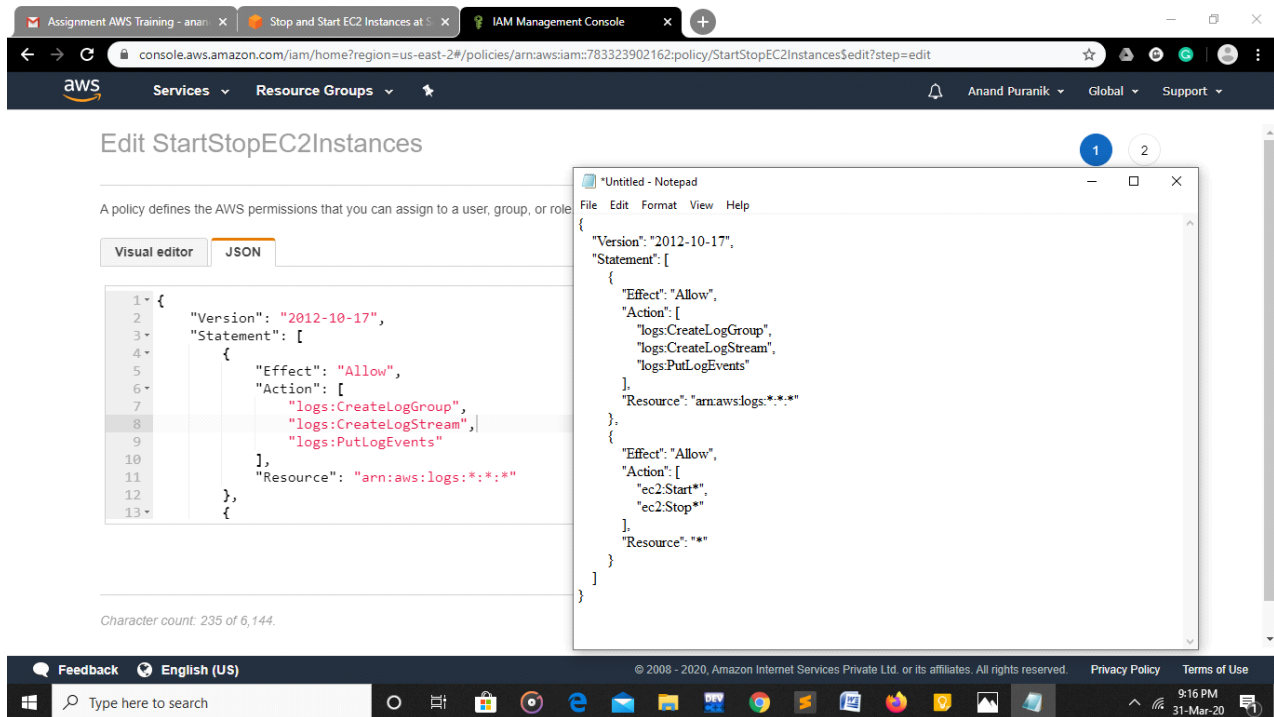


Assignment 1 - Write lambda function using role to create and Start EC2 instance

1. Create a custom AWS Identity and Access Management (IAM) policy and execution role for your Lambda function.
2. Create Lambda functions that stop and start your EC2 instances.

Create an IAM policy and role-



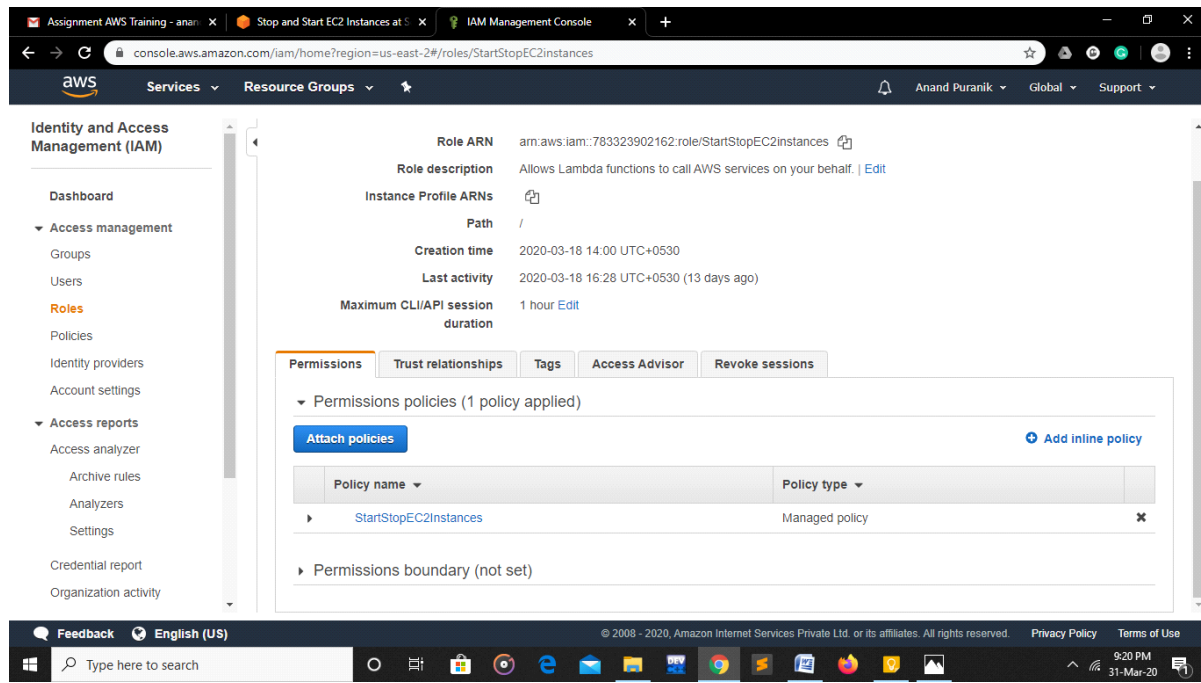
The screenshot shows the AWS IAM console with the 'Edit StartStopEC2Instances' policy selected. The policy is displayed in the JSON editor. A Notepad window is overlaid on the right, showing the JSON code for the policy. The policy allows the following actions:

- logs:CreateLogGroup
- logs:CreateLogStream
- logs:PutLogEvents
- ec2:Start*
- ec2:Stop*

The policy is named 'StartStopEC2Instances' and is associated with the role 'StartStopEC2InstancesRole'.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "logs:CreateLogGroup",
        "logs:CreateLogStream",
        "logs:PutLogEvents"
      ],
      "Resource": "arn:aws:logs:*:*:*"
    },
    {
      "Effect": "Allow",
      "Action": [
        "ec2:Start*",
        "ec2:Stop*"
      ],
      "Resource": "*"
    }
  ]
}
```

2. Create an IAM role for Lambda. When attaching a permissions policy, search for and choose the IAM policy that you created.



Create Lambda functions that stop and start your EC2 instances

1. In the Lambda Function, choose Create function.

2. Choose Author from scratch.

3. Under Basic information, add the following:

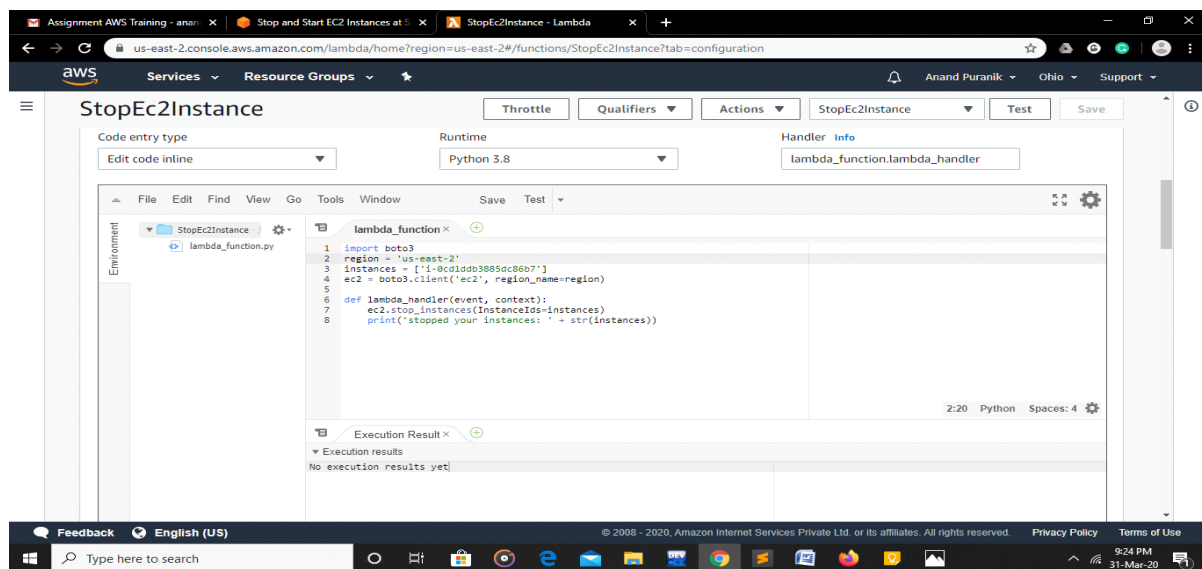
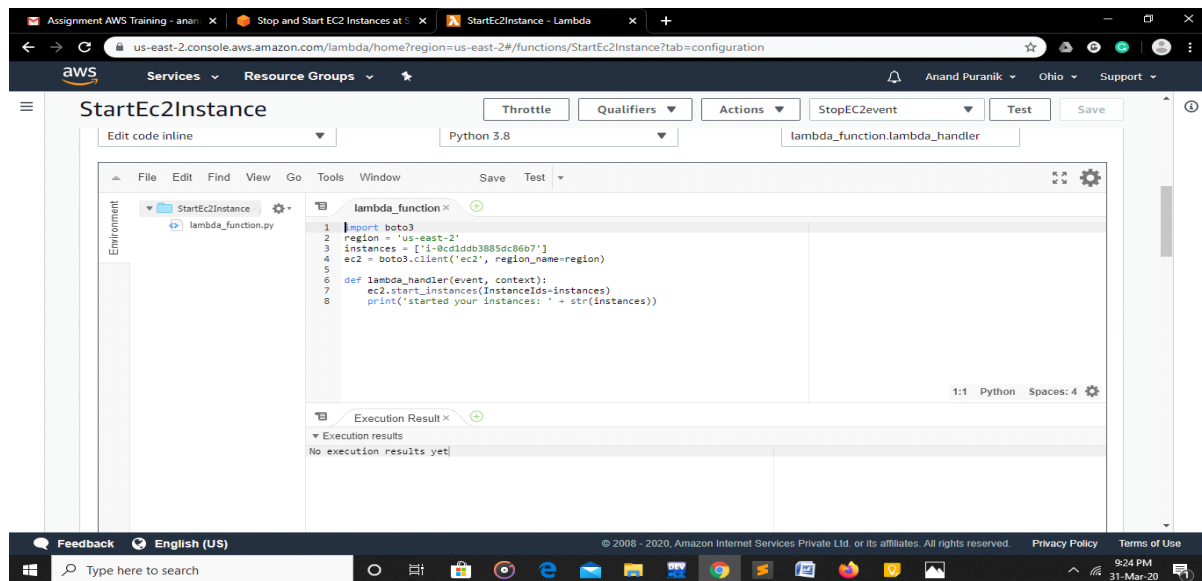
For Function name, enter a name that identifies it as the function used to stop your EC2 instances. For example, "Start EC2Instances".

Under Permissions, expand Choose or create an execution role.

Under Execution role, choose Use an existing role.

Under Existing role, choose the IAM role that you created.

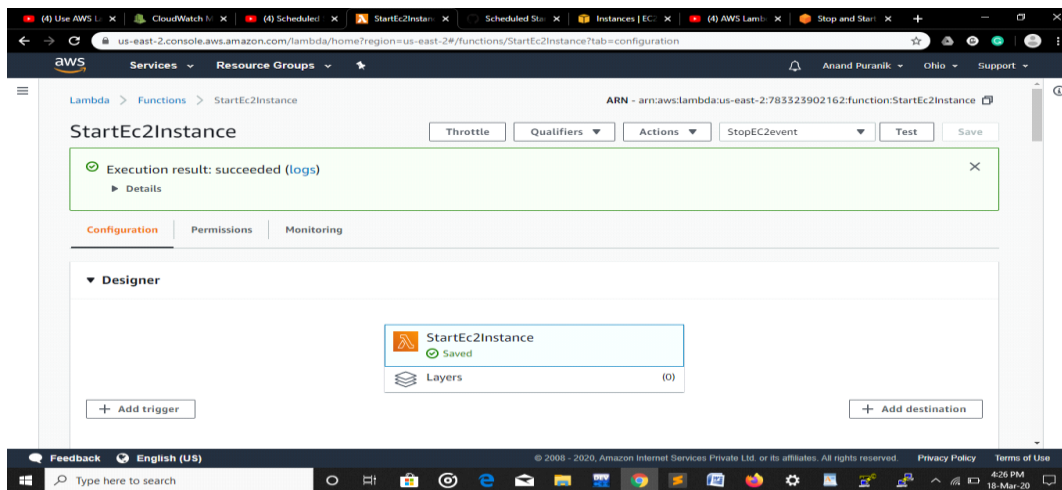
4. Choose Create function.



- Under Basic settings, set Timeout to 10 seconds.

Testing of Lambda functions

1. In the Lambda Function, choose Functions.
2. Select one of the functions that you created.
3. Choose Actions, and then choose Test.
4. In the Configure test event dialog, choose Create new test event.
5. Enter an Event name, and then choose Create.
6. Choose Test to execute the function.



Output-

The screenshot displays the AWS Management Console for the 'us-east-2' region. The left sidebar shows navigation options like 'EC2 Dashboard', 'Events', 'Tags', 'Reports', 'Limits', 'INSTANCES', and 'IMAGES'. The main content area shows a list of EC2 instances with columns for Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, Alarm Status, and Public DNS (IPv4). A single instance, 'i-0cd1ddb3885dc86b7', is listed with a state of 'running'. Below the list, the details for this instance are shown, including its Public DNS, Private DNS, Private IPs, and Availability Zone.

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)
	i-0cd1ddb3885dc86b7	t2.micro	us-east-2a	running	Initializing	None	ec2-18-191-147-33.us-east-2.compute.amazonaws.com

Instance: i-0cd1ddb3885dc86b7 Public DNS: ec2-18-191-147-33.us-east-2.compute.amazonaws.com

Description		Status Checks	Monitoring	Tags
Instance ID	i-0cd1ddb3885dc86b7	Public DNS (IPv4)	ec2-18-191-147-33.us-east-2.compute.amazonaws.com	
Instance state	running	IPv4 Public IP	18.191.147.33	
Instance type	t2.micro	IPv6 Public IP	-	
Finding	Opt-in to AWS Compute Optimizer for recommendations. Learn more	Elastic IPs	-	
Private DNS	ip-172-31-9-53.us-east-2.compute.internal	Availability zone	us-east-2a	
Private IPs	172.31.9.53	Security groups	launch-wizard-3 , view inbound rules , view outbound rules	
Secondary private IPs		Scheduled events	No scheduled events	

This screenshot shows the same AWS Management Console interface, but the EC2 instance 'i-0cd1ddb3885dc86b7' is now in a 'stopped' state. The instance details section shows the Private IP as 172.31.9.53 and the VPC ID as vpc-1233fb79. The AMI ID is also visible as ubuntu/images/hvm-ssd/ubuntu-bionic-18.04-amzn-20181001.x86_64.

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)
	i-0cd1ddb3885dc86b7	t2.micro	us-east-2a	stopped		None	-

Instance: i-0cd1ddb3885dc86b7 Private IP: 172.31.9.53

Description		Status Checks	Monitoring	Tags
Instance ID	i-0cd1ddb3885dc86b7	Public DNS (IPv4)	-	
Instance state	stopped	IPv4 Public IP	-	
Instance type	t2.micro	IPv6 Public IP	-	
Finding	Opt-in to AWS Compute Optimizer for recommendations. Learn more	Elastic IPs	-	
Private DNS	ip-172-31-9-53.us-east-2.compute.internal	Availability zone	us-east-2a	
Private IPs	172.31.9.53	Security groups	launch-wizard-3 , view inbound rules , view outbound rules	
Secondary private IPs		Scheduled events	-	
VPC ID	vpc-1233fb79	AMI ID	ubuntu/images/hvm-ssd/ubuntu-bionic-18.04-amzn-20181001.x86_64	

Assignment 2

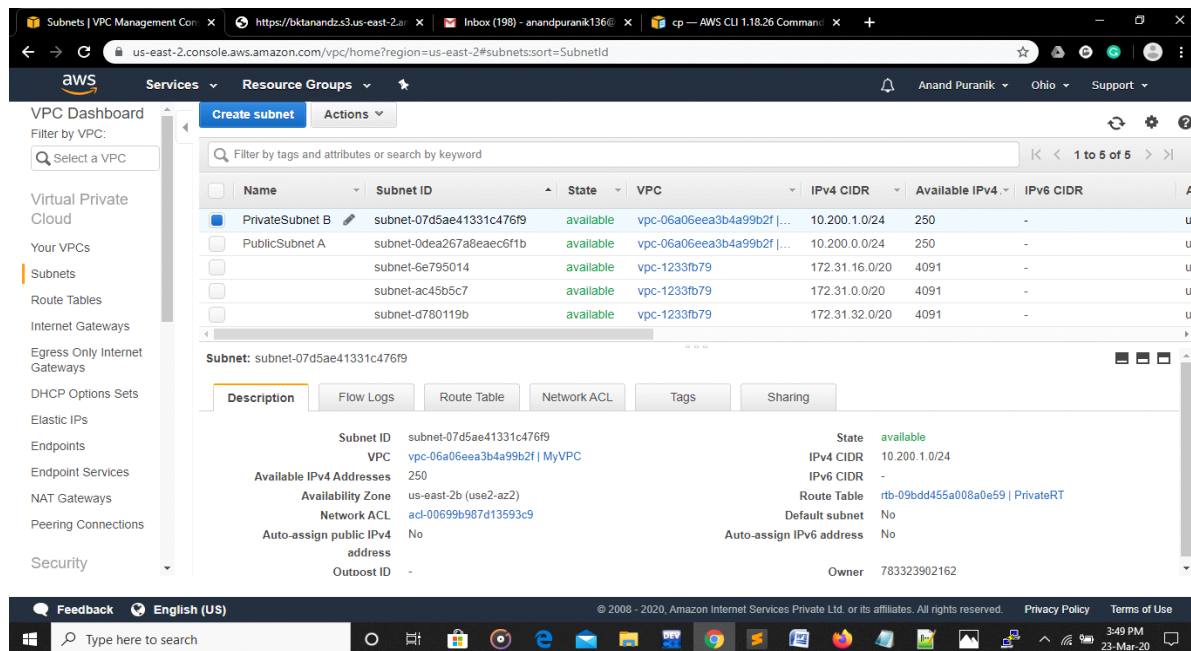
Creating VPC with public and private subnet , configure route table , connect ec2 private instance with public ec2 instance , upload sample file to newly created s3 bucket

- VPC is created with CIDR block – 10.0.0.0/16
- 2 subnets are created &
 - Choose custom vpc which we created
 - Assign IPv4 CIDR block as giving ip range to subnet i.e 10.0.1.0/24

The screenshot displays the AWS VPC Management Console. On the left, a navigation pane lists various VPC-related services. The main area shows a table of VPCs. Below this, the details for a specific VPC are shown, including its ID, state, CIDR blocks, and associated route tables and DHCP options sets.

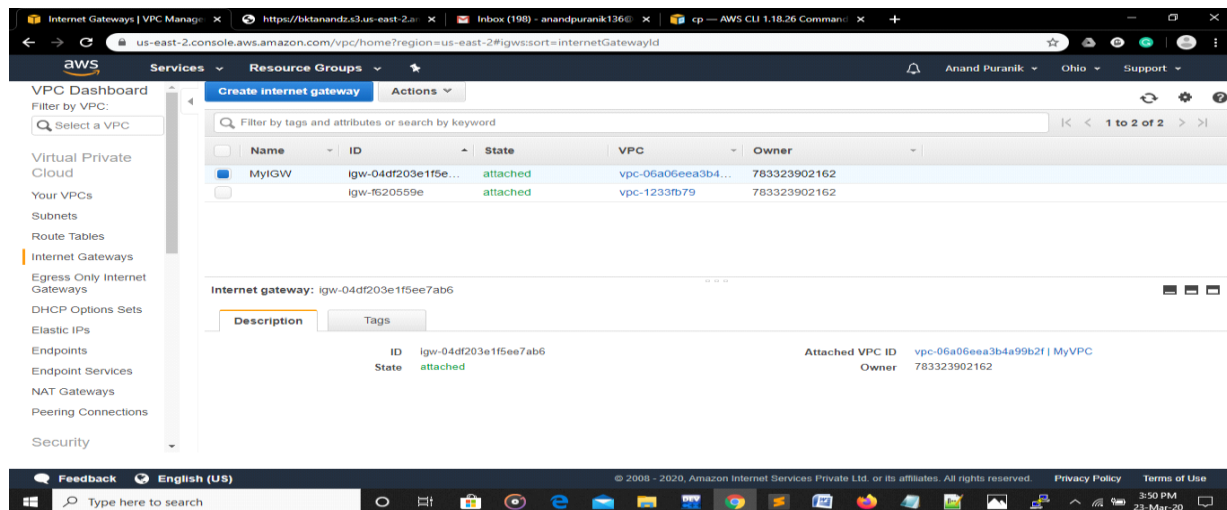
Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	DHCP options set	Main Route table
MyVPC	vpc-06a06eea3b4a99b2f	available	10.200.0.0/16	-	dopt-77d27f1c	rtb-0d1aef0f6becd9f57
	vpc-1233fb79	available	172.31.0.0/16	-	dopt-77d27f1c	rtb-bce272d7

Description	
VPC ID	vpc-06a06eea3b4a99b2f
State	available
IPv4 CIDR	10.200.0.0/16
IPv6 Pool	-
Network ACL	acl-00699b987d13593c9
DHCP options set	dopt-77d27f1c
Owner	783323902162
Tenancy	default
Default VPC	No
IPv6 CIDR	-
DNS resolution	Enabled
DNS hostnames	Disabled
Route table	rtb-0d1aef0f6becd9f57



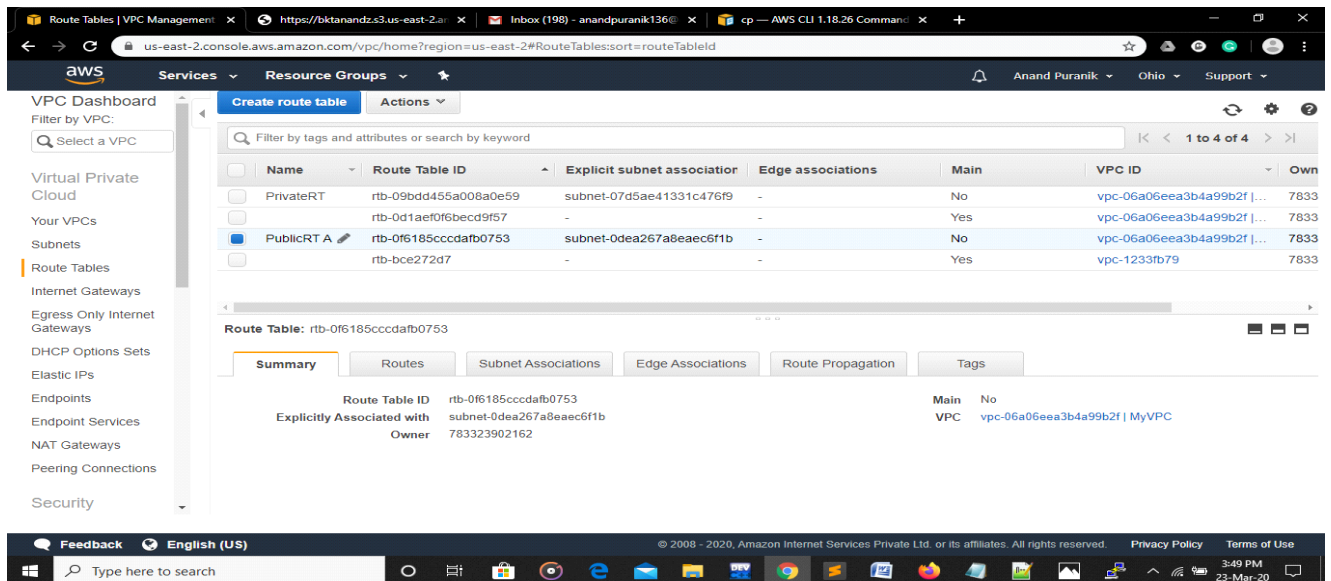
When creating Public subnet Modify auto assign IP - ON Auto-assign IPv4.

4. Further Internet Gateway is created and It is attached to the VPC

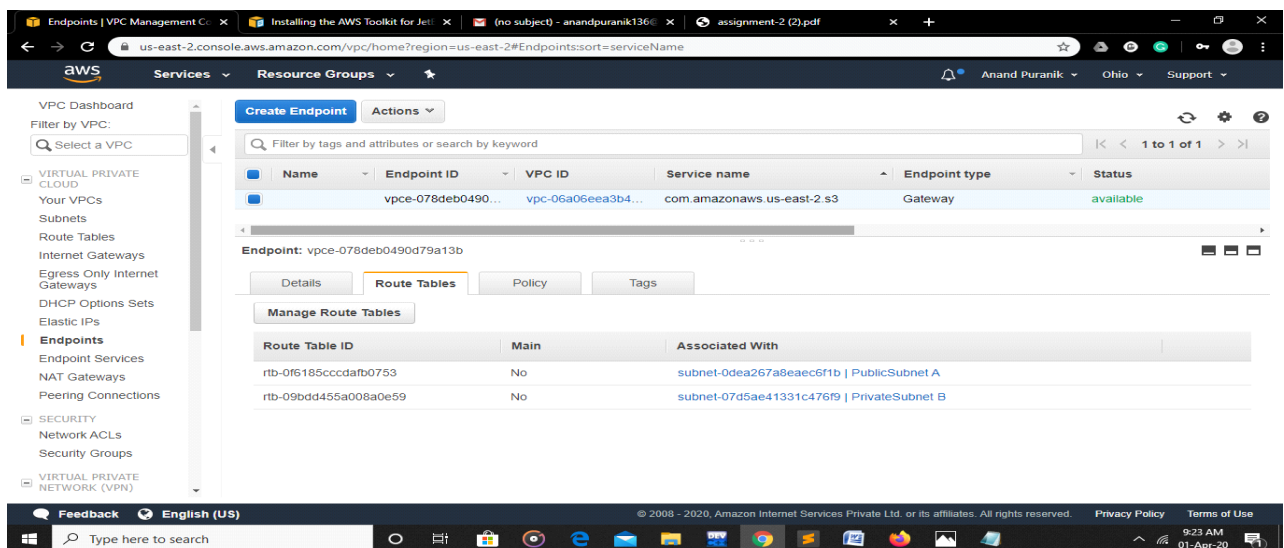


5. Creating route table

- Select custom vpc while creating
- After creating Route set Target as Internet Gateway
- Associate Public Subnet to Public Route Table



Creating end point to custom vpc and attach to private subnet



Select Custom VPC

Select public/private subnet

Subnets

Name	Subnet ID	State	VPC	IPv4 CIDR	Available IPv4	IPv6 CIDR
PrivateSubnet B	subnet-07d5ae41331c476f9	available	vpc-06a06eea3b4a99b2f	10.200.1.0/24	251	-
PublicSubnet A	subnet-0dea267a8eac6f1b	available	vpc-06a06eea3b4a99b2f	10.200.0.0/24	251	-
	subnet-6e795014	available	vpc-1233fb79	172.31.16.0/20	4089	-
	subnet-ac45b5c7	available	vpc-1233fb79	172.31.0.0/20	4090	-
	subnet-d780119b	available	vpc-1233fb79	172.31.32.0/20	4090	-

Subnet: subnet-07d5ae41331c476f9

Property	Value
Subnet ID	subnet-07d5ae41331c476f9
VPC	vpc-06a06eea3b4a99b2f MyVPC
State	available
IPv4 CIDR	10.200.1.0/24
IPv6 CIDR	-
Route Table	rtb-09bdd455a008a0e59 PrivateRT
Default subnet	No
Auto-assign public IPv4 address	No
Auto-assign IPv6 address	No
Owner	783323902162

Create Two EC2 Instances-

Instances

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)
Private EC2 B	i-01405e53d3a8bac16	t2.micro	us-east-2b	running	2/2 checks ...	None	-
Public EC2 A	i-0299aa18d4f4f6f08	t2.micro	us-east-2b	running	2/2 checks ...	None	-

Private EC2 B Details:

Property	Value
Instance ID	i-01405e53d3a8bac16
Instance state	running
Instance type	t2.micro
Finding	Opt-in to AWS Compute Optimizer for recommendations. Learn more
Private DNS	ip-10-200-1-163.us-east-2.compute.internal
Private IPs	10.200.1.163
Secondary private IPs	-
VPC ID	vpc-06a06eea3b4a99b2f (MyVPC)
Public DNS (IPv4)	-
IPv4 Public IP	-
IPv6 IPs	-
Elastic IPs	-
Availability zone	us-east-2b
Security groups	Private SG. view inbound rules . view outbound rules
Scheduled events	No scheduled events
AMI ID	amzn2-ami-hvm-2.0.20200304.0-x86_64-gp2 (ami-0e01ce4ee18447327)

Create Security Groups-

The screenshot displays the AWS Management Console interface for the 'us-east-2' region. The left-hand navigation pane shows the 'Security Groups' link under the 'SECURITY' category. The main content area shows a list of security groups. The selected security group, 'sg-0125262516a320153', is highlighted. Below the list, the 'Inbound Rules' tab is active, showing a table of inbound rules. One rule is present, allowing SSH access from the source IP 116.75.154.3/32.

Name	Group ID	Group Name	VPC ID	Type	Description	Owner
PublicSG	sg-0125262516a320153	PublicSG	vpc-06a06eea3b4...	EC2-VPC	Public Security Gr...	783323902162
default	sg-016306bc8e8e...	default	vpc-06a06eea3b4...	EC2-VPC	default VPC securi...	783323902162
website_s_grp	sg-05cd30ea6b45...	website_s_grp	vpc-1233fb79	EC2-VPC	http,https,ssh	783323902162
launch-wizard-1	sg-0770c5d2e535...	launch-wizard-1	vpc-1233fb79	EC2-VPC	launch-wizard-1 cr...	783323902162
launch-wizard-2	sg-0edb737c24f1b...	launch-wizard-2	vpc-1233fb79	EC2-VPC	launch-wizard-2 cr...	783323902162
launch-wizard-3	sg-0f065a1168e29...	launch-wizard-3	vpc-1233fb79	EC2-VPC	launch-wizard-3 cr...	783323902162

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	116.75.154.3/32	

```
root@ip-10-200-1-163:/home/ec2-user
login as: ec2-user
Authenticating with public key "imported-openssh-key"
Last login: Mon Mar 23 09:50:55 2020 from 116.75.154.3

 _ | _ | _ )
 _ | ( /   / Amazon Linux 2 AMI
 _ | \ _ | _ |

https://aws.amazon.com/amazon-linux-2/
No packages needed for security; 6 packages available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-10-200-0-10 ~]$ ssh -i exvpc.pem ec2-user@10.200.1.163
Last login: Mon Mar 23 09:51:54 2020 from 10.200.0.10

 _ | _ | _ )
 _ | ( /   / Amazon Linux 2 AMI
 _ | \ _ | _ |

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-10-200-1-163 ~]$ sudo su
[root@ip-10-200-1-163 ec2-user]# aws configure
AWS Access Key ID [*****BN6G]: AKIA3MTN6GDJHGECBN6G
AWS Secret Access Key [*****4uN]: WV3bN5yJyv6nwDM2ADZVzyMDsLovLyaEW7
SS4+uN
Default region name [us-east-2]: us-east-2
Default output format [None]:
[root@ip-10-200-1-163 ec2-user]# aws s3 mb s3://bktanandz
make_bucket: bktanandz
[root@ip-10-200-1-163 ec2-user]# nano test.txt
[root@ip-10-200-1-163 ec2-user]# ls
test.txt
[root@ip-10-200-1-163 ec2-user]# aws s3 cp test.txt s3://bktanandz/test.txt
upload: ./test.txt to s3://bktanandz/test.txt
[root@ip-10-200-1-163 ec2-user]# aws s3 ls
2020-03-23 09:55:04 anand16bkt9
2020-03-23 09:35:13 anandkpbkt
2020-03-15 06:08:51 anandsitedemo
2020-03-23 10:14:01 bktanandz
[root@ip-10-200-1-163 ec2-user]#
```

With the help of putty connection is established.

Connecting Public EC2 with Private EC2 using SSH cmd Command & .pem file.

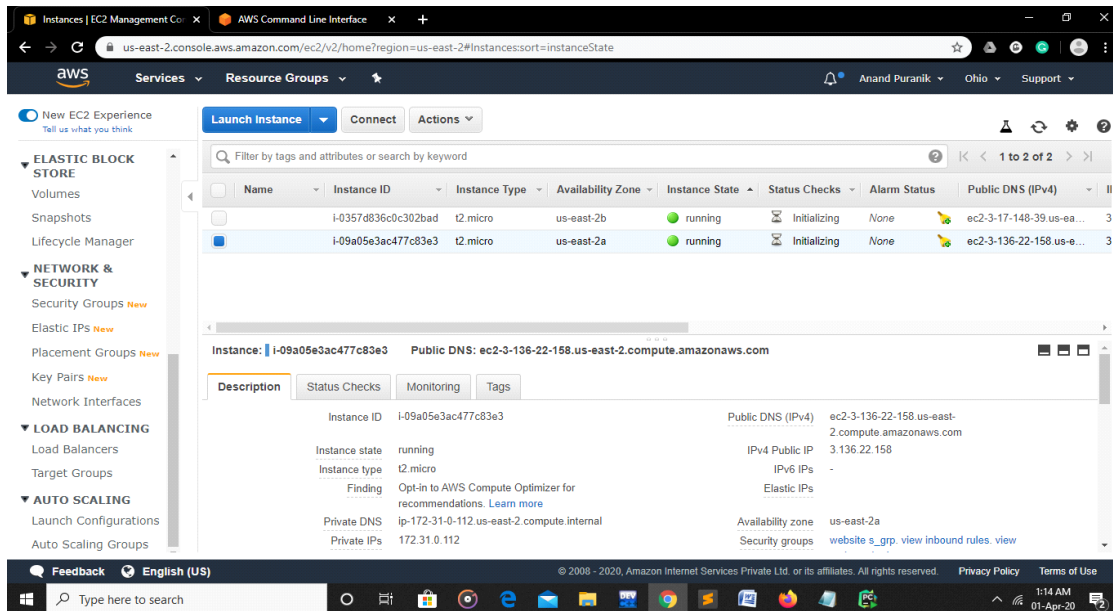
Create IAM user to access s3 bucket :

- a. Create user group by having S3 full (access) as a policy
- b. Attach user which we created
 - **Bucket is created using aws S3 mb S3://bktanandz**
 - **Upload file using aws s3 cp s3://bktanandz**

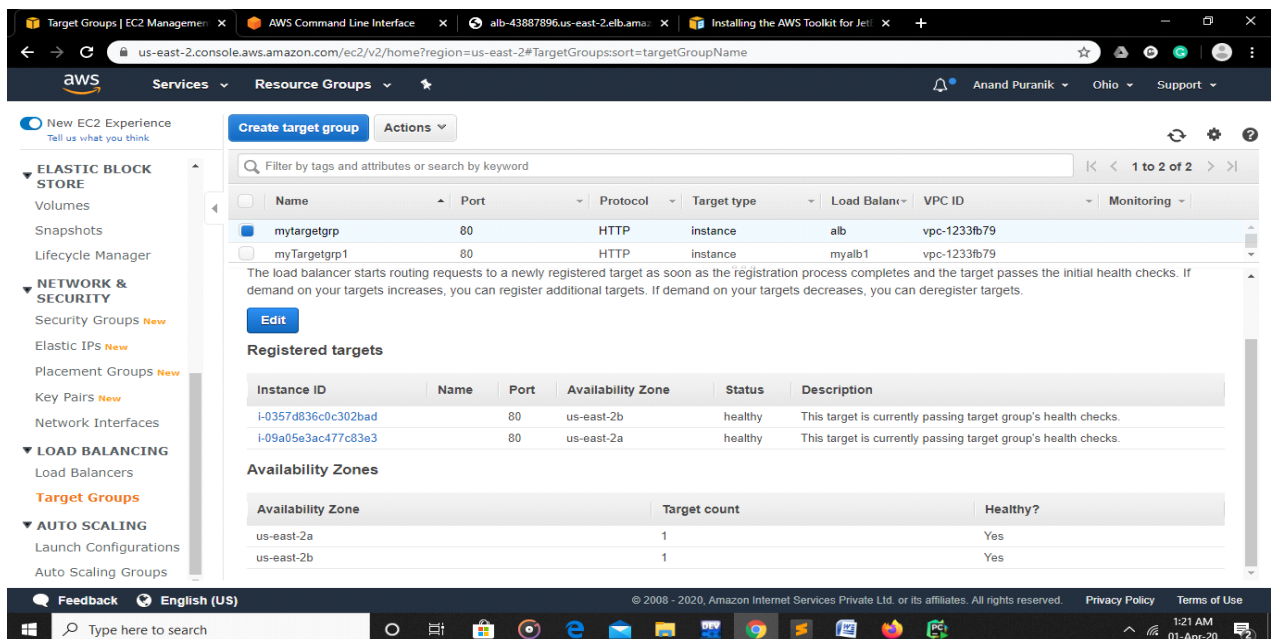
Assignment 3

Create autoscaling of instance with min and Max load on the basis of cpu
Attach the instance to Alb

1. creating 2 ec2 instances



2. creating target group:



3. creating alb

default vpc using atleast 2 subnet

Step 1: Configure Load Balancer

Load Balancer Protocol: HTTP
Load Balancer Port: 80

Availability Zones

Specify the Availability Zones to enable for your load balancer. The load balancer routes traffic to the targets in these Availability Zones only. You can specify only one subnet per Availability Zone. You must specify subnets from at least two Availability Zones to increase the availability of your load balancer.

VPC: vpc-1233fb79 (172.31.0.0/16) (default)

Availability Zones

- ☒ **us-east-2a**: subnet-ac45b5c7
IPv4 address: Assigned by AWS
- ☒ **us-east-2b**: subnet-6e795014
IPv4 address: Assigned by AWS

[Cancel](#) [Next: Configure Security Settings](#)

Giving existing target grp-

mytargetgrp

The load balancer starts routing requests to a newly registered target as soon as the registration process completes and the target passes the initial health checks. If demand on your targets increases, you can register additional targets. If demand on your targets decreases, you can deregister targets.

Registered targets

Instance ID	Name	Port	Availability Zone	Status	Description
i-0357d836dc302bad		80	us-east-2b	healthy	This target is currently passing target group's health checks.
i-09a05e3ac477c83e3		80	us-east-2a	healthy	This target is currently passing target group's health checks.

Availability Zones

Availability Zone	Target count	Healthy?
us-east-2a	1	Yes
us-east-2b	1	Yes

4. Copy the DNS address and test the results



This is anand's server 2

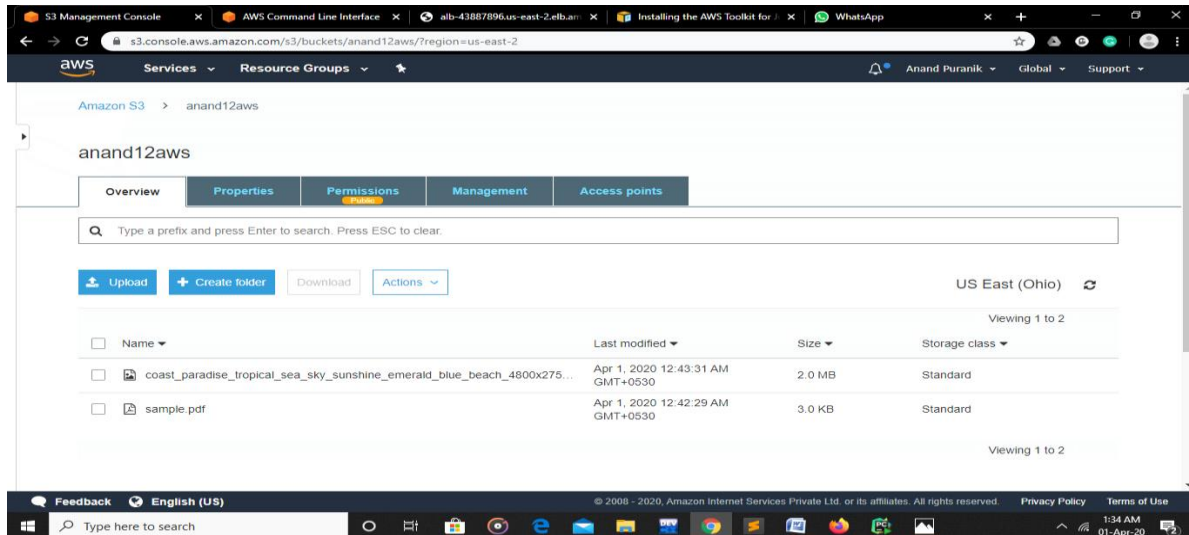


Assignment 4

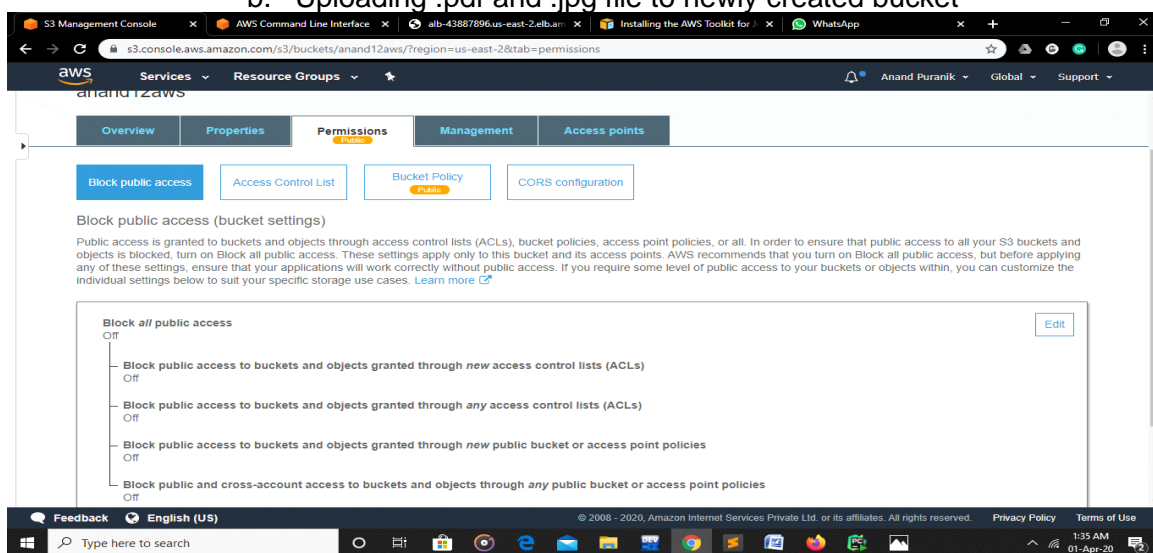
Create a bucket policy Upload some images pdf Which will give public access only to images and not to PDF

Steps

- Creating s3 bucket

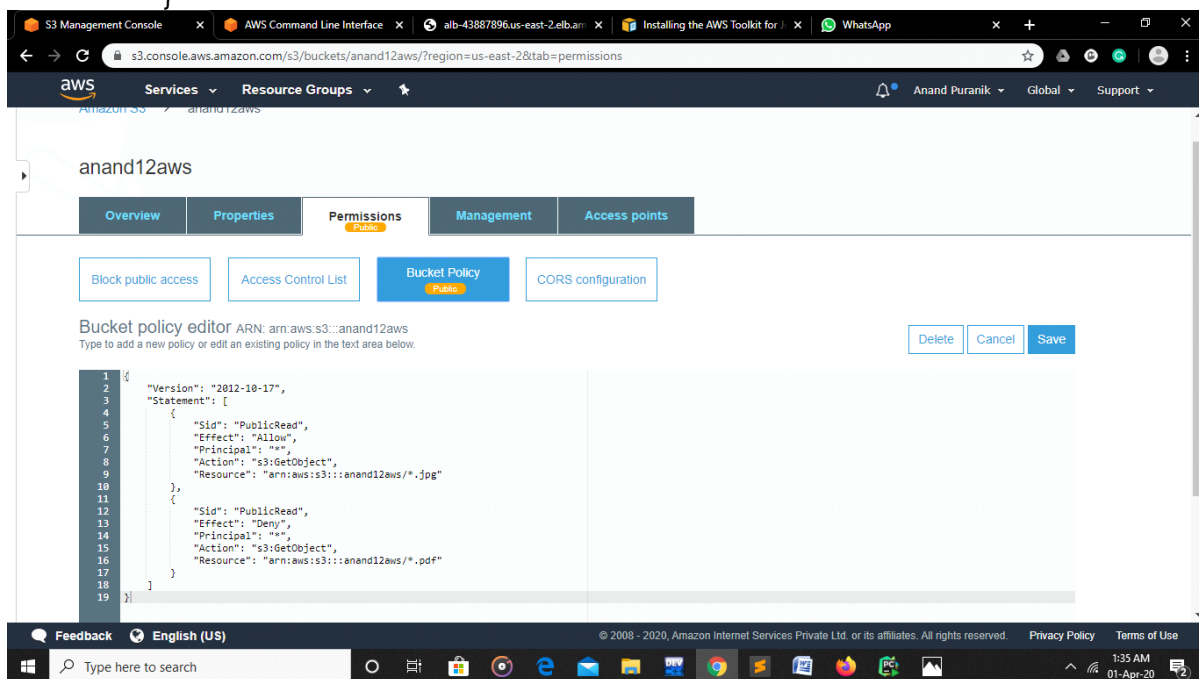


- While creating s3 bucket choose Block all public access “Off”
- Uploading .pdf and .jpg file to newly created bucket



1. Creating bucket policy using following code:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "PublicRead",
      "Effect": "Allow",
      "Principal": "*",
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::anand12aws/*.jpg"
    },
    {
      "Sid": "PublicRead",
      "Effect": "Deny",
      "Principal": "*",
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::anand12aws/*.pdf"
    }
  ]
}
```



Assignment 5

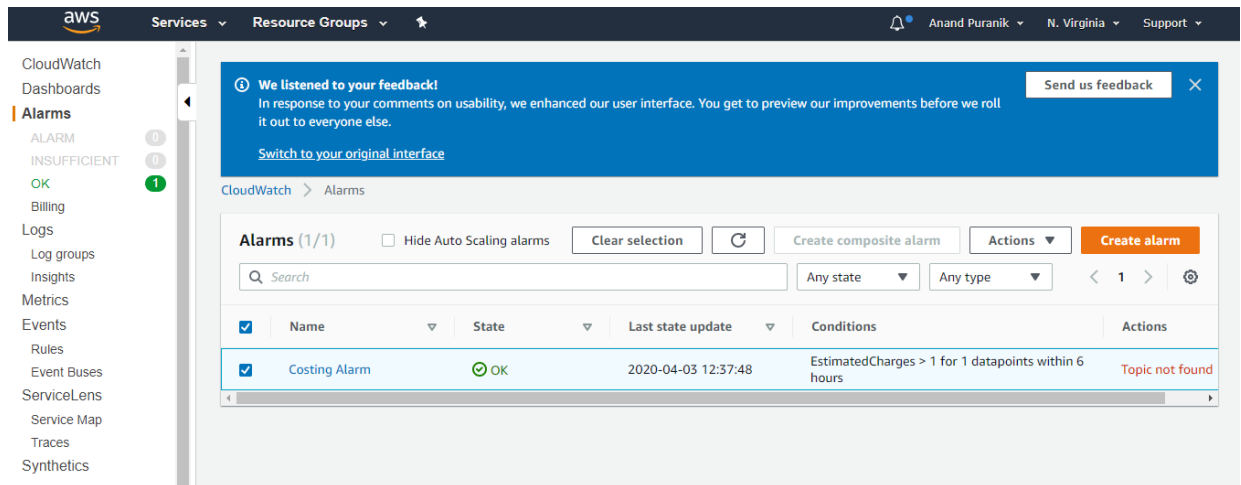
1. Create a billing alarm on your account to check if your account billing exceeds \$1 for the current month.

To enable the monitoring of estimated charges

1. Open the Billing and Cost Management console
2. In the navigation pane, choose **Billing Preferences**.
3. Choose **Receive Billing Alerts**.
4. Choose **Save preferences**.

To create a billing alarm using the CloudWatch console

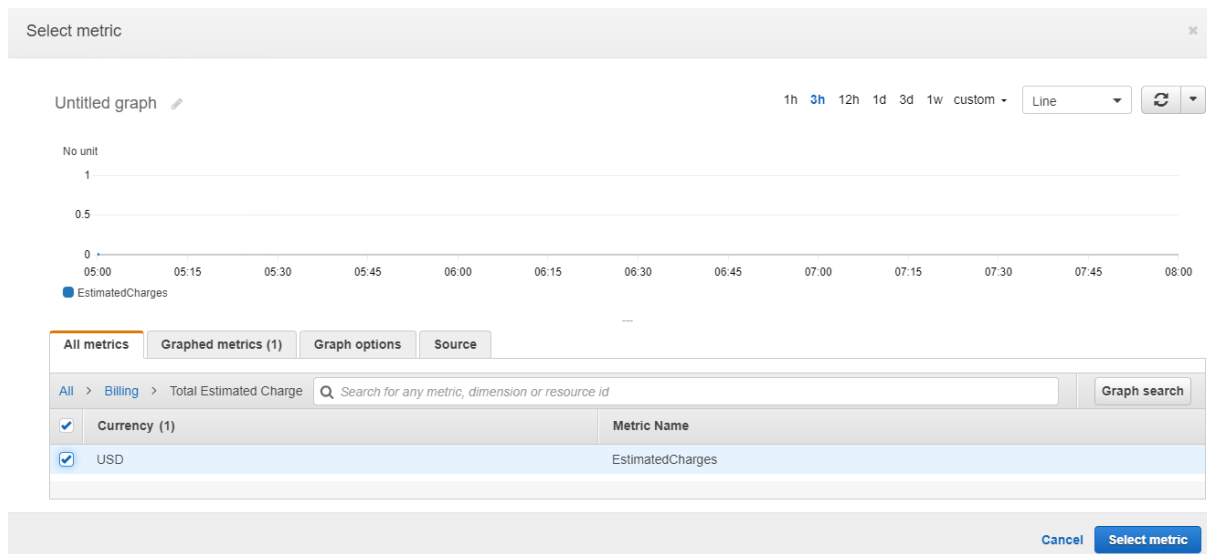
1. Select N Virginia
2. In the navigation pane, choose **Alarms**, **Create Alarm**.



The screenshot shows the AWS CloudWatch Alarms console. At the top, there's a navigation bar with the AWS logo, 'Services', 'Resource Groups', and user information. A blue banner at the top of the main content area reads: 'We listened to your feedback! In response to your comments on usability, we enhanced our user interface. You get to preview our improvements before we roll it out to everyone else. Switch to your original interface'. Below this, the breadcrumb 'CloudWatch > Alarms' is visible. The main area displays 'Alarms (1/1)' with a 'Hide Auto Scaling alarms' checkbox. A table lists the alarms:

<input checked="" type="checkbox"/>	Name	State	Last state update	Conditions	Actions
<input checked="" type="checkbox"/>	Costing Alarm	OK	2020-04-03 12:37:48	EstimatedCharges > 1 for 1 datapoints within 6 hours	Topic not found

3. Choose **Select metric**. In the **All metrics** tab, choose **Billing, Total Estimated Charge**.
4. Select the check box next to **EstimatedCharges**, and choose **Select metric**.



5. Under **Conditions**, choose **Static**.
6. For **Whenever EstimatedCharges is**, choose **Greater**.
7. For **than**, enter the monetary amount (for example, **1\$**) that must be exceeded to trigger the alarm.

Resource Groups ▼ ★ 🔔 Anand

6 hours ▼

Conditions

Threshold type

☒ Static
Use a value as a threshold

☐ Anomaly detection
Use a band as a threshold

Whenever EstimatedCharges is...

Define the alarm condition.

☒ Greater
> threshold

☐ Greater/Equal
≥ threshold

☐ Lower/Equal
≤ threshold

☐ Lower
< threshold

than...

Define the threshold value.

1 USD

Must be a number

► Additional configuration

Cancel **Next**

8. Choose Next.

Resource Groups ▼ ★ 🔔 Anand Puranik ▼ N. Virginia ▼ Support ▼

Alarm state trigger

Define the alarm state that will trigger this action.

☒ In alarm
The metric or expression is outside of the defined threshold.

☐ OK
The metric or expression is within the defined threshold.

☐ Insufficient data
The alarm has just started or not enough data is available.

Remove

Select an SNS topic

Define the SNS (Simple Notification Service) topic that will receive the notification.

☒ Select an existing SNS topic

☐ Create new topic

☐ Use topic ARN

Send a notification to...

Only email lists for this account are available.

Add notification

Auto Scaling action

9. Under **Notification**, select an SNS topic to notify when the alarm is in alarm state.

To have the alarm send multiple notifications for the same alarm state or for different alarm states, choose **Add notification**.

10. When finished, choose **Next**.

11. Enter a name and description for the alarm. The name must contain only ASCII characters. Then choose **Next**.

12. Under **Preview and create**, confirm that the information and conditions are what you want, then choose **Create alarm**.

The screenshot displays the AWS CloudWatch Alarms console. At the top, there's a navigation bar with the AWS logo, 'Services', 'Resource Groups', and user information. A left-hand navigation menu lists various AWS services, with 'Alarms' highlighted. A blue banner at the top of the main content area announces a UI update. Below this, the 'Alarms (1/1)' section shows a table with one alarm. The alarm is named 'Costing Alarm', is in an 'OK' state, and was last updated on 2020-04-03 at 12:37:48. Its condition is 'EstimatedCharges > 1 for 1 datapoints within 6 hours'. The 'Actions' column for this alarm shows 'Topic not found'.

Alarms (1/1) ☐ Hide Auto Scaling alarms

<input checked="" type="checkbox"/>	Name	State	Last state update	Conditions	Actions
<input checked="" type="checkbox"/>	Costing Alarm	OK	2020-04-03 12:37:48	EstimatedCharges > 1 for 1 datapoints within 6 hours	Topic not found