

BUILDING A FACE DETECTION APP ON AWS

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OBJECTIVE:

The main objective of building this face detection application is to detect the image and describe about the image using the AWS.

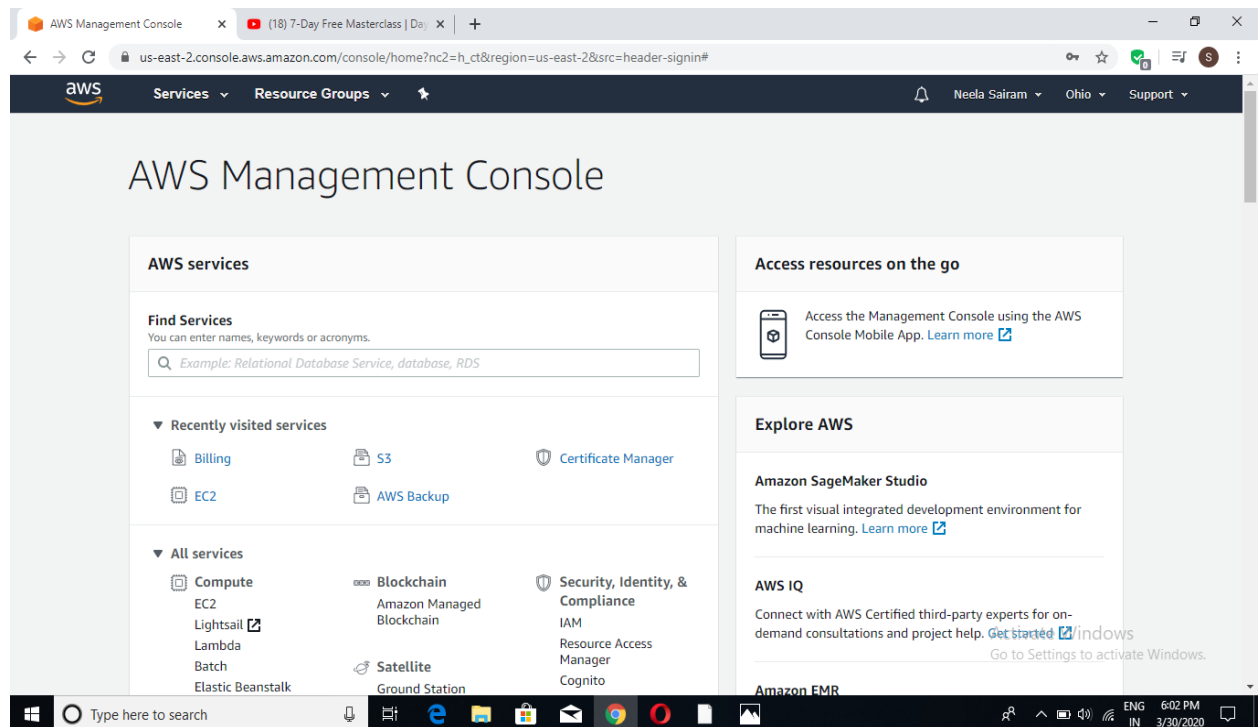
DESCRIPTION:

To detect the image, we use four components i.e., Telegram Bot, EC2, S3 and Amazon Rekognition. When the image is uploaded to the telegram, that image will be taken by the EC2 and will try to store that image into a bucket which is created. EC2 will also send that respective image to the Amazon Rekognition to detect the image, and the description of that image will be sent back as a response to the EC2 and ultimately to the Telegram Bot.

SCREENSHOTS:

AWS:

1. AWS Login screen with Username:



2. EC2 Dashboard:

The screenshot shows the AWS EC2 Management Console. The left sidebar contains navigation links for EC2 Dashboard, Events, Tags, Reports, Limits, INSTANCES, and IMAGES. The main content area displays a welcome message and a table of resources in the US East (Ohio) Region. The table lists Running instances (1), Elastic IPs (0), Dedicated Hosts (0), Snapshots (0), Volumes (1), Load balancers (0), Key pairs (2), Security groups (3), and Placement groups (0). A right-hand panel shows account attributes like VPC and Default VPC, and additional information like Windows activation. The bottom of the screen shows a Windows taskbar with the time 2:50 PM on 4/1/2020.

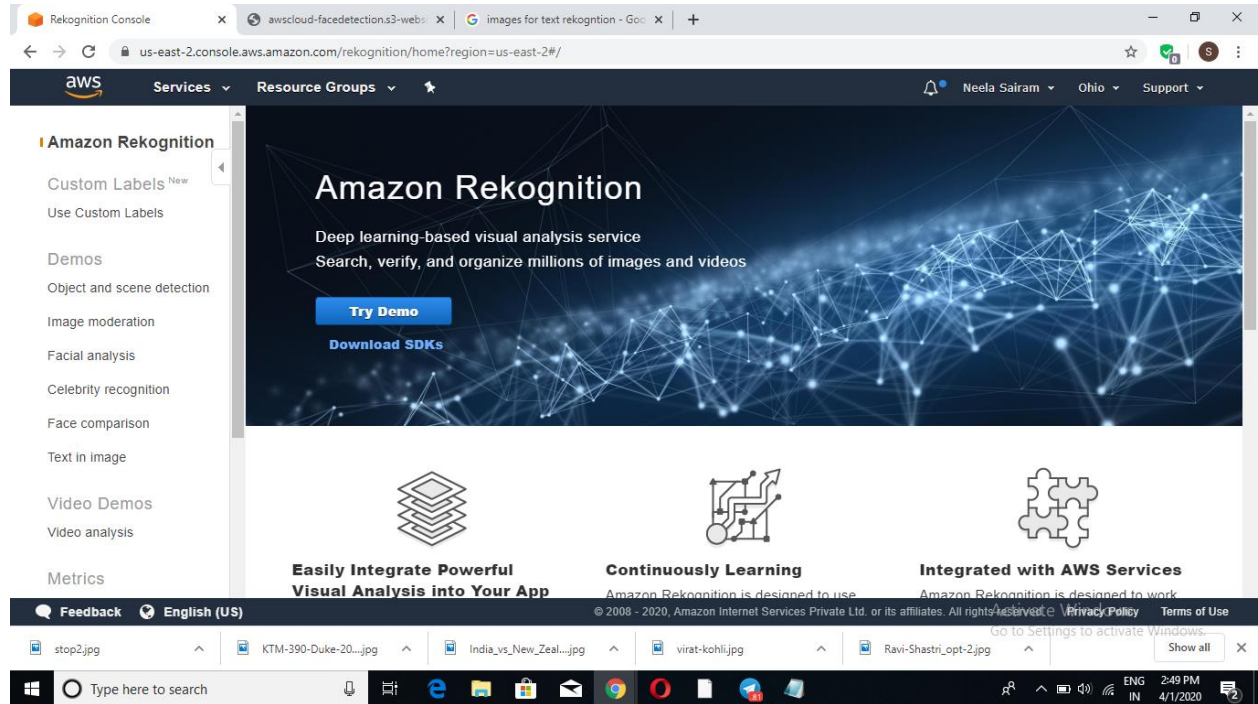
Resources	
Running instances	1
Elastic IPs	0
Dedicated Hosts	0
Snapshots	0
Volumes	1
Load balancers	0
Key pairs	2
Security groups	3
Placement groups	0

3. S3 Dashboard:

The screenshot shows the AWS S3 Management Console. The left sidebar contains navigation links for Buckets, Batch operations, Access analyzer for S3, Block public access, and Feature spotlight. The main content area displays a table of buckets in the US East (Ohio) Region. The table lists two buckets: awscloud-facedetection and ethunus-awscloud, both with public access and created on 2020-03-30T13:27:09.000Z and 2020-03-27T07:32:23.000Z respectively. A right-hand panel shows account attributes like VPC and Default VPC, and additional information like Windows activation. The bottom of the screen shows a Windows taskbar with the time 2:30 PM on 4/1/2020.

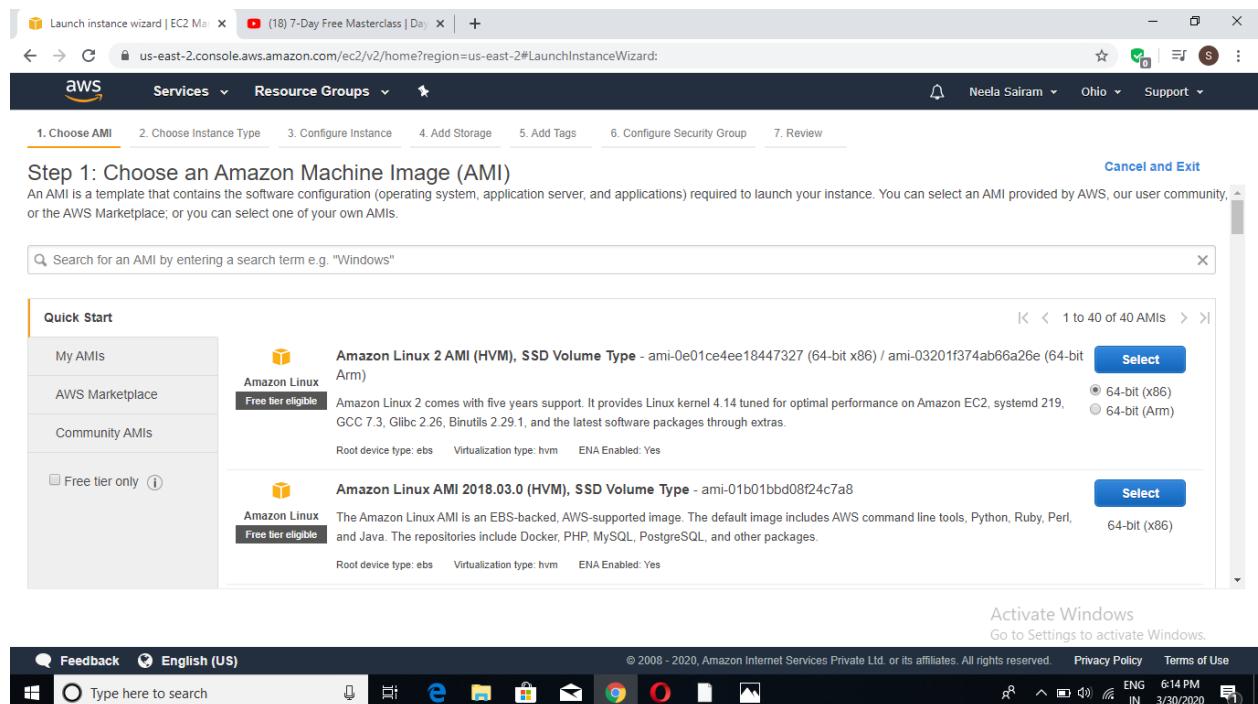
Name	Region	Access	Bucket created
awscloud-facedetection	US East (Ohio) us-east-2	Objects can be public	2020-03-30T13:27:09.000Z
ethunus-awscloud	US East (Ohio) us-east-2	Objects can be public	2020-03-27T07:32:23.000Z

4. Rekognition Dashboard:



EC2:

5. Choosing an AMI:



6. Choosing an Instance Type:

Launch instance wizard | EC2 M... x (18) 7-Day Free Masterclass | De... x +

us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#LaunchInstanceWizard:

aws Services Resource Groups

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance types Current generation Show/Hide Columns

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes

Cancel Previous Review and Launch Next: Configure Instance Details

Go to Settings to activate Windows.

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Type here to search

7. Adding Storage:

Launch instance wizard | EC2 M... x (18) 7-Day Free Masterclass | De... x +

us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#LaunchInstanceWizard:

aws Services Resource Groups

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/xvda	snap-0f54692056aaa4c20	8	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypt

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

Cancel Previous Review and Launch Next: Add Tags

Go to Settings to activate Windows.

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Type here to search

8. Configuring Security Group:

Launch instance wizard | EC2 Ma x (18) 7-Day Free Masterclass | De x +

us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#LaunchInstanceWizard:

aws Services Resource Groups

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☒ Create a new security group ☐ Select an existing security group

Security group name: launch-wizard-2

Description: launch-wizard-2 created 2020-03-30T18:18:25.953+05:30

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop
HTTP	TCP	80	Anywhere 0.0.0.0/0 ::/0	e.g. SSH for Admin Desktop

[Add Rule](#)

Warning
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.

[Cancel](#) [Previous](#) [Review and Launch](#)

Go to Settings to activate Windows.

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9. Key Pair Download:

Launch instance wizard | EC2 Ma x (18) 7-Day Free Masterclass | De x +

us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#LaunchInstanceWizard:

aws Services Resource Groups

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 7: Review Instance Launch

Please review your instance launch details. You can edit details before launching your instance.

Improve your instances' security
Your instances may be accessible from the Internet. You can also open additional ports in your security groups.

AMI Details
Amazon Linux 2 AMI (HVM), S...
Free tier eligible
Amazon Linux 2 comes with five years of software packages through extras.
Root Device Type: ebs Virtualization type: x86_64

Instance Type
Instance Type ECUs

Select an existing key pair or create a new key pair

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Choose an existing key pair
Select a key pair
awscloud

☒ I acknowledge that I have access to the selected private key file (awscloud.pem), and that without this file, I won't be able to log into my instance.

[Cancel](#) [Launch Instances](#)

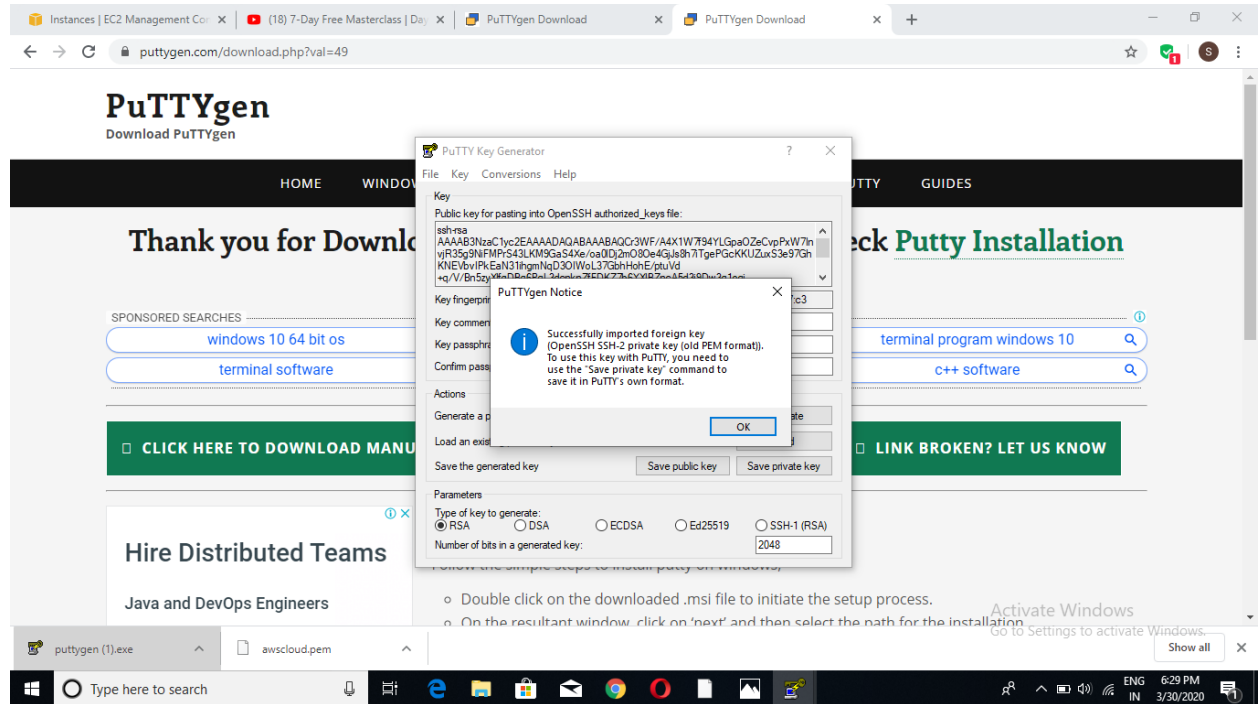
[Cancel](#) [Previous](#) [Launch](#)

Activate Windows
Go to Settings to activate Windows.

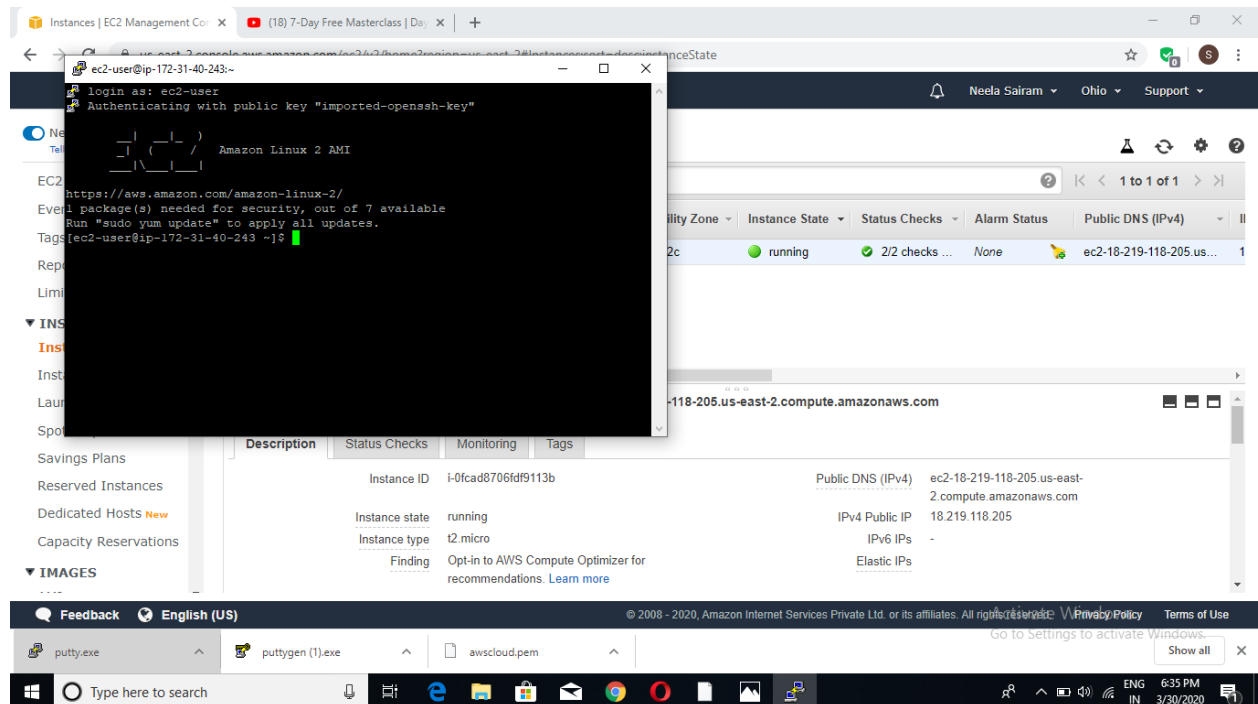
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awscloud.pem

10. PuTTYgen conversion from pem to ppk:

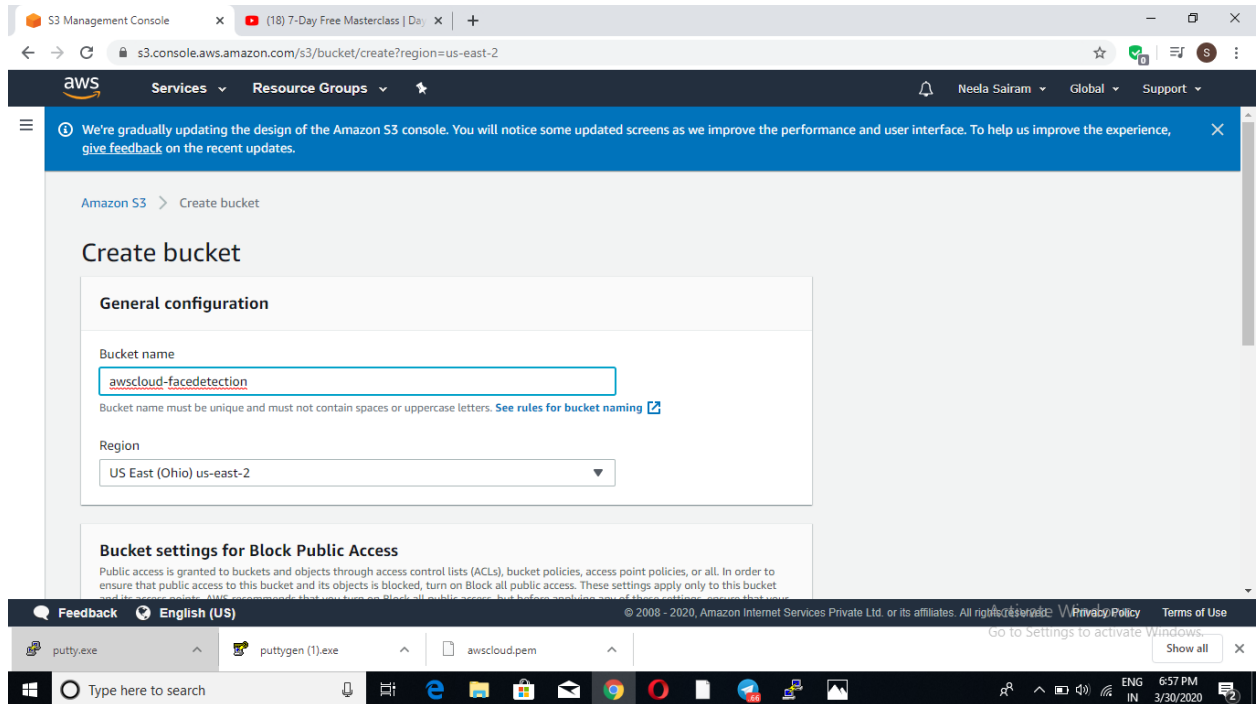


11. Logged in EC2 black screen:

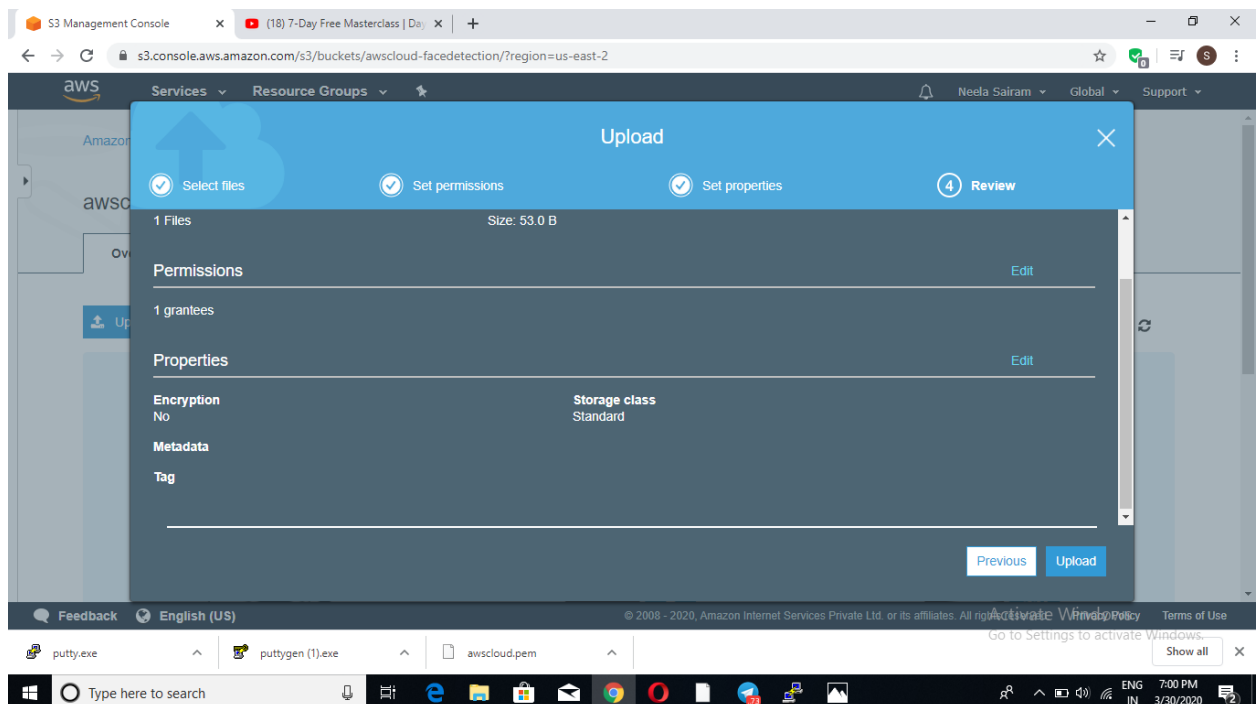


S3:

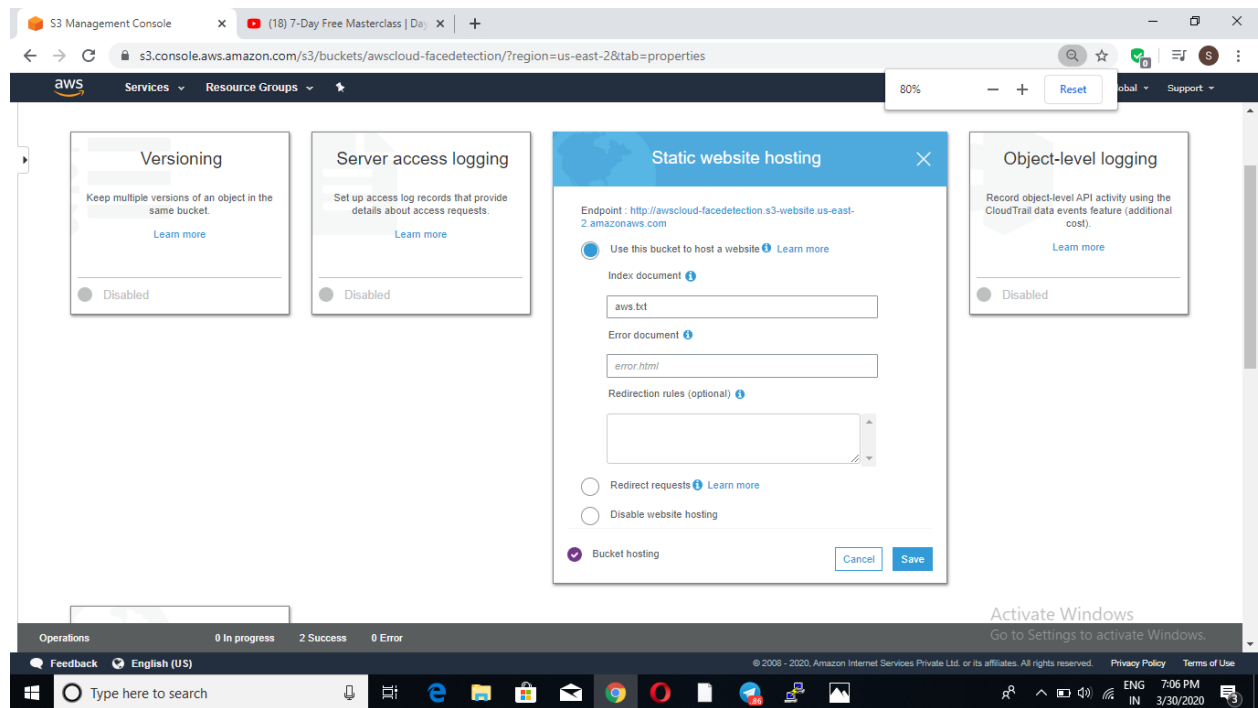
12. Creating a Bucket:



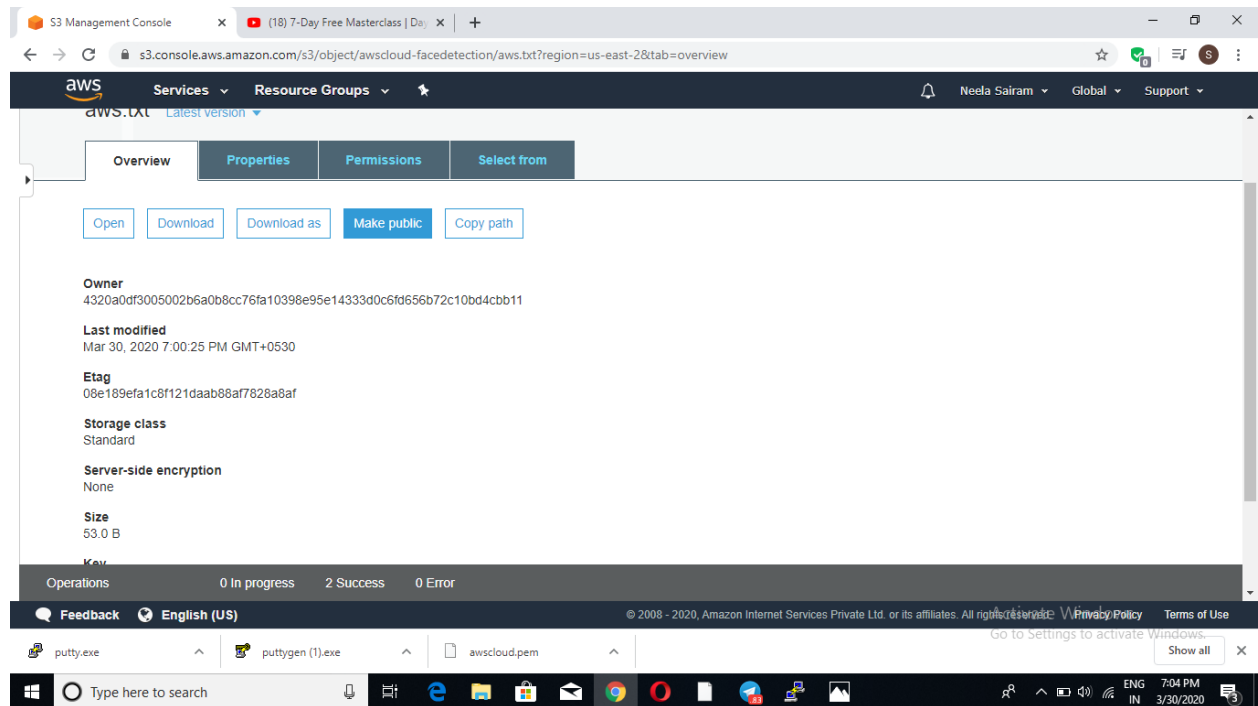
13. Uploading an Object:



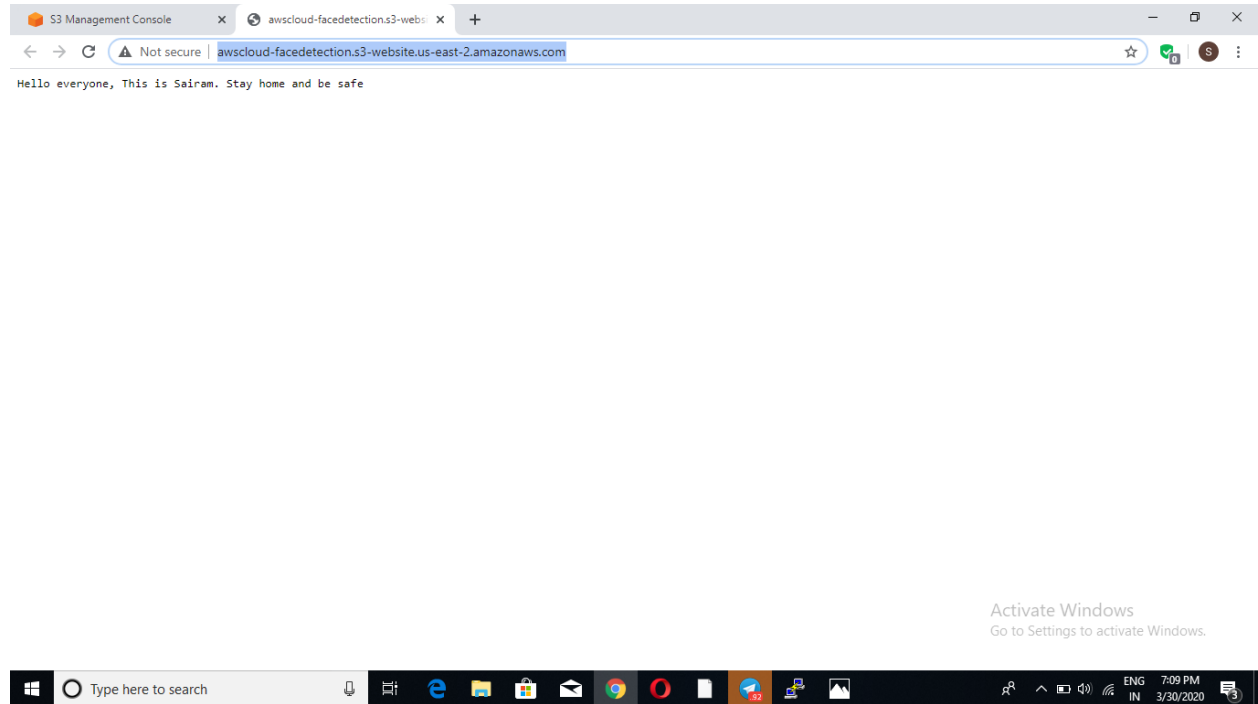
14. Enabling Static Website:



15. Making the Object Public:

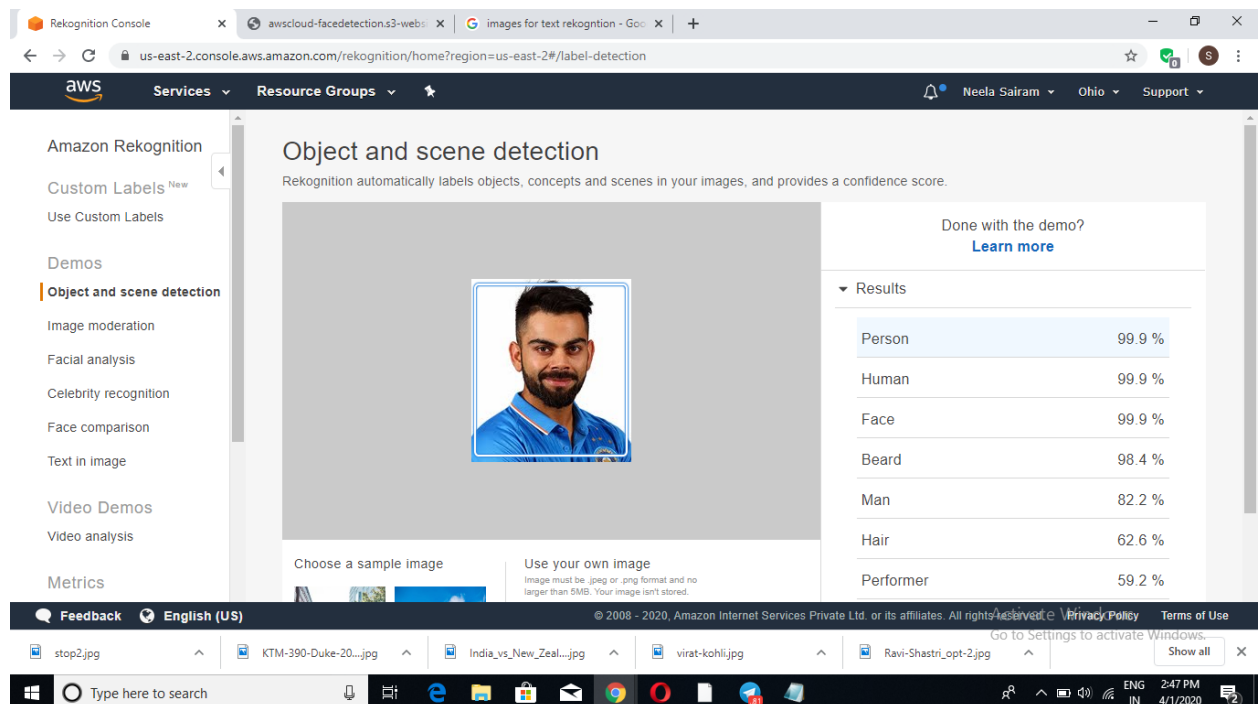


16. Checking the S3 link on the browser:



Rekognition:

17. Face Detect:



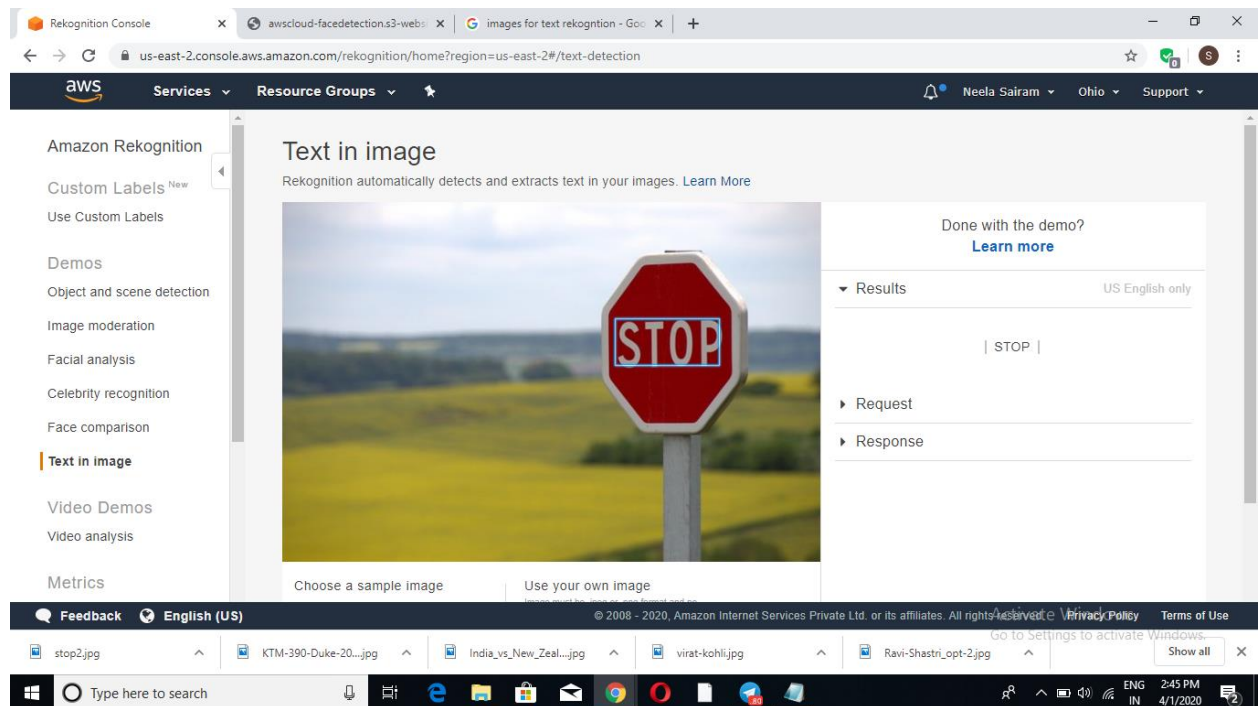
18. Face Compare:

The screenshot shows the AWS Rekognition Console's 'Face comparison' page. The left sidebar lists various services, with 'Face comparison' highlighted. The main area is titled 'Face comparison' and includes a subtitle: 'Compare faces to see how closely they match based on a similarity percentage.' It features two input fields: 'Reference face' and 'Comparison faces'. The 'Reference face' field contains a photo of Virat Kohli. The 'Comparison faces' field contains a photo of the Indian cricket team. Below these fields, there are two 'Choose a sample image' buttons. The right side of the interface displays the 'Results' section, which shows a comparison between the reference face and the comparison faces. It indicates a 'Similarity' of 96.6% with a blue progress bar. Below this, there is a section for 'Done with the demo?' with a 'Learn more' link. The bottom of the page shows the AWS footer with copyright information and links to 'Privacy Policy' and 'Terms of Use'. The Windows taskbar at the bottom shows the time as 2:40 PM on 4/1/2020.

19. Celebrity Recognition:

The screenshot shows the AWS Rekognition Console's 'Celebrity recognition' page. The left sidebar lists various services, with 'Celebrity recognition' highlighted. The main area features a large image of Sundar Pichai with a blue bounding box around his face. Below this image, there are two 'Choose a sample image' buttons. The right side of the interface displays the 'Results' section, which shows a comparison between the reference face and the comparison faces. It indicates a 'Match confidence' of 100%. Below this, there is a section for 'Request' and 'Response'. The bottom of the page shows the AWS footer with copyright information and links to 'Privacy Policy' and 'Terms of Use'. The Windows taskbar at the bottom shows the time as 2:37 PM on 4/1/2020.

20. Text in Image:



EC2 & S3:

21. Installing aws-sdk:

```
ec2-user@ip-172-31-40-243: /var/www/html/face
$ composer --update-with-all-dependencies --ignore-platform-reqs --prefer-stable --prefer-lowest --sort-packages --no-optimize-autoloader --no-classmap-authoritative --apcu-autoloader --no-packages
[ec2-user@ip-172-31-40-243 face]$ sudo /bin/dd if=/dev/zero of=/var/swap.1 bs=1M count=1024
1024+0 records in
1024+0 records out
1073741324 bytes (1.1 GB) copied, 14.1805 s, 75.7 MB/s
[ec2-user@ip-172-31-40-243 face]$ sudo /sbin/mkswap /var/swap.1
mkswap: /var/swap.1: insecure permissions 0644, 0600 suggested.
Setting up swapspace version 1, size = 1024 MiB (1073737728 bytes)
no label, UUID=5ea05984-1eb8-40cb-80e2-0ad787004c3a
[ec2-user@ip-172-31-40-243 face]$ sudo /sbin/swapoff /var/swap.1
swapoff: /var/swap.1: insecure permissions 0644, 0600 suggested.
[ec2-user@ip-172-31-40-243 face]$ sudo /bin/dd if=/dev/zero of=/var/swap.1 bs=1M count=1024
/bin/dd: failed to open '/var/swap.1': Text file busy
[ec2-user@ip-172-31-40-243 face]$ sudo php -d memory_limit=-1 ~/composer.phar require aws/aws-sdk-php
Using version ^2.8 for aws/aws-sdk-php
./composer.json has been updated
Loading composer repositories with package information
Updating dependencies (including require-dev)
Package operations: 3 installs, 0 updates, 0 removals
  - Installing symfony/event-dispatcher (v2.8.52): Loading from cache
  - Installing guzzle/guzzle (v3.9.3): Downloading (100%)
  - Installing aws/aws-sdk-php (2.8.31): Downloading (100%)
symfony/event-dispatcher suggests installing symfony/dependency-injection
symfony/event-dispatcher suggests installing symfony/http-kernel
guzzle/guzzle suggests installing guzzlehttp/guzzle (Guzzle 3 has moved to a new package name. The package you have installed, Guzzle 3, is deprecated.)
aws/aws-sdk-php suggests installing doctrine/cache (Adds support for caching of credentials and responses)
aws/aws-sdk-php suggests installing ext-apc (Allows service description opcode caching, request and response caching, and credentials caching)
aws/aws-sdk-php suggests installing monolog/monolog (Adds support for logging HTTP requests and responses)
aws/aws-sdk-php suggests installing symfony/yaml (Eases the ability to write manifests for creating jobs in AWS Import/Export)
Package guzzle/guzzle is abandoned, you should avoid using it. Use guzzlehttp/guzzle instead.
Writing lock file
Generating autoload files
```

22. Installing php:

```
ec2-user@ip-172-31-40-243:/var/www/html$ sudo yum install php
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core
Package php-5.4.16-46.amzn2.0.2.x86_64 already installed and latest version
Nothing to do
[ec2-user@ip-172-31-40-243 html]$
```

Activate Windows
Go to Settings to activate Windows.

23. Index.php file code:

```
index (2) - Notepad
File Edit Format View Help
<?php
/*
Install php - sudo yum install php
curl -sS https://getcomposer.org/installer | php
cd /var/www/html
sudo mkdir face
cd face
sudo php -d memory_limit=-1 ~/composer.phar require aws/aws-sdk-php
In case if you get memory error -
sudo /bin/dd if=/dev/zero of=/var/swap.1 bs=1M count=1024
sudo /sbin/mkswap /var/swap.1
sudo /sbin/swapon /var/swap.1
sudo wget https://i.pinimg.com/originals/b9/7e/a3/b97ea33b5842c7894b804923c6c05580.jpg
sudo mv b97ea33b5842c7894b804923c6c05580.jpg sample.jpg
*/
error_reporting(0);
require_once(__DIR__ . '/vendor/autoload.php');

use Aws\S3\S3Client;
use Aws\Rekognition\RekognitionClient;

$bucket = 'awscloud-facedetection';
$keyname = 'sample.jpg';

$s3 = S3Client::factory([
    'profile' => 'default',
    'region' => 'us-east-2',
    'version' => '2006-03-01',
    'signature' => 'v4'
]);
try {
    // Upload data.
    $result = $s3->putObject([
        'Bucket' => $bucket,
        'Key' => $keyname,
        'SourceFile' => __DIR__ . '/' . $keyname,
        'ACL' => 'public-read'
    ]);
    // Print the URL to the object.
    $imageUrl = $result['ObjectURL'];
    if($imageUrl) {
        echo "Image upload done... Here is the URL: " . $imageUrl;
    }
} catch (Exception $e) {
    echo $e->getMessage() . PHP_EOL;
}
```

Activate Windows
Go to Settings to activate Windows.

24. Upload success:

```
ec2-user@ip-172-31-40-243:/var/www/html/face
count=1024
1024+0 records in
1024+0 records out
1073741824 bytes (1.1 GB) copied, 14.1905 s, 75.7 MB/s
[ec2-user@ip-172-31-40-243 face]$ sudo /sbin/mkswap /var/swap.1
mkswap: /var/swap.1: insecure permissions 0644, 0600 suggested.
Setting up swapspace version 1, size = 1024 MiB (1073737728 bytes)
no label, UUID=5ea05984-1eb8-40cb-80e2-0ad787004c3a
[ec2-user@ip-172-31-40-243 face]$ sudo /sbin/swapon /var/swap.1
swapon: /var/swap.1: insecure permissions 0644, 0600 suggested.
[ec2-user@ip-172-31-40-243 face]$ sudo /bin/dd if=/dev/zero of=/var/swap.1 bs=1M
count=1024
/bin/dd: failed to open '/var/swap.1': Text file busy
[ec2-user@ip-172-31-40-243 face]$ sudo php -d memory_limit=-1 ~/composer.phar re
quire aws/aws-sdk-php
Using version "2.8" for aws/aws-sdk-php
./composer.json has been updated
Loading composer repositories with package information
Updating dependencies (including require-dev)
Package operations: 3 installs, 0 updates, 0 removals
  - Installing symfony/event-dispatcher (v2.8.52): Loading from cache
  - Installing guzzle/guzzle (v3.9.3): Downloading (100%)
  - Installing aws/aws-sdk-php (2.8.31): Downloading (100%)
symfony/event-dispatcher suggests installing symfony/dependency-injection
symfony/event-dispatcher suggests installing symfony/http-kernel
guzzle/guzzle suggests installing guzzlehttp/guzzle (Guzzle 5 has moved to a new
package name. The package you have installed, Guzzle 3, is deprecated.)
aws/aws-sdk-php suggests installing doctrine/cache (Adds support for caching of
credentials and responses)
aws/aws-sdk-php suggests installing ext-apc (Allows service description opcode c
aching, request and response caching, and credentials caching)
aws/aws-sdk-php suggests installing monolog/monolog (Adds support for logging HT
TP requests and responses)
aws/aws-sdk-php suggests installing symfony/yaml (Eases the ability to write man
ifests for creating jobs in AWS Import/Export)
Package guzzle/guzzle is abandoned, you should avoid using it. Use guzzlehttp/gu
zzle instead.
Writing lock file
Generating autoload files
[ec2-user@ip-172-31-40-243 face]$ ls
composer.json composer.lock index.php sample.jpg vendor
[ec2-user@ip-172-31-40-243 face]$ sudo php index.php
Image upload done... Here is the URL: https://awscloud-facetedetection.s3.us-east-
[ec2-user@ip-172-31-40-243 face]$
```

EC2 & Rekognition:

25. Face Detect success:

The screenshot displays the AWS Management Console interface. On the left, the 'INSTANCES' section is expanded, showing a list of instances. The main area displays the details for an EC2 instance with ID 'i-0fcad8706fd9113b'. The instance is in a 'running' state, using the 't2.micro' instance type. The public DNS is 'ec2-18-219-118-205.us-east-2.compute.amazonaws.com' and the public IP is '18.219.118.205'. A terminal window is overlaid on the console, showing the command 'php index.php' being executed. The output of the script is 'Image upload done... Here is the URL: https://awscloud-facetedetection.s3.us-east-2.amazonaws.com/face-detect.jpg'. The terminal also shows the installation of the AWS SDK for PHP and the execution of the script.

