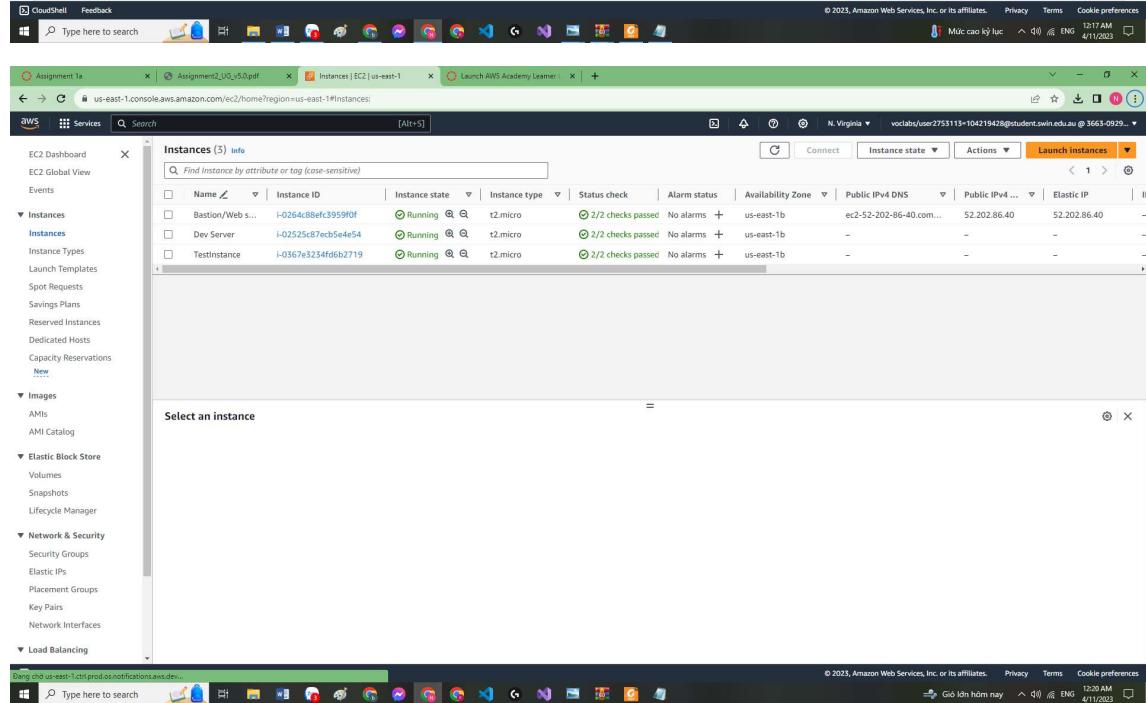
Create Load Balancer
Create an application, network gateway or classic Elastic Load Balancer.
[Create Load Balancer](#)

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](#)

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Instances (3) Info

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 IP	Elastic IP	IF
□	Bastion/Web s...	i-0264c88fc3959f0f	Running	t2.micro	2/2 checks passed	No alarms	+ us-east-1b	ec2-52-202-86-40.com...	52.202.86.40	52.202.86.40	-
□	Dev Server	i-02525c87eb5e4e54	Running	t2.micro	2/2 checks passed	No alarms	+ us-east-1b	-	-	-	-
□	TestInstance	i-0367e3234fd6b2719	Running	t2.micro	2/2 checks passed	No alarms	+ us-east-1b	-	-	-	-

Find Instance by attribute or tag (case-sensitive)

EC2 Dashboard EC2 Global View Events Instances Instances Types Launch Templates Spot Requests Savings Plans Reserved Instances Dedicated Hosts Capacity Reservations New Images AMIs AMI Catalog Elastic Block Store Volumes Snapshots Lifecycle Manager Network & Security Security Groups Elastic IPs Placement Groups Key Pairs Network Interfaces Load Balancing

Dang chon us-east-1.cnprod.notifications.aws.dev... © 2023, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences Giờ lớn hôm nay 12:20 AM 4/11/2023

Nguyen Gia Binh - 104219428

2.5.2: Elastic IP

The screenshot shows two consecutive screenshots of the AWS Management Console interface.

Screenshot 1: Allocate Elastic IP address

This screen is titled "Allocate Elastic IP address". It shows the "Elastic IP address settings" configuration. Key options include:

- Network Border Group:** us-east-1
- Public IPv4 address pool:** Amazon's pool of IPv4 addresses (selected)
- Tags - optional:** No tags associated with the resource.
- Actions:** Buttons for "Cancel" and "Allocate".

Screenshot 2: Elastic IP addresses (1/1)

This screen displays the allocated elastic IP address. The table shows one entry:

Name	Allocated IPv4 address	Type	Allocation ID	Reverse DNS record	Actions
-	52.1.196.227	Public IP	eipalloc-0e0f3f74a8348fbe7	-	<ul style="list-style-type: none">Actions ▾Associate Elastic IP addressDisassociate Elastic IP addressUpdate reverse DNSEnable transfersDisable transfersAccept transfers

The "Summary" tab is selected, showing the following details:

Allocated IPv4 address	Type	Allocation ID	Reverse DNS record
52.1.196.227	Public IP	eipalloc-0e0f3f74a8348fbe7	-
Association ID	Scope	Associated Instance ID	Private IP address
-	VPC	-	-

Nguyen Gia Bin - 104219428

The screenshot shows the AWS Management Console interface for associating an Elastic IP address with an EC2 instance. The top navigation bar includes tabs for Assignment 1a, Assignment 2_UQ_50.pdf, Associate Elastic IP address, and Launch AWS Academy Learner. The main content area is titled "Associate Elastic IP address" and shows the following steps:

- Elastic IP address: 52.1.196.227
- Resource type: Instance (selected)
- Instance: i-02525c87ecb5e4e54
- Private IP address: Choose a private IP address (dropdown menu)
- Reassociation: Allow this Elastic IP address to be reassociated (checkbox)

At the bottom right are "Cancel" and "Associate" buttons.

The screenshot shows the AWS EC2 Instances page. The left sidebar lists various services like CloudShell, Feedback, EC2 Dashboard, and EC2 Global View. The main content area displays a table of Elastic IP addresses:

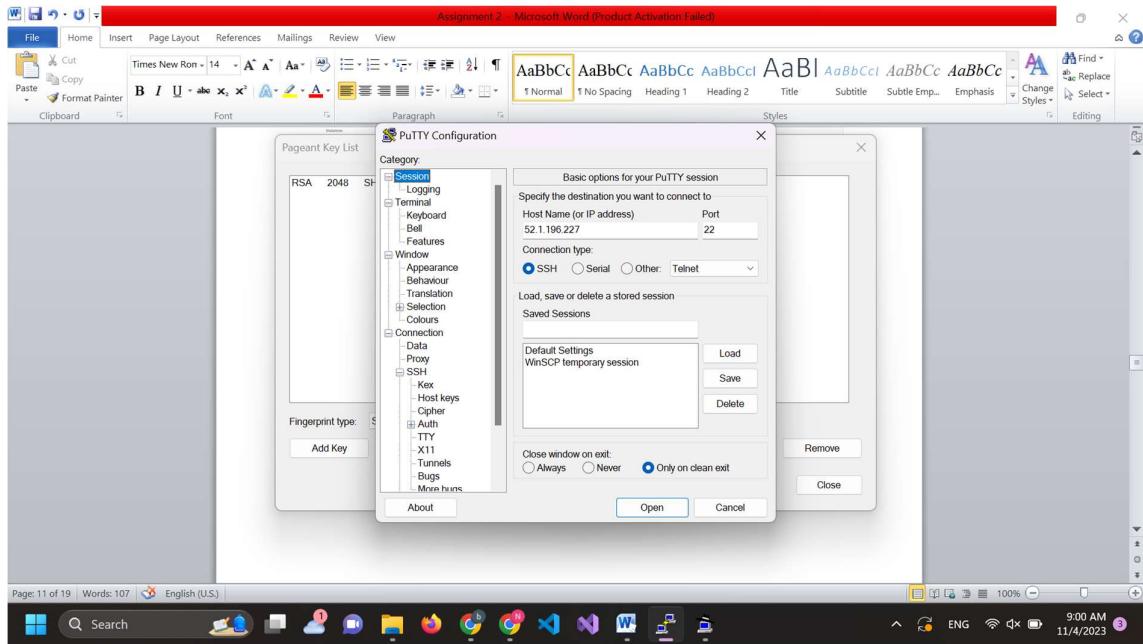
Name	Allocated IPv4 add...	Type	Allocation ID	Reverse DNS record	Associated instance ID	Private IP address
-	52.1.196.227	Public IP	eipalloc-0e0f3f74a8348fbef	-	i-02525c87ecb5e4e54	10.0.196

A message at the top indicates: "Elastic IP address associated successfully. Elastic IP address 52.1.196.227 has been associated with instance i-02525c87ecb5e4e54".

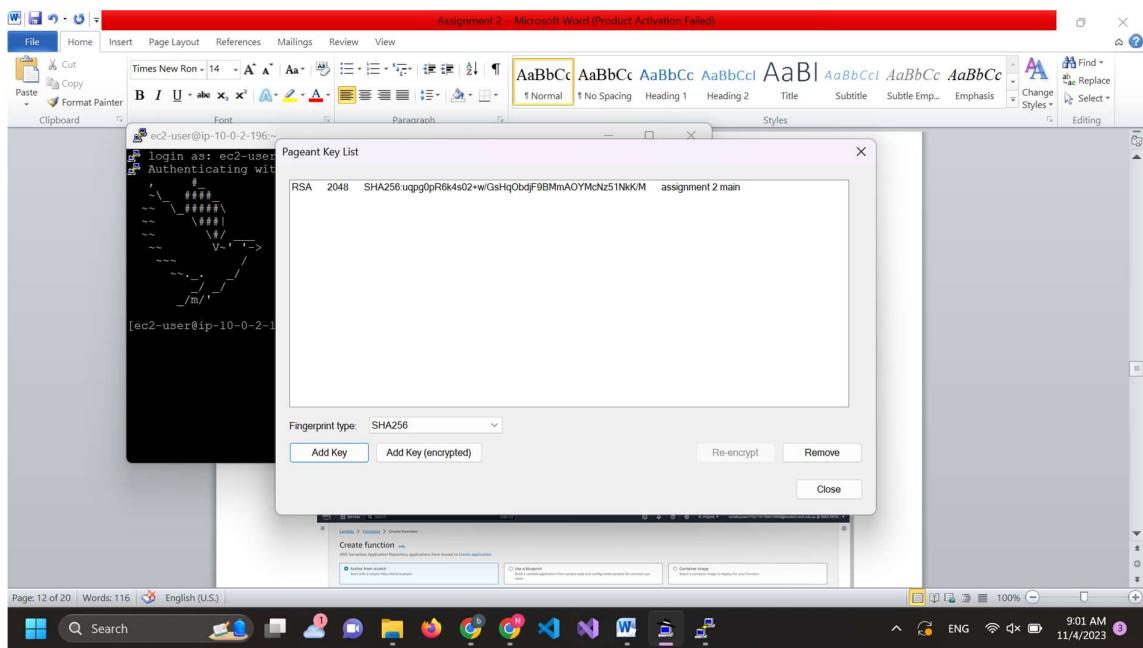
Nguyen Gia Bin - 104219428

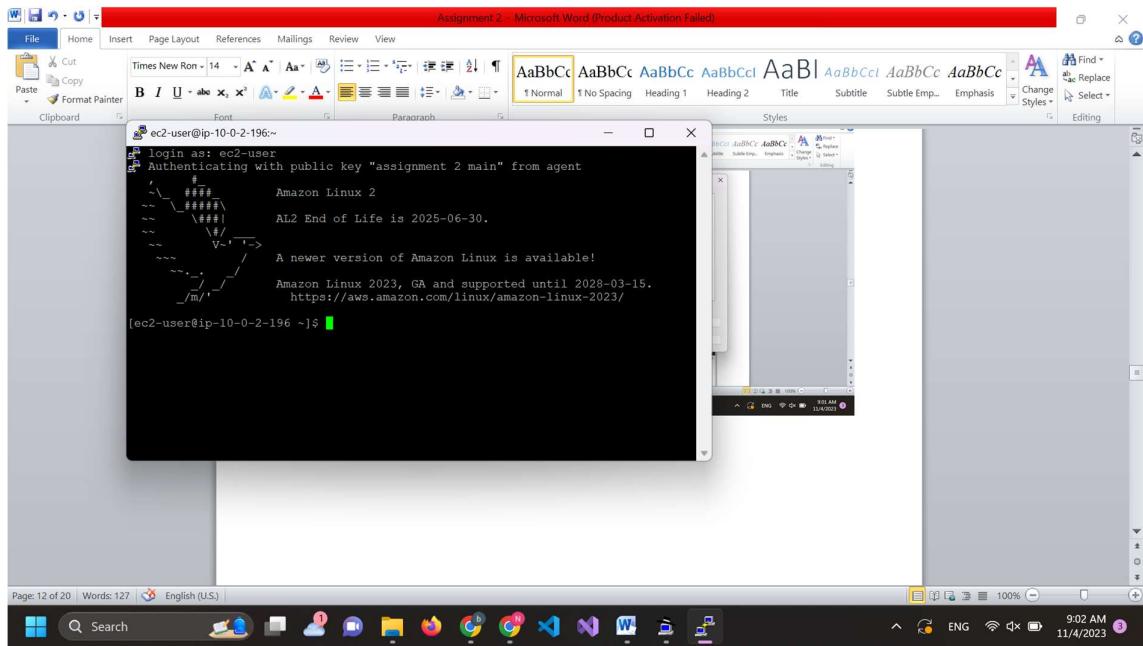
2.5.3: Install PHPmyadmin into Dev Server

Go into Putty and use Dev server public ipv4

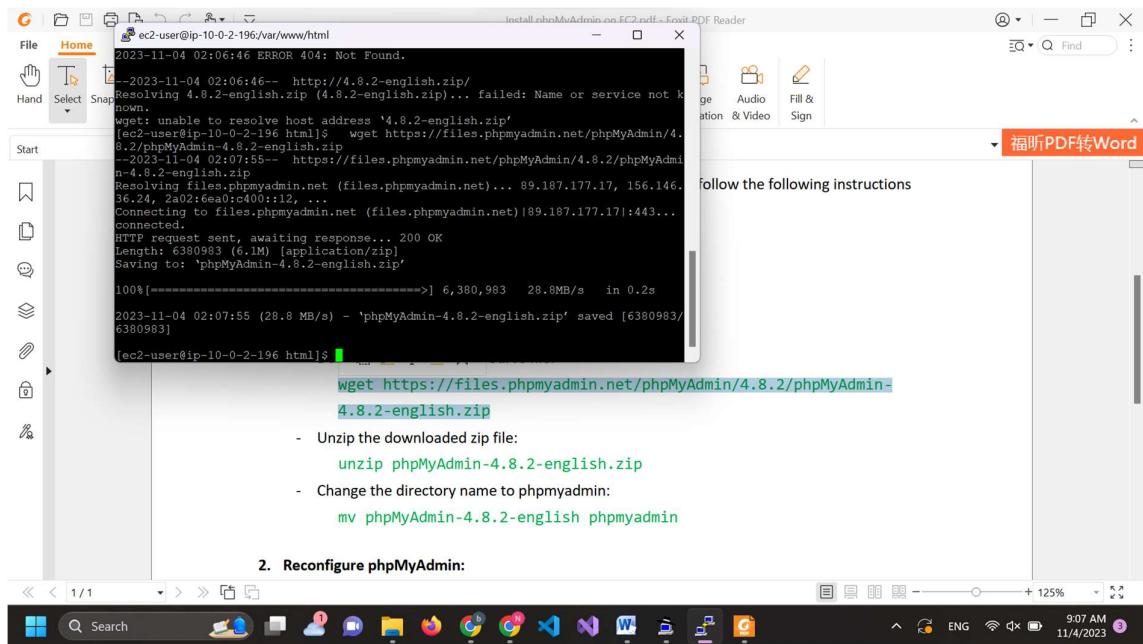


Put the key from assignment 1 (I rename it) into pageant





Now start installing phpmyadmin using the command



Nguyen Gia Bin - 104219428

The image shows a Windows desktop environment with two PDF files open in Foxit Reader and a terminal window.

Top PDF Document:

Section 1: Download phpMyAdmin

- Download phpMyAdmin from <https://github.com/phpmyadmin/phpmyadmin/releases/tag/v4.8.2-english>
- Unzip the downloaded file: `unzip phpMyAdmin-4.8.2-english.zip`
- Change the directory to `phpMyAdmin-4.8.2-english`: `mv phpMyAdmin-4.8.2-english phpmyadmin`

Bottom PDF Document:

Section 2: Reconfigure phpMyAdmin

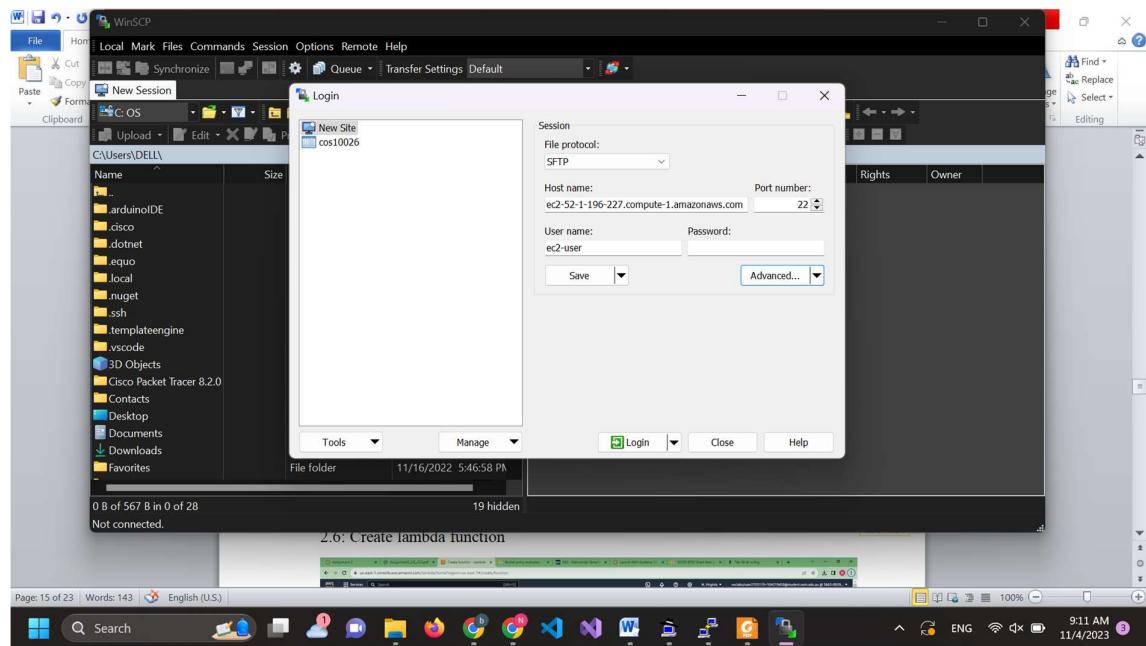
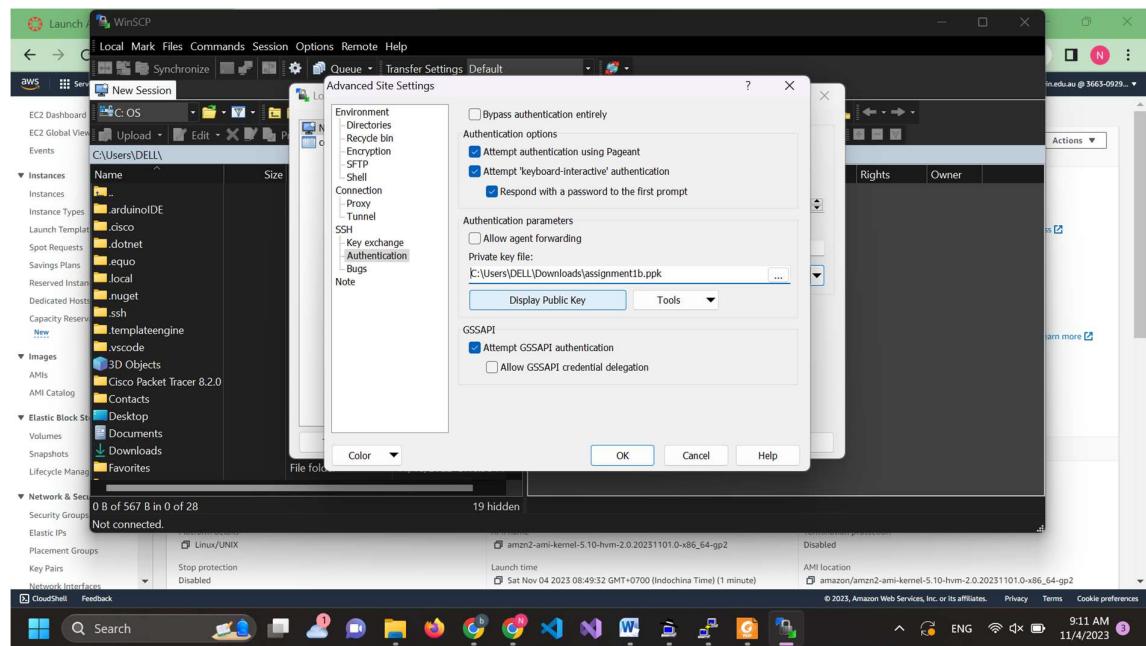
- Download phpMyAdmin from <https://github.com/phpmyadmin/phpmyadmin/releases/tag/v4.8.2-english>
- Unzip the downloaded file: `unzip phpMyAdmin-4.8.2-english.zip`
- Change the directory to `phpMyAdmin-4.8.2-english`: `mv phpMyAdmin-4.8.2-english phpmyadmin`

Terminal Window:

Both terminal windows show the command `mv phpMyAdmin-4.8.2-english phpmyadmin` being run in the directory `/var/www/html`.

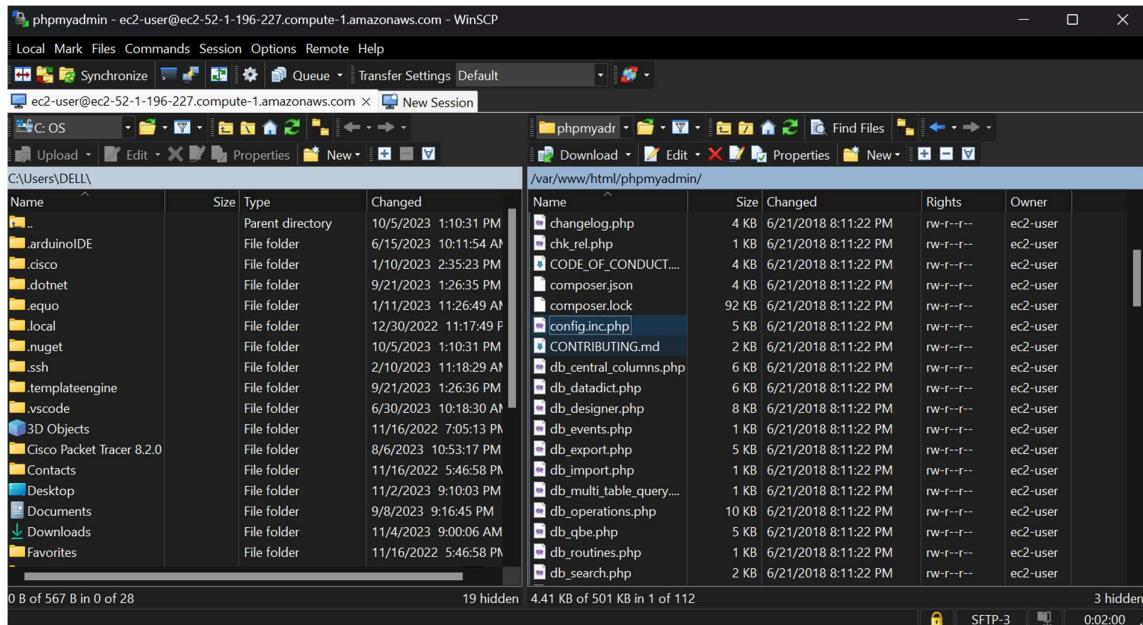
Open Win SCP using Devserver public DNS as Hostname

Nguyen Gia Bin - 104219428

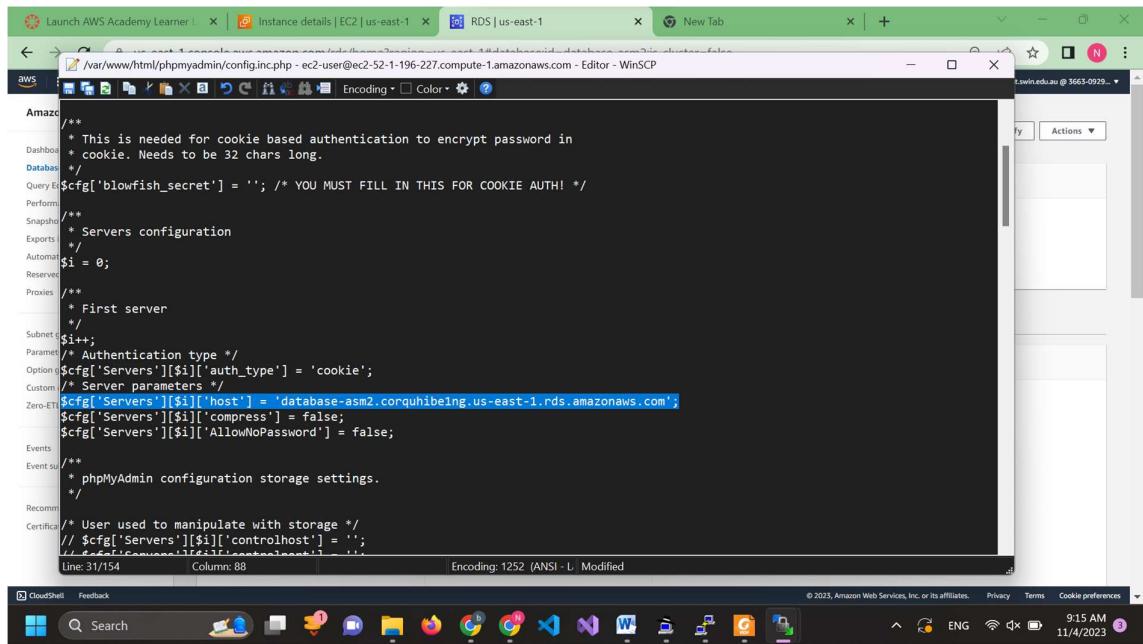


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Reconfigure phpmyadmin

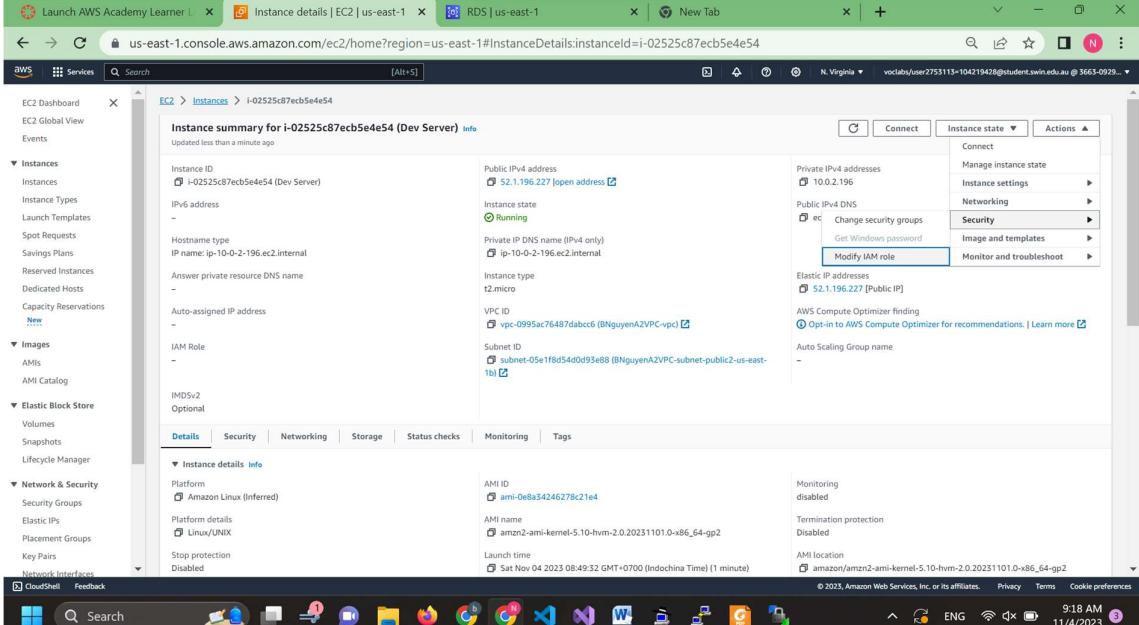


Change “localhost” to my RDS endpoint



Nguyen Gia Binh - 104219428

Modify IAM role



The screenshot shows the AWS EC2 Instances page. The instance summary for i-02525c87ecb5e4e54 (Dev Server) is displayed. The 'Actions' menu is open, and the 'Modify IAM role' option is selected. Other options in the menu include Connect, Manage instance state, Instance settings, Networking, Security, Image and templates, and Monitor and troubleshoot.

Instance summary for i-02525c87ecb5e4e54 (Dev Server)

Instance ID: i-02525c87ecb5e4e54 (Dev Server)

Public IPv4 address: 52.1.196.227 [open address]

Private IPv4 addresses: 10.0.2.196

Instance state: Running

Private IP DNS name (IPv4 only): ip-10-0-2-196.ec2.internal

Instance type: t2.micro

VPC ID: vpc-0995ac76487dabc6 (NguyenA2VPC-vpc)

Subnet ID: subnet-05e1f8d54d0d93e88 (NguyenA2VPC-subnet-public2-us-east-1b)

Auto Scaling Group name: -

IAM Role: -

IMDSv2 Optional: -

Platform: Amazon Linux (Inferred)

AMI ID: ami-0eba34246278c21e4

AMI name: amzn2-ami-kernel-5.10-hvm-2.0.20231101.0-x86_64-gp2

Monitoring: disabled

Termination protection: Disabled

Launch time: Sat Nov 04 2023 08:49:32 GMT+0700 (Indochina Time) (1 minute)

AMI location: amazon/amzn2-ami-kernel-5.10-hvm-2.0.20231101.0-x86_64-gp2

Network & Security: -

Security Groups: -

Elastic IPs: -

Placement Groups: -

Key Pairs: -

Network Interfaces: -

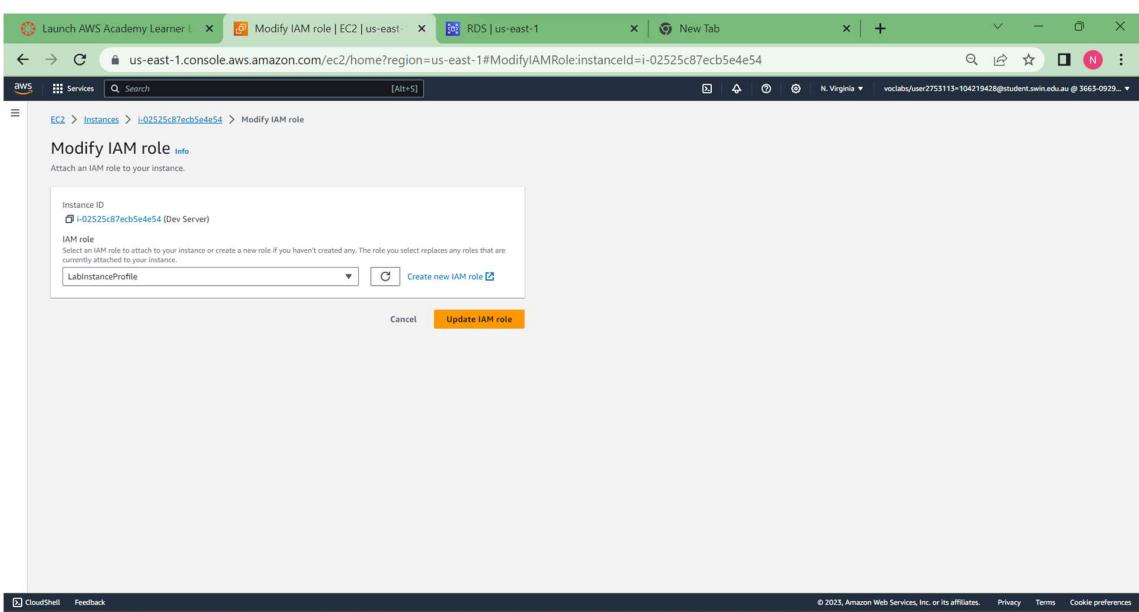
CloudShell Feedback: -

Search: Search

Actions: Connect, Manage instance state, Instance settings, Networking, Security, Image and templates, Monitor and troubleshoot, Modify IAM role, Elastic IP addresses, AWS Compute Optimizer finding, Auto Scaling Group name.

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System Tray: ENG, 9:18 AM, 11/4/2023, 3 notifications



The screenshot shows the 'Modify IAM role' dialog box for instance i-02525c87ecb5e4e54. The 'LabInstanceProfile' role is selected in the dropdown menu. The 'Create new IAM role' button is visible. The 'Update IAM role' button is highlighted in orange.

Modify IAM role

Attach an IAM role to your instance.

Instance ID: i-02525c87ecb5e4e54 (Dev Server)

IAM role: Select an IAM role to attach to your instance or create a new role if you haven't created any. The role you select replaces any roles that are currently attached to your instance.

LabInstanceProfile Create new IAM role

Cancel Update IAM role

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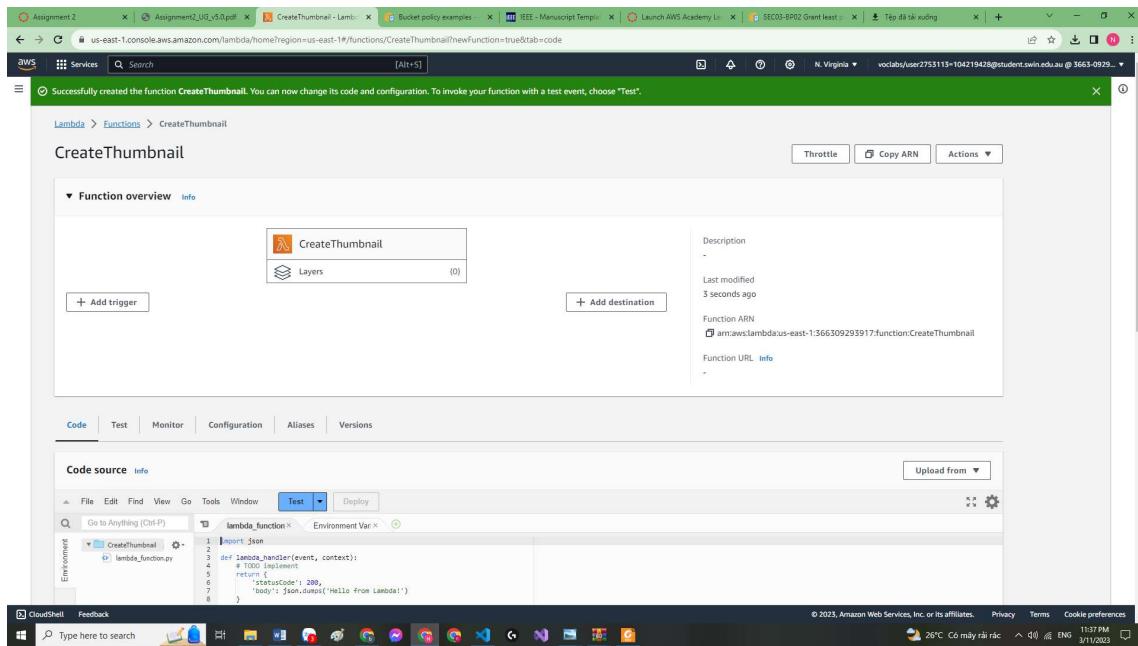
System Tray: ENG, 9:19 AM, 11/4/2023, 3 notifications

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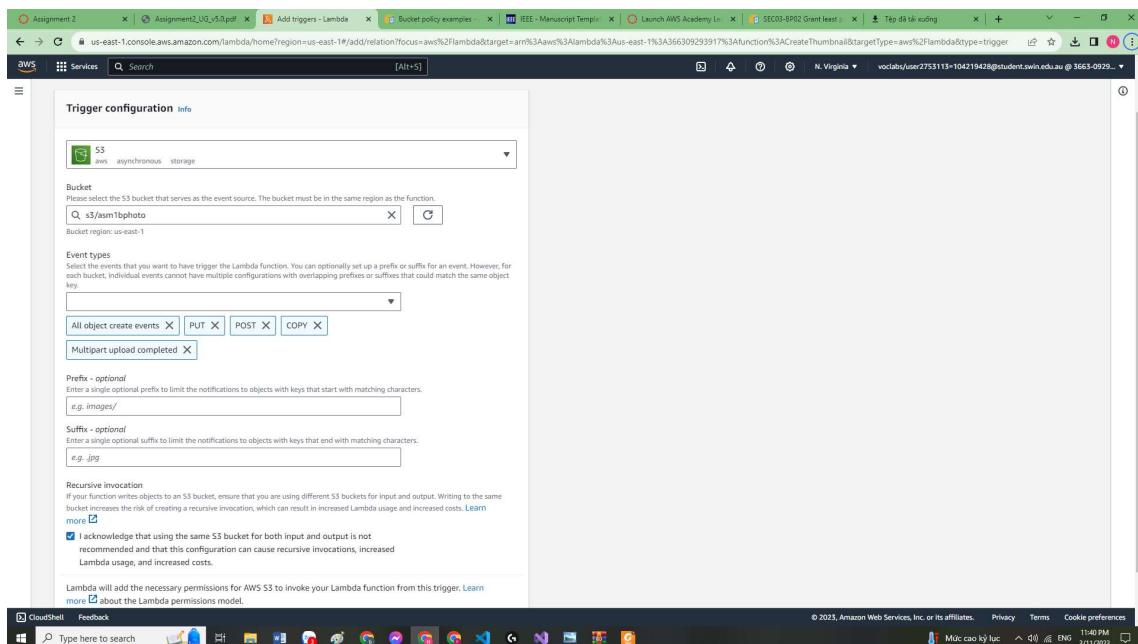
The screenshot shows the AWS Lambda console interface. A modal window titled "Successfully attached LambdaProfile to instance i-02525c87ecb5e4e54" is displayed over the main "Instances" list. The list shows three instances: "Bastion/Web S..." (t2.micro), "Dev Server" (t2.micro), and "TestInstance" (t2.micro). All instances are running and have passed 2/2 checks. The main navigation bar includes "Launch AWS Academy Learner", "Instances | EC2 | us-east-1", "RDS | us-east-1", "New Tab", and "N. Virginia". The bottom status bar shows the date and time as 11/4/2023.

2.6: Create lambda function

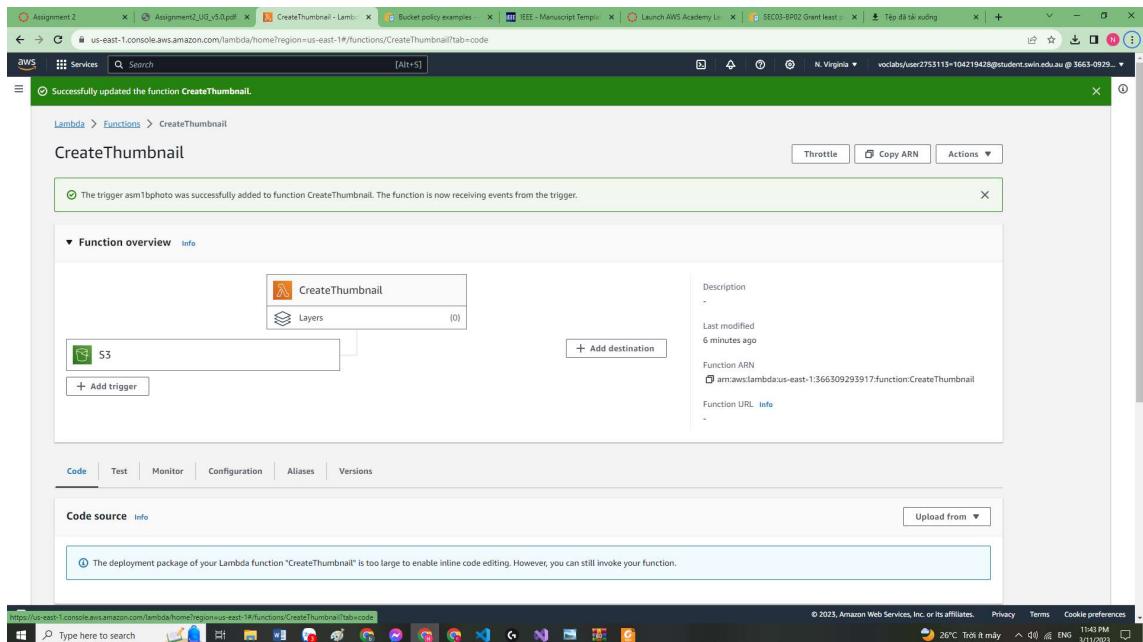
The screenshot shows the "Create function" wizard in the AWS Lambda console. The first step, "Author from scratch", is selected. Other options shown are "Use a blueprint" and "Container image". The "Basic information" section allows setting the function name to "CreateThumbnail" and choosing Python 3.7 as the runtime. The "Architecture" section shows "x86_64" selected. The "Permissions" section includes a "Change default execution role" link and "Execution role" options for creating a new role or using an existing one. The bottom status bar shows the date and time as 11/3/2023.



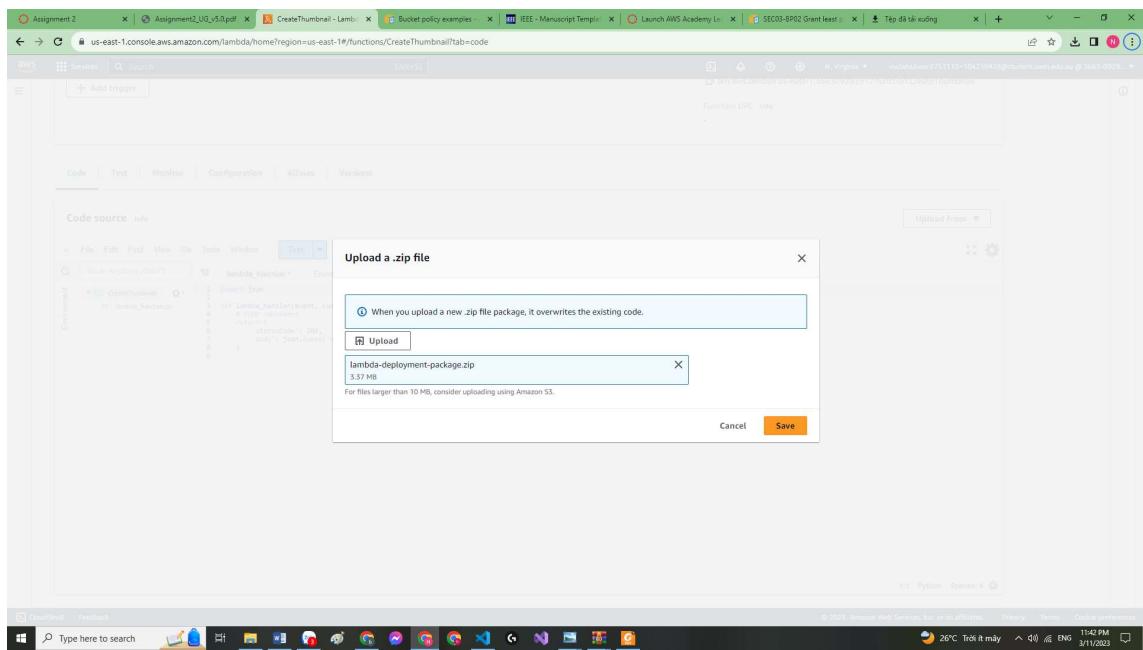
2.6.2:Configure the trigger:

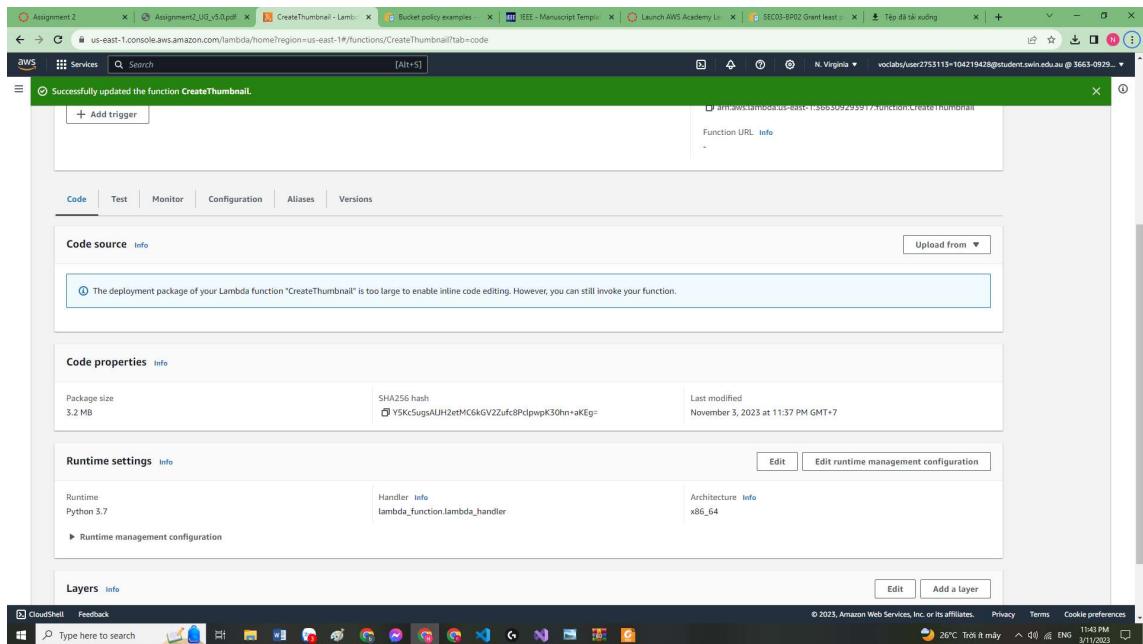


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2.6.3: Upload a deployment package that I download from Canvas

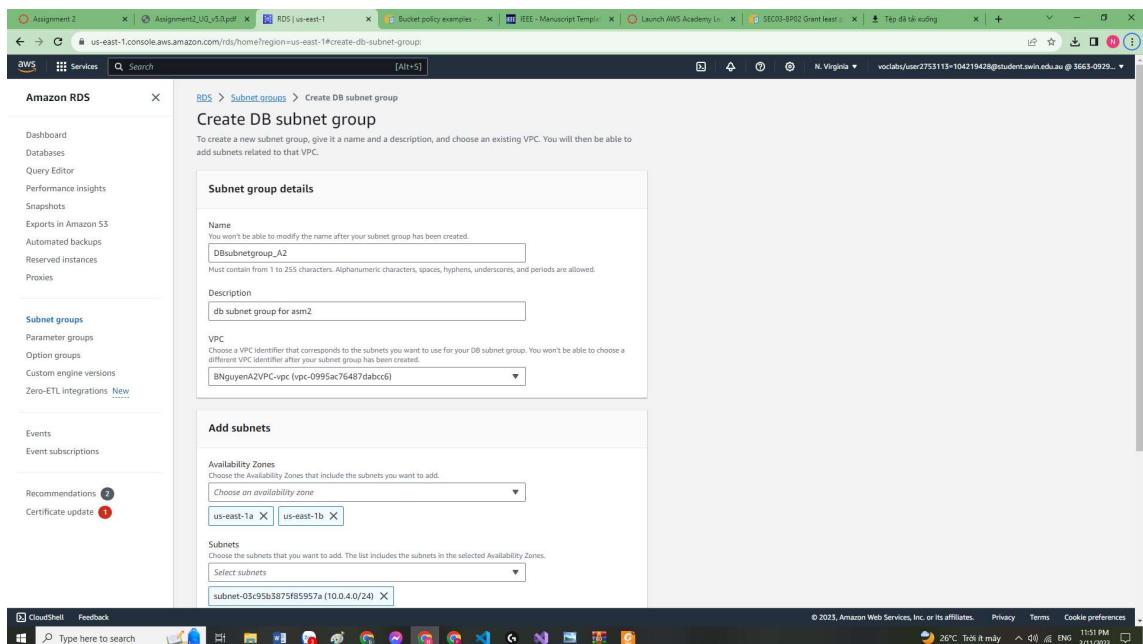




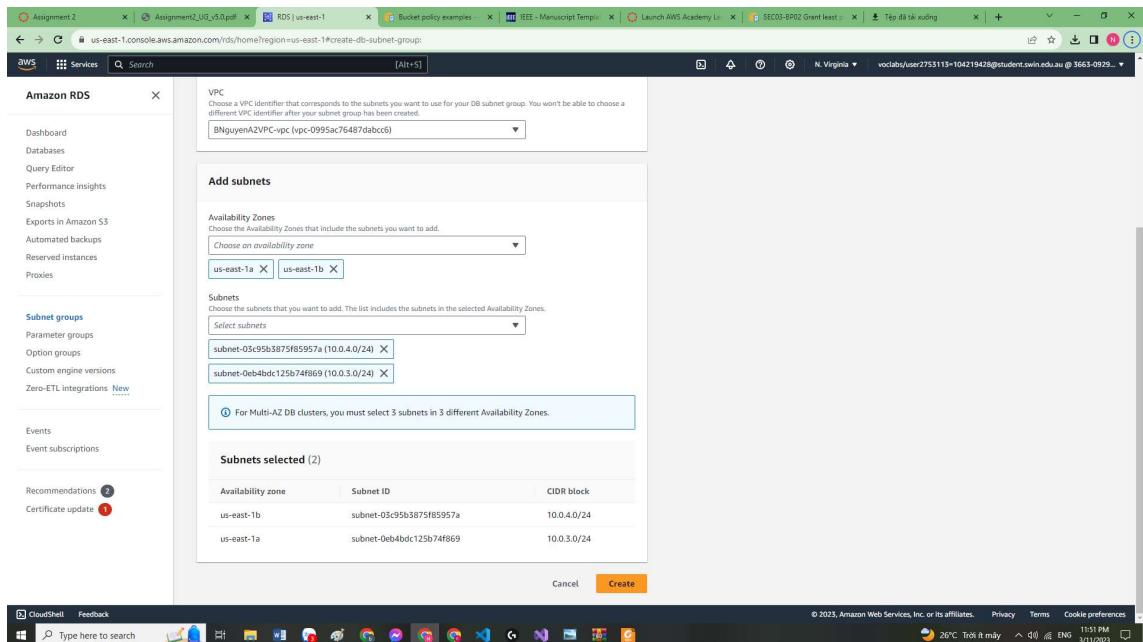
Upload photoalbum into the dev server

2.7: RDS database

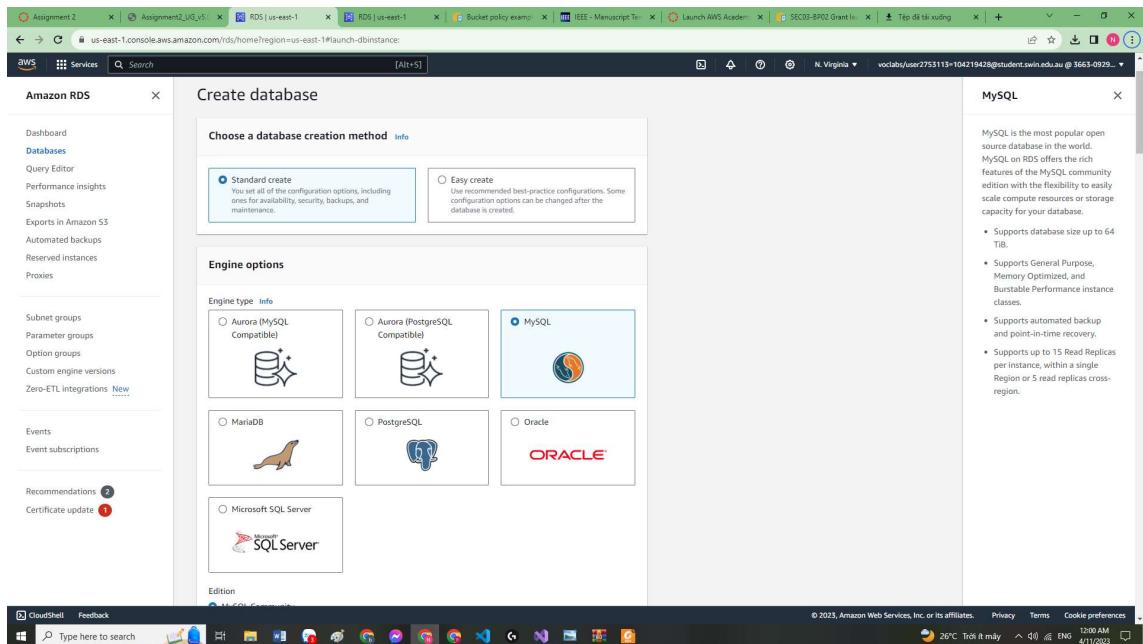
2.7.1: Create the database subnet group



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2.7.2: Config the database



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The screenshot shows the AWS RDS MySQL Community edition configuration page. On the left, a sidebar lists various database options like Dashboard, Databases, and Engine Version (MySQL 8.0.28). The main area is titled 'Edition' and shows 'MySQL Community'. It includes sections for 'Known issues/limitations', 'Show versions that support the Multi-AZ DB cluster', 'Show versions that support the Amazon RDS Optimized Writes', 'Engine Version' (MySQL 8.0.28), 'Templates' (Production, Dev/Test, Free tier selected), and 'Availability and durability'. A right-hand panel provides a summary of MySQL features, including support for up to 64 TiB, General Purpose, Memory Optimized, and Burstable Performance instance classes, automated backup, point-in-time recovery, and up to 15 Read Replicas per instance.

The screenshot shows the 'Settings' tab of the AWS RDS MySQL instance creation page. It requires a 'DB instance identifier' (e.g., 'Database-AS2M2') and a 'Master username' (e.g., 'admin'). Under 'Credentials Settings', there are options for 'Manage master credentials in AWS Secrets Manager' (unchecked) and 'Auto generate a password' (unchecked). Both fields have placeholder text: 'Type a login ID for the master user of your DB instance.' and 'Amazon RDS can generate a password for you, or you can specify your own password.'. Below these are fields for 'Master password' and 'Confirm master password', both containing '*****'. The right-hand panel reiterates MySQL's features and storage capacity.

Password: lickmya707

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Instance configuration
The DB instance configuration options below are limited to those supported by the engine that you selected above.

DB instance class Info
▼ Hide Filters

Include previous generation classes

Standard classes (includes m classes)

Memory optimized classes (includes r and x classes)

Burstable classes (includes t classes)

Storage

Storage type Info
General Purpose SSD (gp2)
Baseline performance determined by volume size

Allocated storage Info
20 GiB
The minimum value is 20 GiB and the maximum value is 6,744 GiB

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

Compute resource
Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that your compute resource can connect to this database.

Don't connect to an EC2 compute resource
Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

Connect to an EC2 compute resource
Set up a connection to an EC2 compute resource for this database.

Network type Info
To use dual-stack mode, make sure that you associate an IPv6 CIDR block with a subnet in the VPC you specify.

IPv4
Your resources can communicate only over the IPv4 addressing protocol.

Dual-stack mode
Your resources can communicate over IPv4, IPv6, or both.

Virtual private cloud (VPC) Info
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

BNGuyenA2VPC-vcpc (vcpc-0995ac76487dabc6)
4 Subnets, 2 Availability Zones

Only VPCs with a corresponding DB subnet group are listed.

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

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The screenshot shows the AWS RDS MySQL setup configuration page. The left sidebar lists various RDS services like Dashboard, Databases, Query Editor, etc. The main panel has sections for Public access, VPC security group (Firewall), Availability Zone, RDS Proxy, Certificate authority - optional, and Database authentication. A right sidebar provides MySQL details and a list of features.

MySQL

- MySQL is the most popular open source database in the world.
- MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.
- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

The screenshot shows the AWS RDS database creation success page. It displays a message about successfully creating a DB subnetgroup and provides a link to view credential details. It also highlights the introduction of Aurora I/O-Optimized. Below this, a modal window provides information on creating a Blue/Green deployment to minimize downtime during upgrades. The main table lists two databases: 'assignment1b-db' and 'database-asm2'. The table includes columns for DB identifier, Status, Role, Engine, Region & AZ, Size, Actions, CPU, Current activity, Maintenance, and VPC.

DB identifier	Status	Role	Engine	Region & AZ	Size	Actions	CPU	Current activity	Maintenance	VPC
assignment1b-db	Available	Instance	MySQL Community	us-east-1a	db.t3.micro	2 Actions	2.66%	0 Connections	none	vpc-0a77c0d69006
database-asm2	Creating	Instance	MySQL Community	-	db.t3.micro	-	-	-	none	vpc-0995ac76487d

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The screenshot shows the AWS RDS console with the database-asm2 instance selected. The left sidebar shows various RDS management options like Dashboard, Databases, and Performance insights. The main summary panel displays the DB identifier (database-asm2), CPU usage (3.18%), Status (Available), and Engine (MySQL Community). It also shows the instance class (db.t3.micro) and Region & AZ (us-east-1b). Below the summary, there are tabs for Connectivity & security, Monitoring, Logs & events, Configuration, Maintenance & backups, and Tags. The Connectivity & security tab provides detailed information about the endpoint, networking (VPC, subnet group, subnets), and security (VPC security groups, publicly accessible status, certificate authority, and DB instance certificate expiration date).

Access phpmyadmin through ec2 instance

<http://ec2-52-1-196-227.compute-1.amazonaws.com/phpmyadmin/>

The screenshot shows a browser window with the URL <http://ec2-52-1-196-227.compute-1.amazonaws.com/phpmyadmin/>. The page displays the phpMyAdmin logo and the "Welcome to phpMyAdmin" message. A login form is present with fields for "Username" and "Password", and a "Go" button.



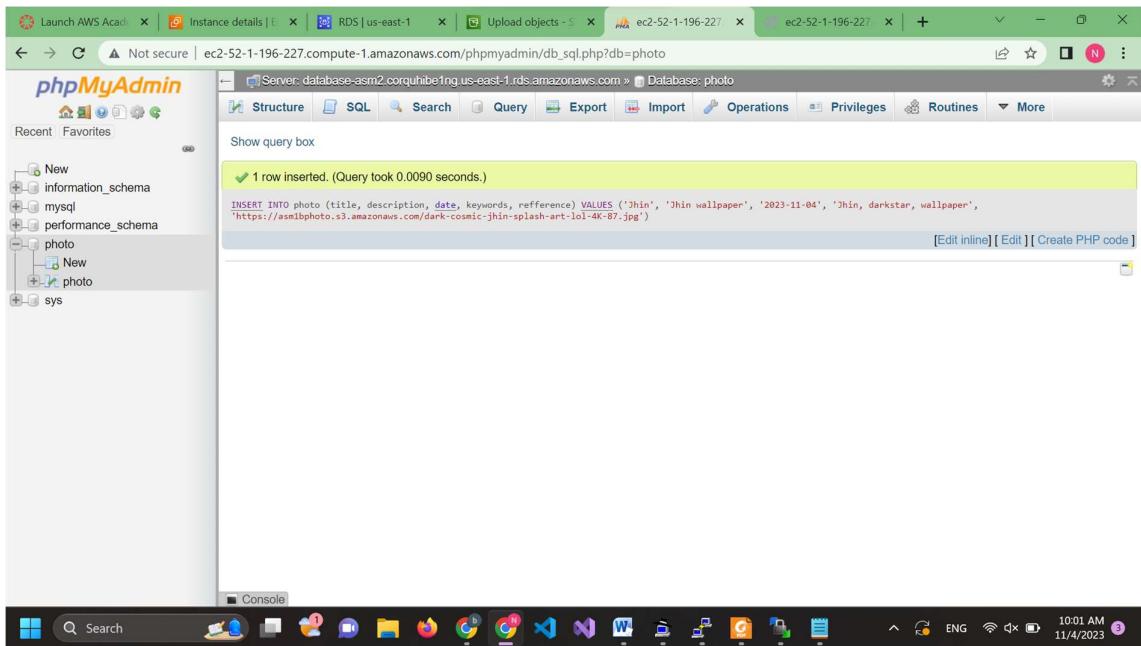
The screenshot shows the phpMyAdmin configuration page. On the left, there's a sidebar with 'Recent' and 'Favorites' sections. The main area has two tabs: 'General settings' and 'Appearance settings'. Under 'General settings', there are fields for 'Change password' and 'Server connection collation' set to 'utf8mb4_unicode_ci'. Under 'Appearance settings', there are 'Theme' (set to 'pnahomme') and 'Font size' (set to '82%'). To the right, there are three panels: 'Database server' (listing server details like host, type, version, and user), 'Web server' (listing Apache, MySQL, PHP, and curl versions), and 'phpMyAdmin' (listing version information). At the bottom, there's a toolbar with various icons.

Create the database call photo and create its table using this SQL

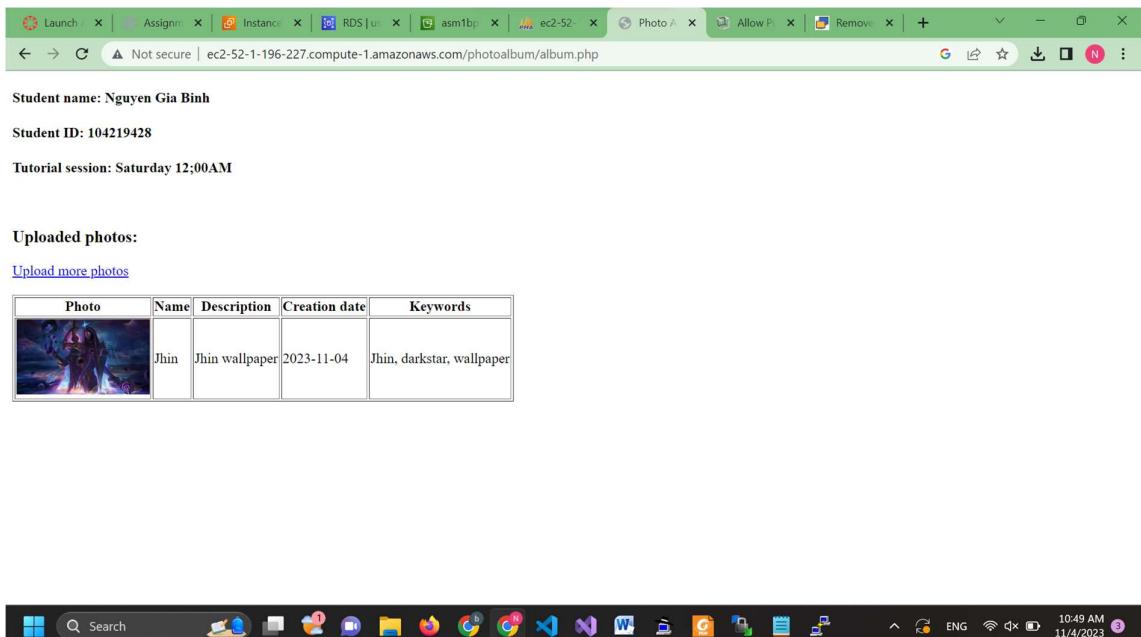
```
CREATE TABLE photo (
    title VARCHAR(255),
    description VARCHAR(255),
    date DATE,
    keywords VARCHAR(255),
    refference VARCHAR(255)
);
```

The screenshot shows the phpMyAdmin SQL query editor. The database selected is 'photo'. The query window contains the SQL code for creating the 'photo' table. Below the query, there are buttons for 'Clear', 'Format', and 'Get auto-saved query'. There are also checkboxes for 'Bind parameters', 'Show this query here again', 'Retain query box', 'Rollback when finished', and 'Enable foreign key checks'. At the bottom right, there's a 'Go' button. The status bar at the bottom indicates the time as 9:39 AM on 11/4/2023.

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Test if the Photo is visible when access from EC2 public DNS (this is before I change the bucket policy)



Testing upload photo

There are 2 broken row because I change the photouploader file so it got broken but the 3 attempt is using the original photouploader php file.

* There was an error in this step but I forgot to take screenshot, You need to create a folder name “uploads” in order to upload photo and I created it in the photoalbum folder*

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Uploaded photos:

[Upload more photos](#)

Photo	Name	Description	Creation date	Keywords
	Jhin	Jhin wallpaper	2023-11-04	Jhin, darkstar, wallpaper
	Jhin_cool2	Jhinattack2		attack ult
	Jhin_cool2	Jhinattack2		attack ult
	Jhin_cool2123	123123	2023-11-04	attack ult12323123



Resizing photo: It is the 2 rows above the last row in this screenshot below

A screenshot of the AWS S3 console. The left sidebar shows navigation options like Buckets, Storage Lens, and Feature spotlight. The main area is titled "Objects (13)" and lists 13 items in a table. The columns include Name, Type, Last modified, Size, and Storage class. The objects listed are: "dark-cosmic-jhin-splash-art-lol-4k-87.jpg" (jpg, 250.7 KB, Standard), "defaultstyle.css" (css, 388.0 B, Standard), "jhin-dark-cosmic-lol-art-0-hd-wallpaper-1920x1080-uhdpaper.com-390_0_a.jpg" (jpg, 399.7 KB, Standard), "jhin-empyrean-lol-hd-wallpaper-uhdpaper.com-245@1@j.jpg" (jpg, 513.5 KB, Standard), "mydb.php" (php, 2.6 KB, Standard), "photo.php" (php, 1.2 KB, Standard), "photouploader.php" (php, 4.0 KB, Standard), "photouploadtemplate.html" (html, 1.4 KB, Standard), "resized-jhin-dark-cosmic-lol-art-0-hd-wallpaper-1920x1080-uhdpaper.com-390_0_a.jpg" (jpg, 52.2 KB, Standard), "resized-jhin-empyrean-lol-hd-wallpaper-uhdpaper.com-245@1@j.jpg" (jpg, 72.5 KB, Standard), and "utils.php" (php, 1.7 KB, Standard). The table has a header row with sorting icons. The bottom of the screen shows the Windows taskbar with pinned icons and the system tray.

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2.8: Security group

The screenshot shows the AWS CloudShell interface. The user has navigated to the EC2 service and selected the 'Security Groups' option. A new security group named 'ELBSGA2' is being created. The 'Details' tab is active, showing the security group name, ID, owner, and VPC information. The 'Inbound rules' tab is selected, displaying two rules: one for port 80 (HTTP) and one for port 443 (HTTPS). Both rules are defined by security group rule IDs.

Name	Security group rule ID	IP version	Type	Protocol	Port range	Source	Description
sgr-0751ff1b8b81692d3	sg-0acd87d4cc36047fe	IPv4	HTTP	TCP	80	0.0.0.0/0	-
sgr-097d18010a7beff7bd	sg-0acd87d4cc36047fe	IPv4	HTTPS	TCP	443	0.0.0.0/0	-

The screenshot shows the AWS CloudShell interface again. The user has created a new security group named 'WebServerSG_A2'. The 'Details' tab is active, showing the security group name, ID, owner, and VPC information. The 'Inbound rules' tab is selected, displaying two rules: one for port 80 (HTTP) and one for port 22 (SSH). Both rules are defined by security group rule IDs.

Name	Security group rule ID	IP version	Type	Protocol	Port range	Source	Description
sgr-03a23338cf1d20629	sg-0c9e68c9dc95735ee	IPv4	HTTP	TCP	80	0.0.0.0/0	-
sgr-0e08c02cf78bfff76	sg-0c9e68c9dc95735ee	IPv4	SSH	TCP	22	0.0.0.0/24	-

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The screenshot shows the AWS EC2 console with the security group details for 'sg-0c190b1b8acf577a1 - NATServerSG_A2'. The 'Details' tab is selected, showing the following information:

Security group name	Security group ID	Description	VPC ID
NATServerSG_A2	sg-0c190b1b8acf577a1	NAT security group for asm2	vpc-0995ac76487dabcc6
Owner	366309293917	Inbound rules count 1 Permission entry	Outbound rules count 1 Permission entry

The 'Inbound rules' tab is active, displaying one rule:

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sgr-01c9f284a5f1a1ff6	IPv4	Custom TCP	TCP	0	0.0.0.0/24	-

At the bottom, the Windows taskbar shows various open applications including CloudShell, Feedback, and several browser tabs.

The screenshot shows the AWS EC2 console with the security group details for 'sg-045f76b793c1f55da - DevServerSG_A2'. The 'Details' tab is selected, showing the following information:

Security group name	Security group ID	Description	VPC ID
DevServerSG_A2	sg-045f76b793c1f55da	dev server security group for asm 2	vpc-0995ac76487dabcc6
Owner	366309293917	Inbound rules count 4 Permission entries	Outbound rules count 1 Permission entry

The 'Inbound rules' tab is active, displaying four rules:

Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
-	sgr-04083b5a7b06c77...	IPv4	SSH	TCP	22	0.0.0.0/0	-
-	sgr-05023fa20159021c8	-	HTTP	TCP	80	sg-0c190b1b8acf577a...	-
-	sgr-0a6b53e904d019...	IPv4	All TCP	TCP	0-65535	0.0.0.0/0	-
-	sgr-05f37240a5a32d7b	-	HTTPS	TCP	443	sg-0c190b1b8acf577a...	-

At the bottom, the Windows taskbar shows various open applications including CloudShell, Feedback, and several browser tabs.

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2.9: Network ACL

The screenshot shows the 'Create network ACL' page in the AWS VPC console. The 'Name' field is set to 'NACL2'. The 'VPC' dropdown is set to 'vpc-0995ac76487dabcc6 / BNguyenA2VPC-vpc'. A tag 'Name: NACL2' is added. The 'Create network ACL' button is highlighted.

Create network ACL Info

A network ACL is an optional layer of security that acts as a firewall for controlling traffic in and out of a subnet.

Network ACL settings

Name - optional
Creates a tag with a key of 'Name' and a value that you specify.

VPC
VPC to use for this network ACL

Tags
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key Value - optional Remove tag
Add tag
You can add up to 50 more tags

Cancel **Create network ACL**

The screenshot shows the 'acl-00afe6b37e53eb85 / NACL2' details page. It displays the updated inbound rules:

Rule number	Type	Protocol	Port range	Source	Allow/Deny
1	All ICMP - IPv4	ICMP (1)	All	0.0.0.0/0	Allow
2	Custom TCP	TCP (6)	32768 - 65535	0.0.0.0/0	Allow
3	HTTPS (443)	TCP (6)	443	0.0.0.0/0	Allow
4	SSH (22)	TCP (6)	22	0.0.0.0/0	Allow
5	MySQL/Aurora (3306)	TCP (6)	3306	0.0.0.0/0	Allow
6	All traffic	All	All	0.0.0.0/0	Allow
*	All traffic	All	All	0.0.0.0/0	Deny

You have successfully updated inbound rules for acl-00afe6b37e53eb85 / NACL2

Details Info

Network ACL ID: Associated with: - Default: No VPC ID:

Inbound rules (7) Edit inbound rules

Filter inbound rules

The screenshot shows the same 'acl-00afe6b37e53eb85 / NACL2' details page, but the bottom part is cut off.

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The screenshot shows the AWS VPC Network ACL Details page. The URL is us-east-1.console.aws.amazon.com/vpcconsole/home?region=us-east-1#NetworkAclDetails:networkAclId=acl-00aafe6b37e53eb85. The page displays a success message: "You have successfully updated subnet associations for acl-00aafe6b37e53eb85 / NACL2." Below this, the network ACL details are shown, including its ID (acl-00aafe6b37e53eb85), association with 2 subnets, and being the default. The VPC ID is vpc-0995ac76487dabcc6. The Subnet associations section lists two subnets: subnet-07c95b3875f85957a and subnet-0eb4bdcc123b74f869, both associated with NACL2 and located in us-east-1b and us-east-1a respectively, with IPv4 CIDR 10.0.4.0/24 and IPv6 CIDR -.

Name	Subnet ID	Associated with	Availability Zone	IPv4 CIDR	IPv6 CIDR
BNguyenA2VPC-subnet-private2...	subnet-07c95b3875f85957a	acl-00aafe6b37e53eb85 / NACL2	us-east-1b	10.0.4.0/24	-
BNguyenA2VPC-subnet-private1...	subnet-0eb4bdcc123b74f869	acl-00aafe6b37e53eb85 / NACL2	us-east-1a	10.0.3.0/24	-