Project Submitted by__ Ratna Sai Kumar
Gmail__Ratnasaikumar419@gmail.com

PROJECT-2

Project Title:- AWS EC2 Instance Automation with Lambda and CloudWatch, SNS.

Project Description:-

- Automating the start and stop of an Amazon EC2 instance using AWS Lambda and CloudWatch Events is a practical approach to optimize costs and ensure the instance runs only when necessary. Here's how you can set up this automation.
- We have a requirement to automate the start and stop of an Amazon EC2 instance on a daily basis. This automation will help us reduce costs and ensure that the EC2 instance is only running during the required hours. We will achieve this by leveraging AWS Lambda for the execution and AWS CloudWatch Events for scheduling.

Project Objectives:-

- Automatically start an Amazon EC2 instance at 9:00 AM daily.
- Automatically stop the same EC2 instance at 6:00 PM daily

Used for services of required is -5

- EC2
- IAM
- LAMBDA
- CLOUDWATCH
- SNS

Creation of EC2 Instance:-

first go to Aws console after that click EC2 instance service

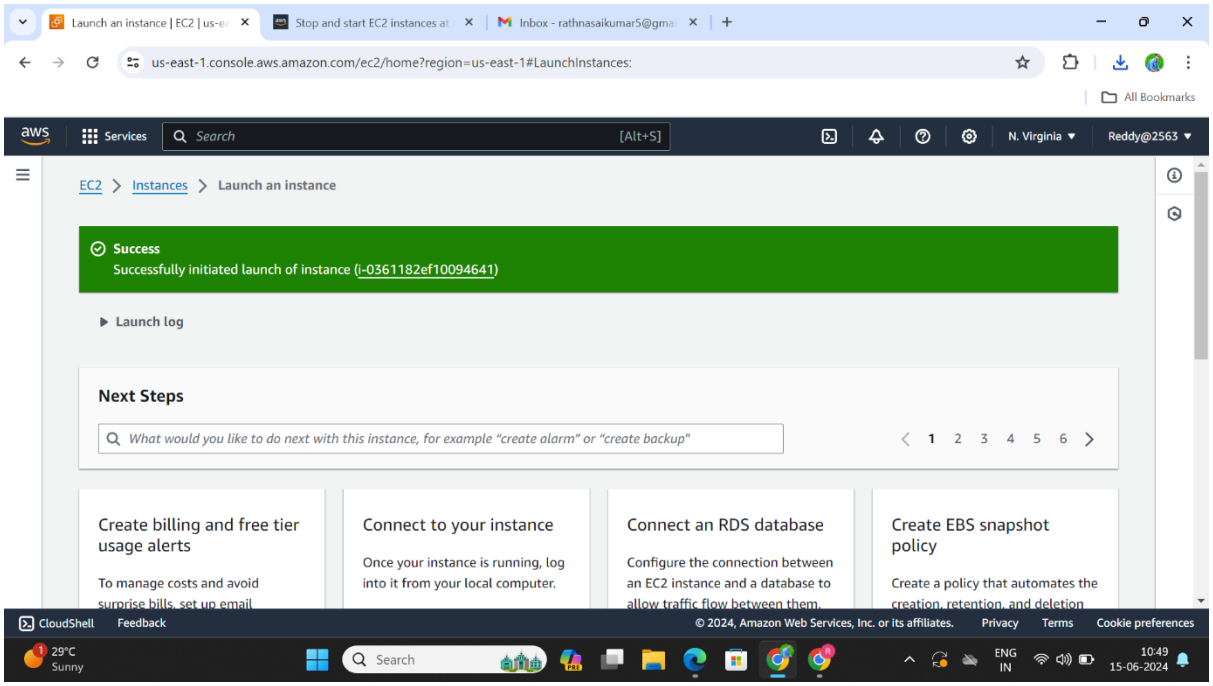
- Dashboard Click on "EC2" under the "Compute" section.
- Click "Launch Instance" to start the instance creation process.
- create the new name Project-2 ec2 launch

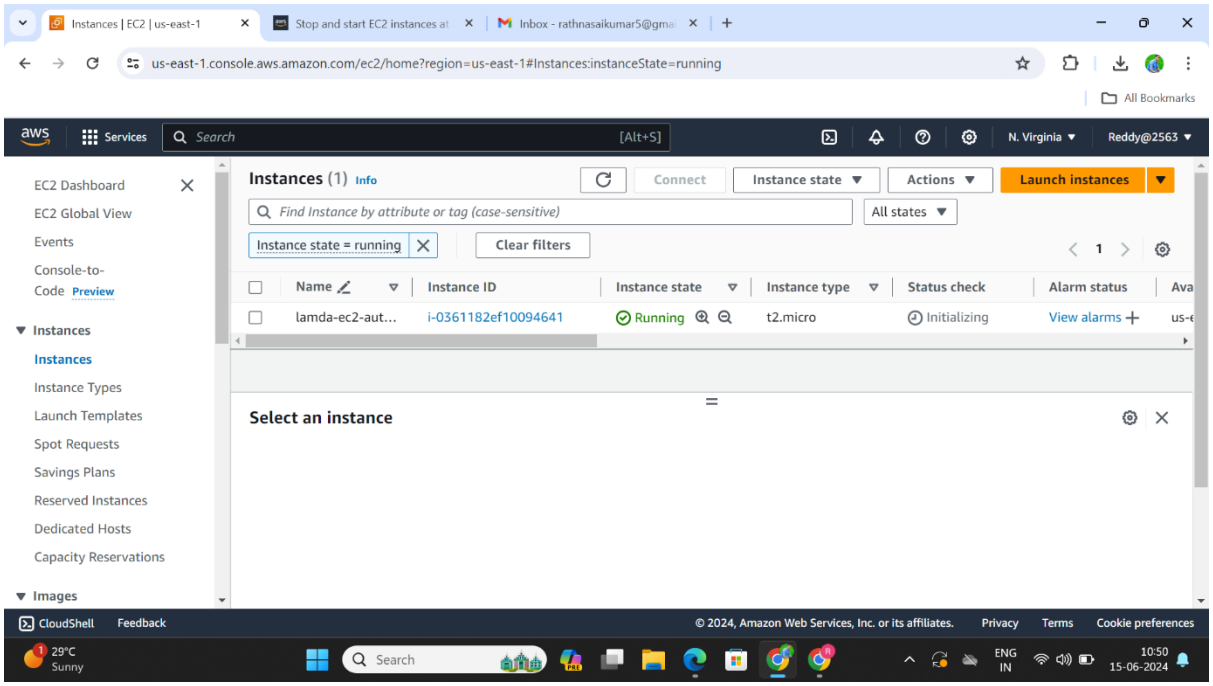
Given the quick sort as the amazon Linux or ubantu Iam this is here for amazon Linux.

After that create for key pair like “not recommaneded default

Click "Launch Instances" and wait for the instance to initialize.

Successfully for the running initial state.





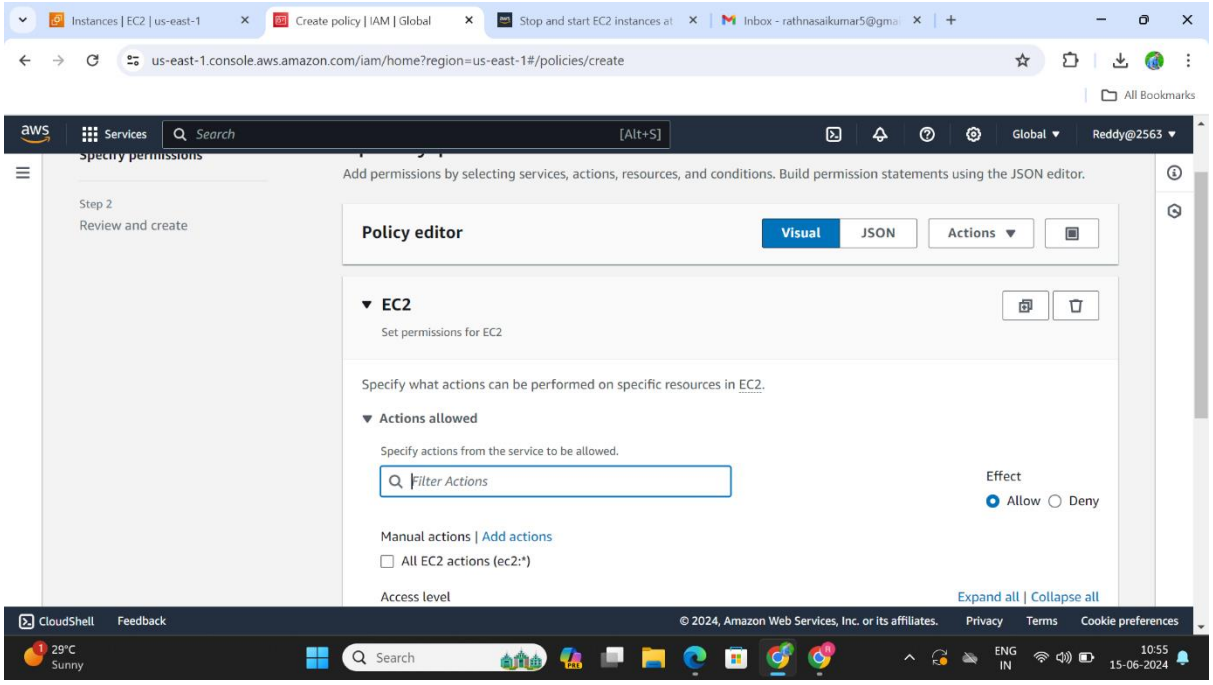
- **Create the IAM Policy:-**

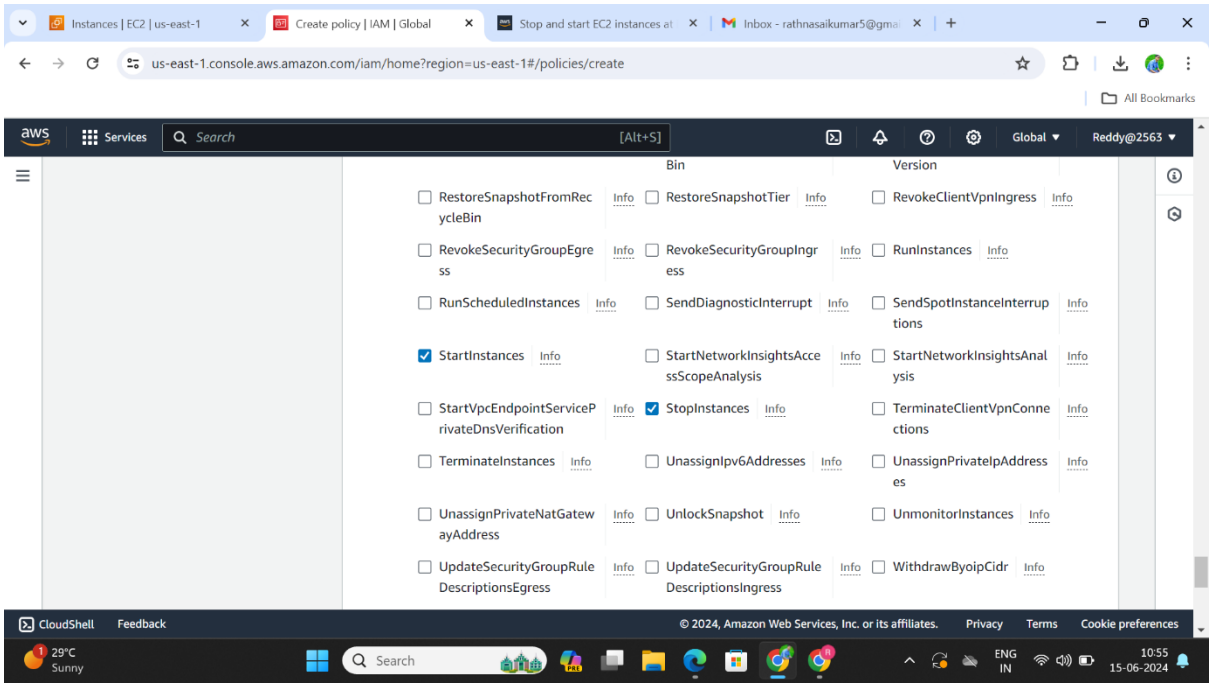
Select the IAM service.

After that select the policy in the left side policy click

After the policy create is the new name any create

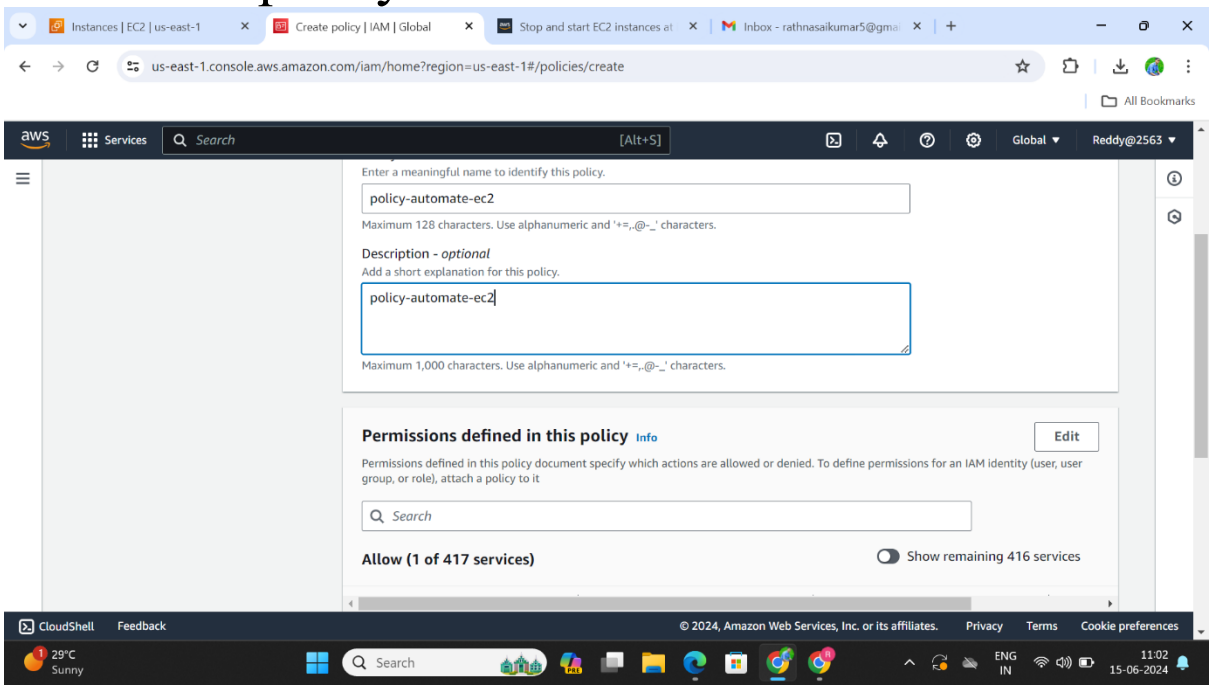
After the EC2 instance is we have to list write any we are click expand all and ec2 start instance select and stop instance will be select automatically running

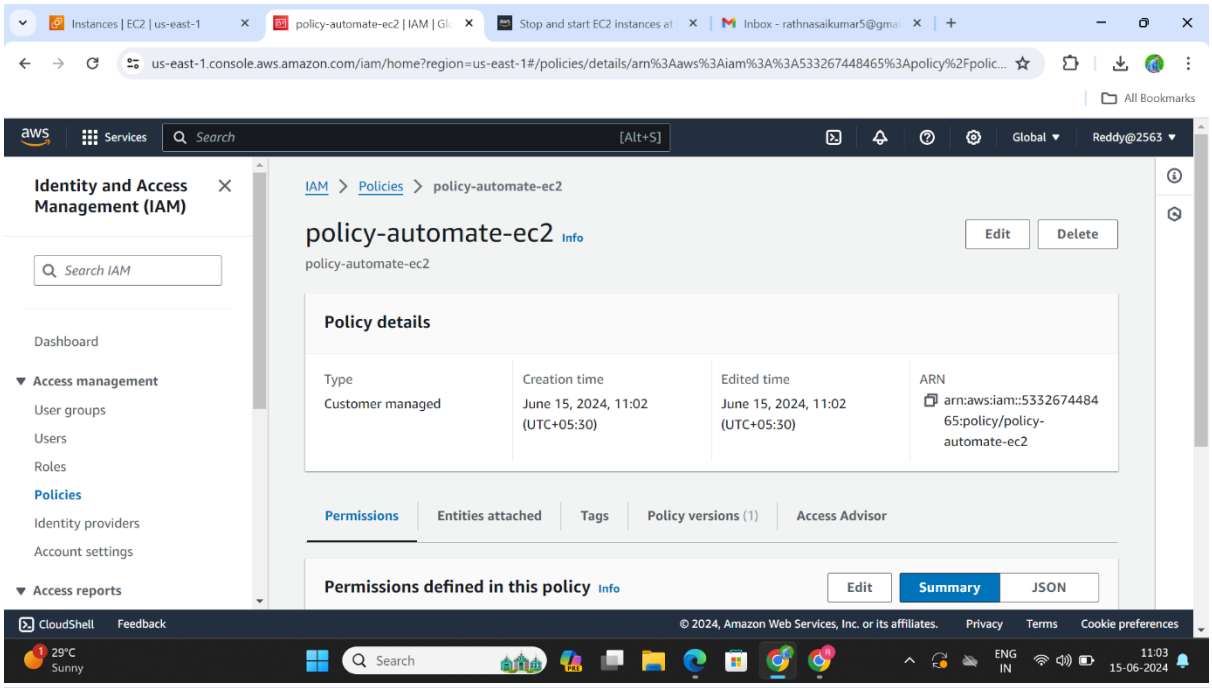


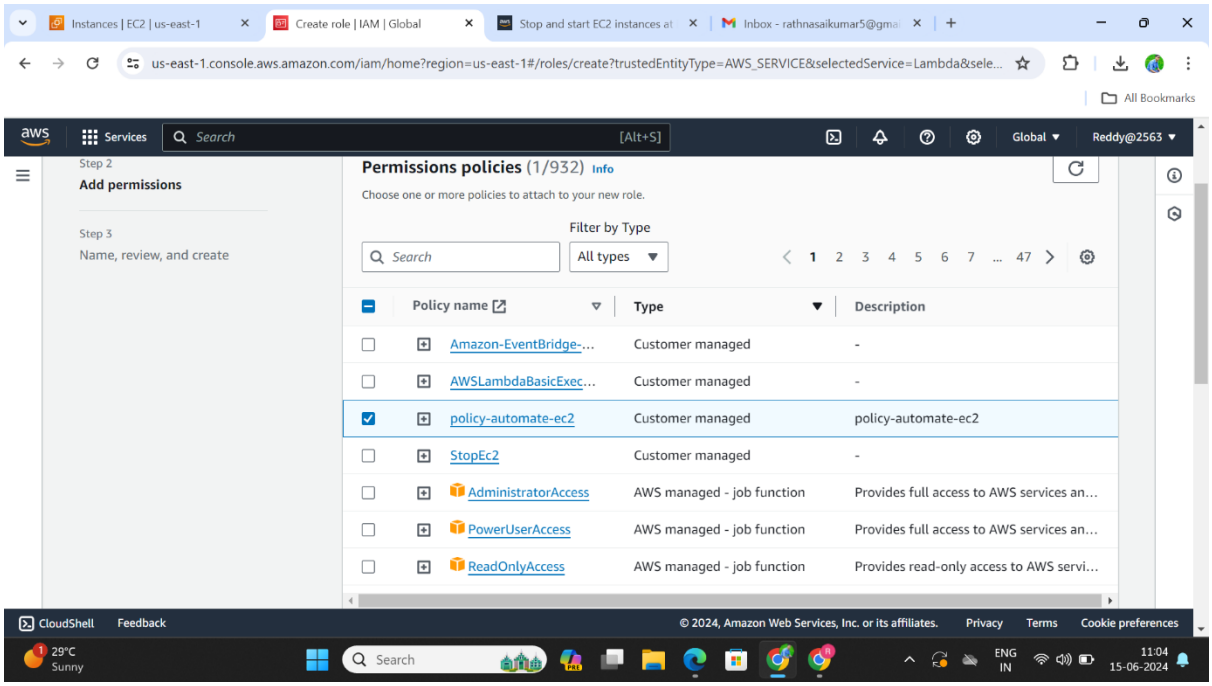


Start instance and stop instance select the option

Create the policy-automate-ec2







After the take create name ‘policy-automate-ec2’

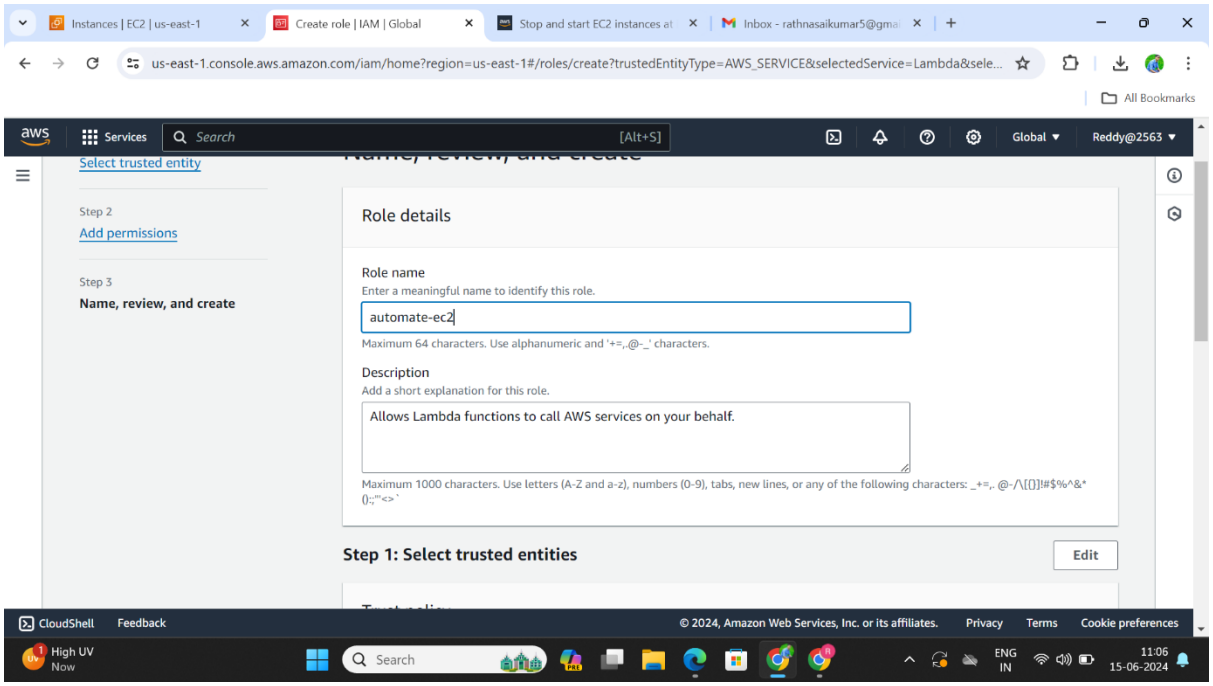
The permission only create the polices

- AWS provides a policy generator and an editor for creating policies. Choose one based on your familiarity and needs

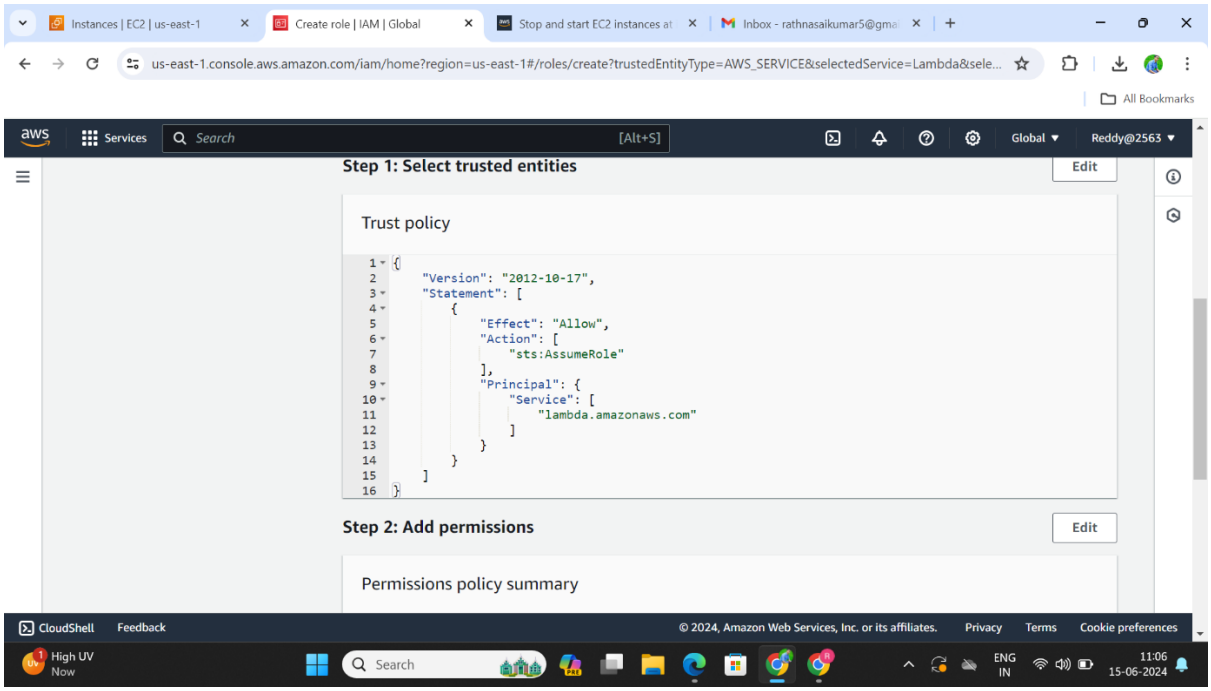
- **Policy Generator:** Use predefined templates or a policy wizard to create policies.
- **JSON Editor:** Write your policy in JSON format for more control and customization.

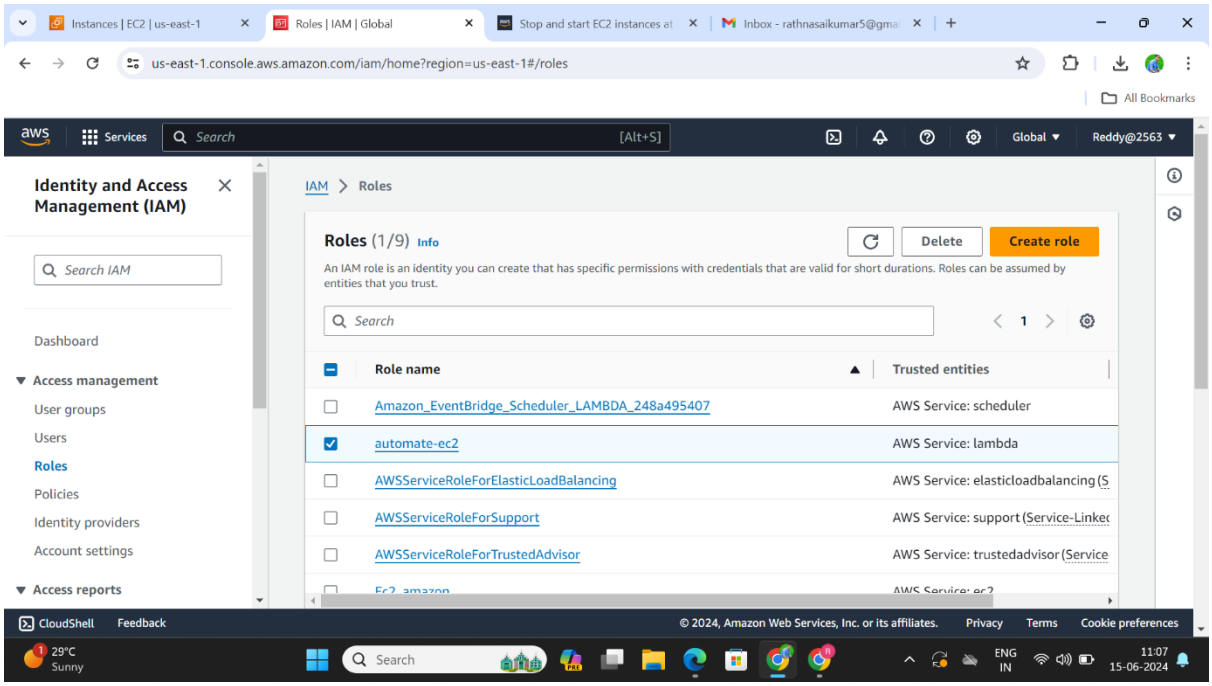
- **IAM ROLE NAME**

Give the IAM role name



Create the role name in any name own create the after next





- **LAMDA FUNCTION**

Create Function:

- Click "Create function".

- Choose "Author from scratch".
- Enter function name, select runtime (e.g., Python 3.10).

Configure Function:

- Optionally, set IAM role, adjust memory, timeout.

Write Code:

- Paste or write your Lambda function code.

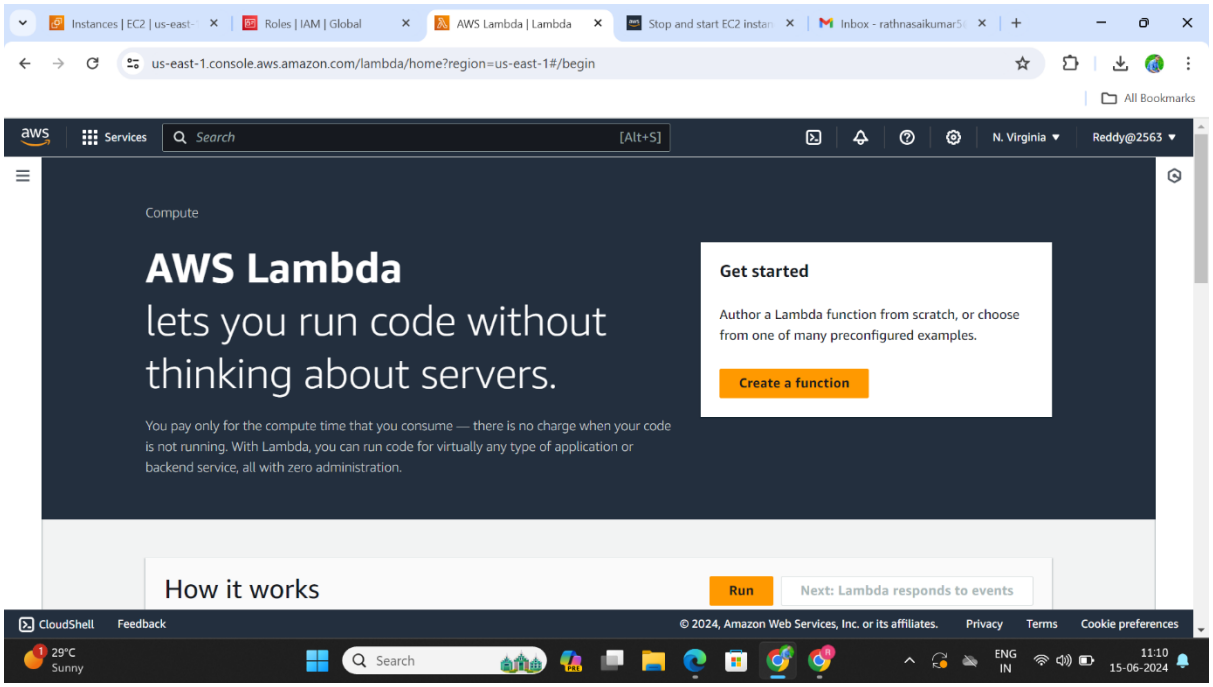
Deploy:

- Click "Deploy" to create your Lambda function.

Test :

- Test function using Lambda console

Monitor using AWS CloudWatch.


Instances | EC2 | us-east-
Roles | IAM | Global
AWS Lambda | Lambda
Stop and start EC2 instan
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us-east-1.console.aws.amazon.com/lambda/home?region=us-east-1#/begin
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Compute
AWS Lambda
lets you run code without thinking about servers.
You pay only for the compute time that you consume — there is no charge when your code is not running. With Lambda, you can run code for virtually any type of application or backend service, all with zero administration.
Get started
Author a Lambda function from scratch, or choose from one of many preconfigured examples.
Create a function
How it works
Run
Next: Lambda responds to events
CloudShell
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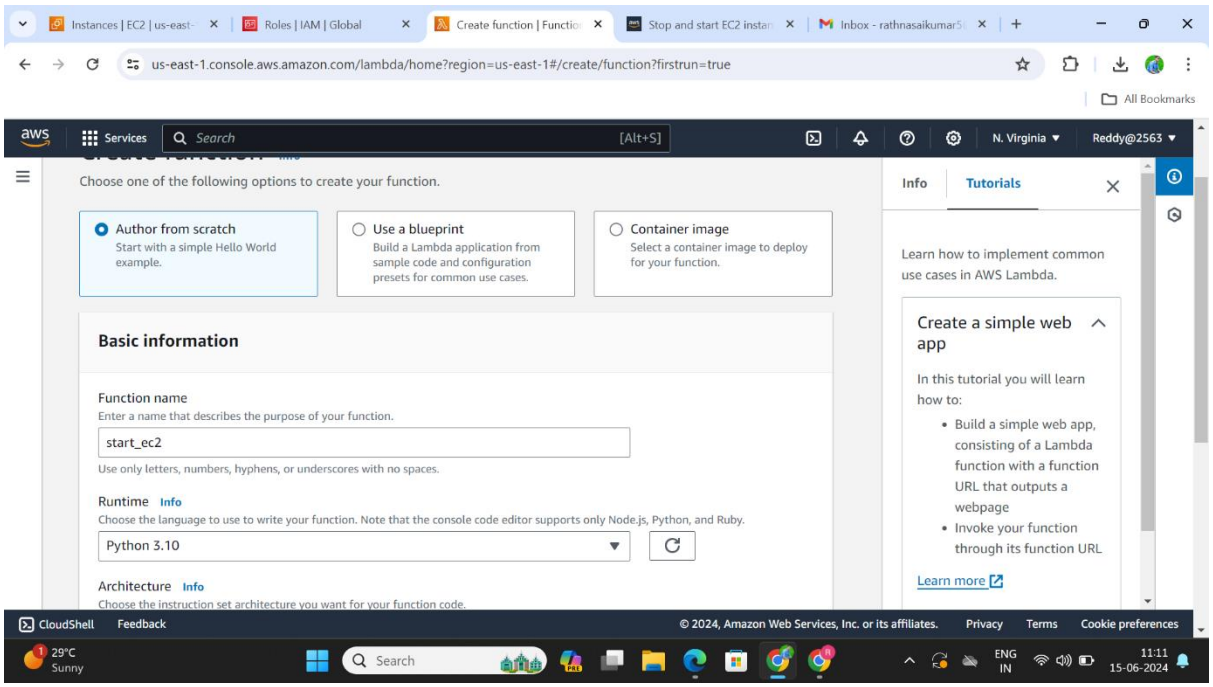
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Roles | IAM | Global
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us-east-1.console.aws.amazon.com/lambda/home?region=us-east-1#/create/function?firstrun=true
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Choose one of the following options to create your function.
Author from scratch
Start with a simple Hello World example.
Use a blueprint
Build a Lambda application from sample code and configuration presets for common use cases.
Container image
Select a container image to deploy for your function.
Basic information
Function name
Enter a name that describes the purpose of your function.
start_ec2
Use only letters, numbers, hyphens, or underscores with no spaces.
Runtime Info
Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.
Python 3.10
Architecture Info
Choose the instruction set architecture you want for your function code.
Info
Tutorials
Learn how to implement common use cases in AWS Lambda.
Create a simple web app
In this tutorial you will learn how to:
Build a simple web app, consisting of a Lambda function with a function URL that outputs a webpage
Invoke your function through its function URL
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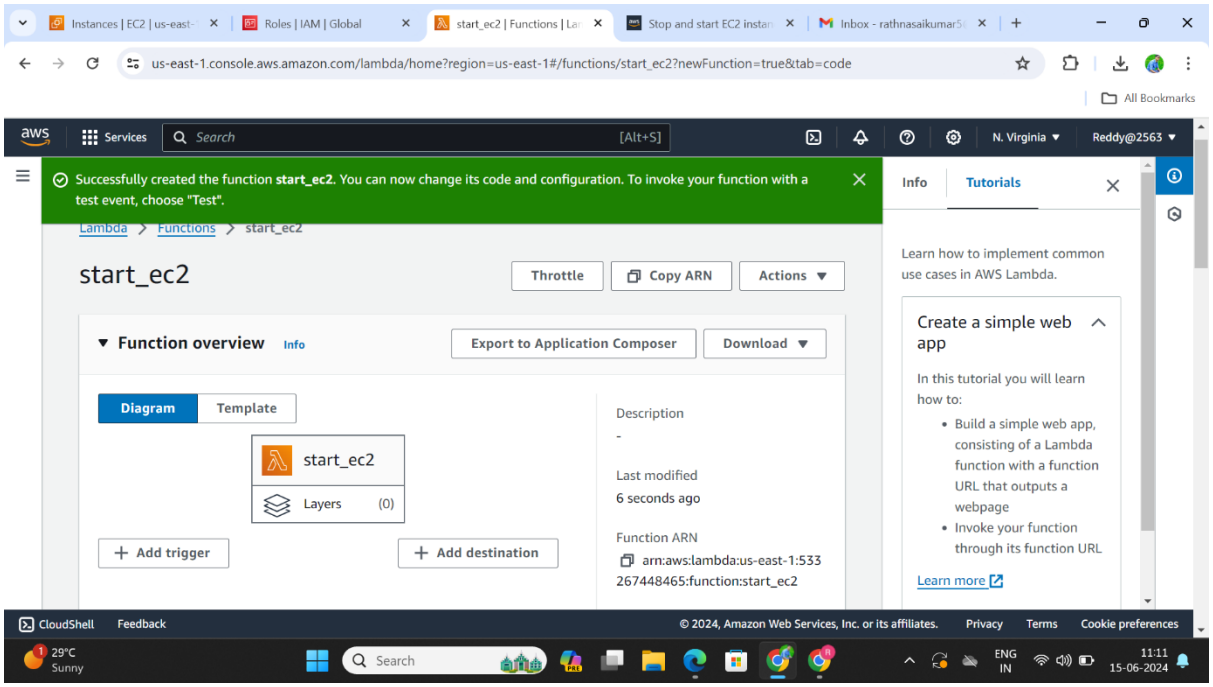
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us-east-1.console.aws.amazon.com/lambda/home?region=us-east-1#/functions/start_ec2?newFunction=true&tab=code
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Successfully created the function start_ec2. You can now change its code and configuration. To invoke your function with a test event, choose "Test".
Lambda > Functions > start_ec2
start_ec2
Throttle
Copy ARN
Actions
Function overview Info
Export to Application Composer
Download
Diagram
Template
start_ec2
Layers (0)
Add trigger
Add destination
Description
-
Last modified
6 seconds ago
Function ARN
arn:aws:lambda:us-east-1:533267448465:function:start_ec2
Info
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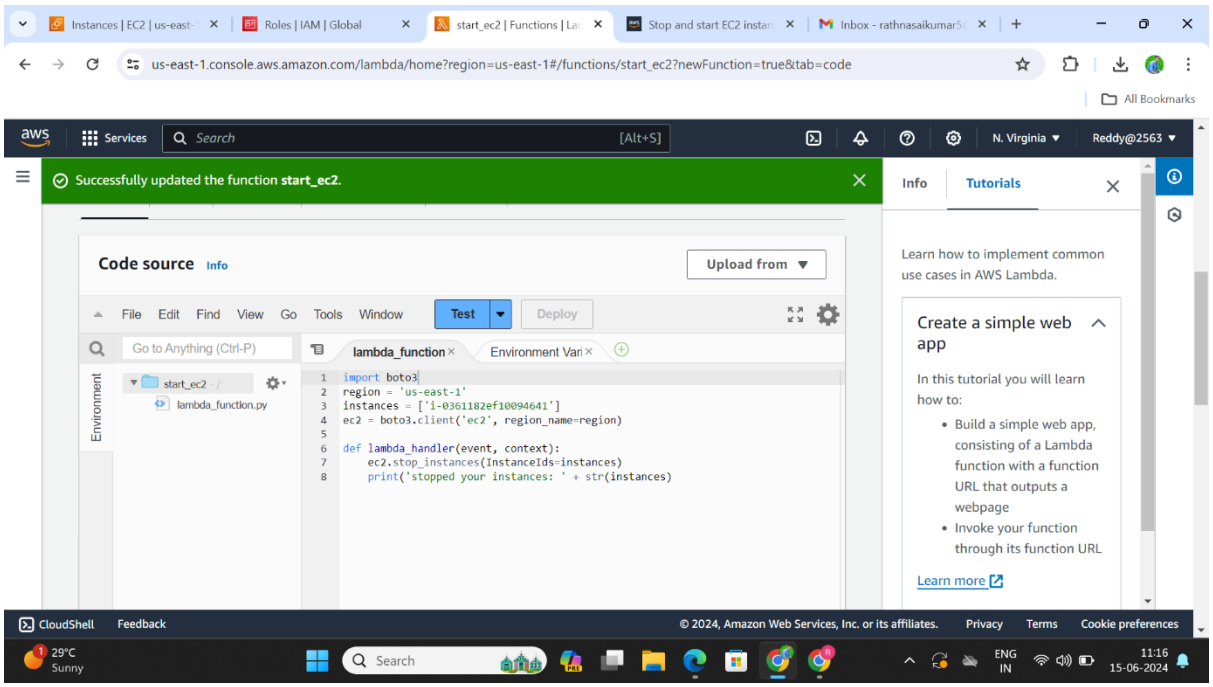
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start_ec2 | Functions | La
Stop and start EC2 instan
Inbox - rathnasaikumar5
us-east-1.console.aws.amazon.com/lambda/home?region=us-east-1#/functions/start_ec2?newFunction=true&tab=code
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Reddy@2563
Successfully updated the function start_ec2.
Code source Info
Upload from
File Edit Find View Go Tools Window
Test
Deploy
Go to Anything (Ctrl-P)
lambda_function
Environment Vari
Environment
start_ec2
lambda_function.py
import boto3
region = 'us-east-1'
instances = ['i-0361182ef10094641']
ec2 = boto3.client('ec2', region_name=region)
def lambda_handler(event, context):
ec2.stop_instances(InstanceIds=instances)
print('stopped your instances: ' + str(instances)
Info
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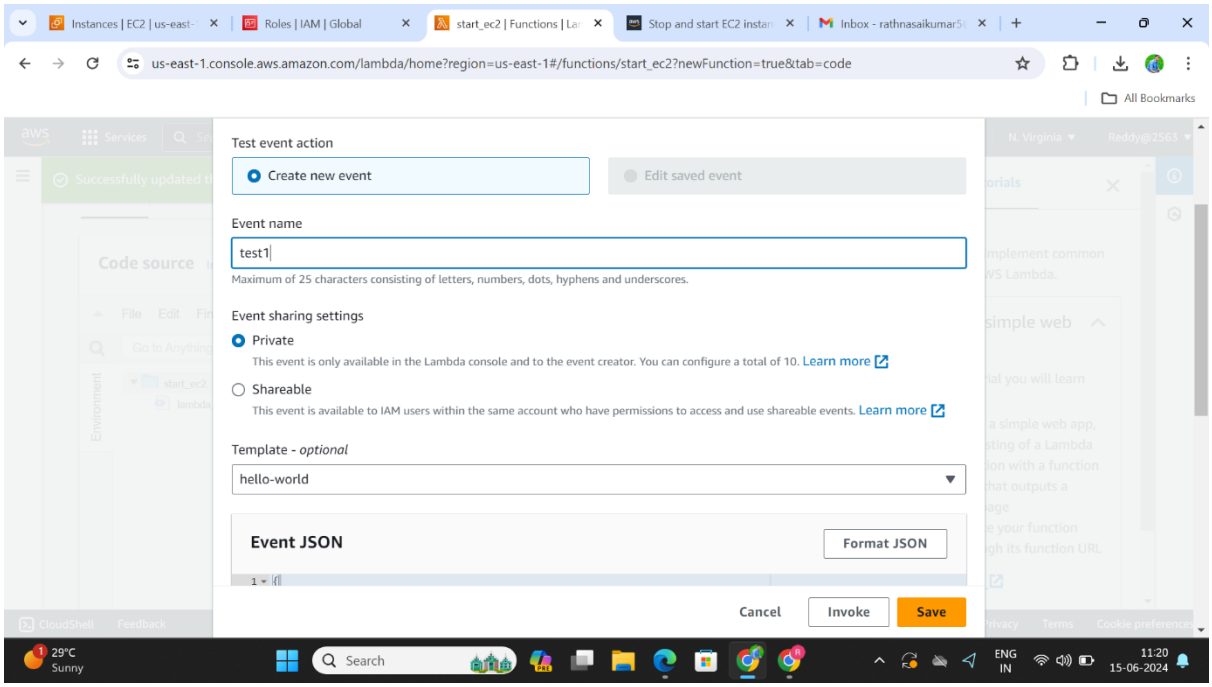
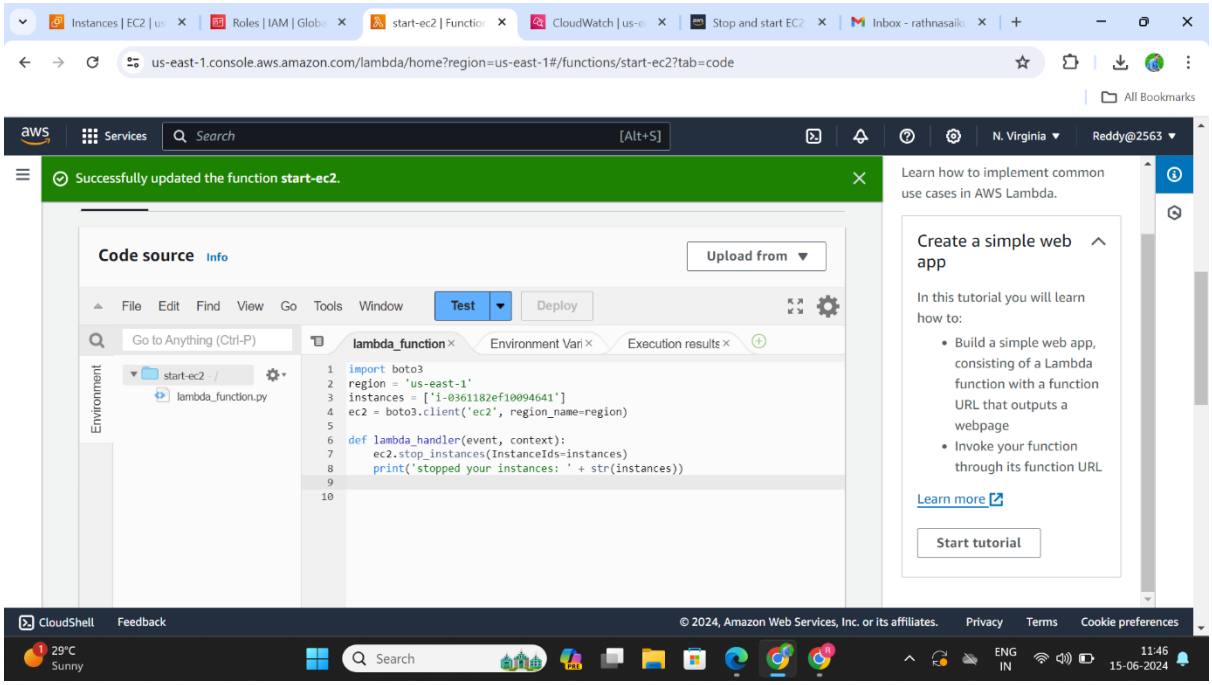
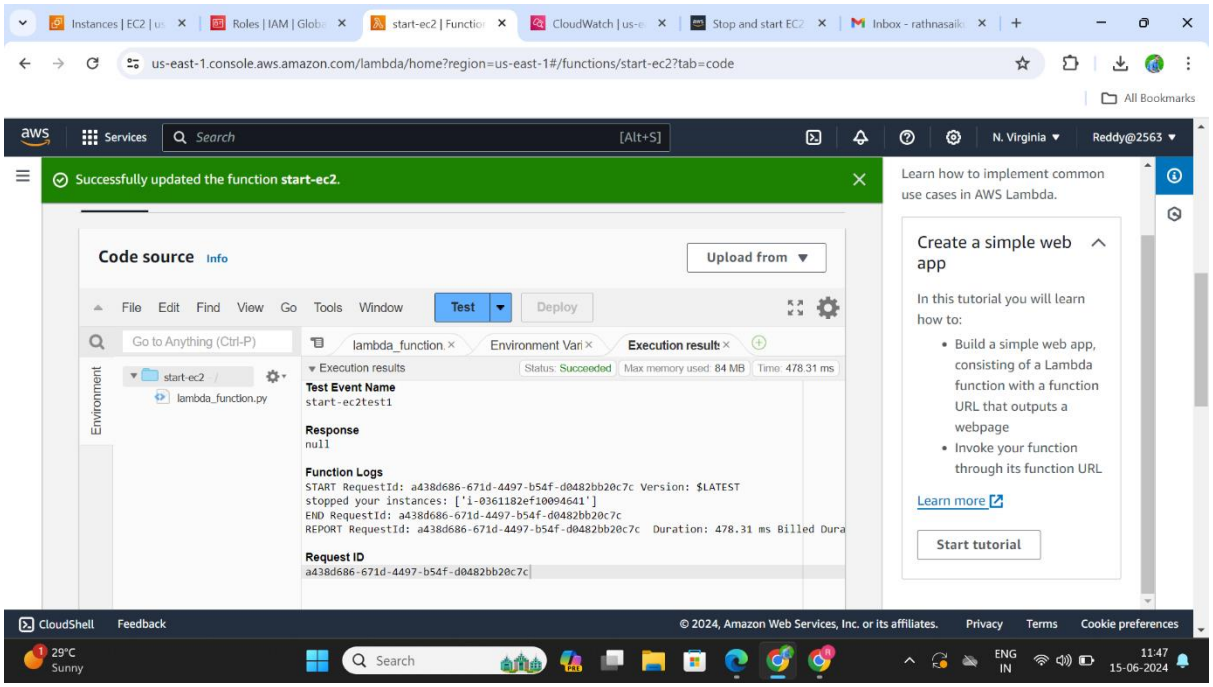
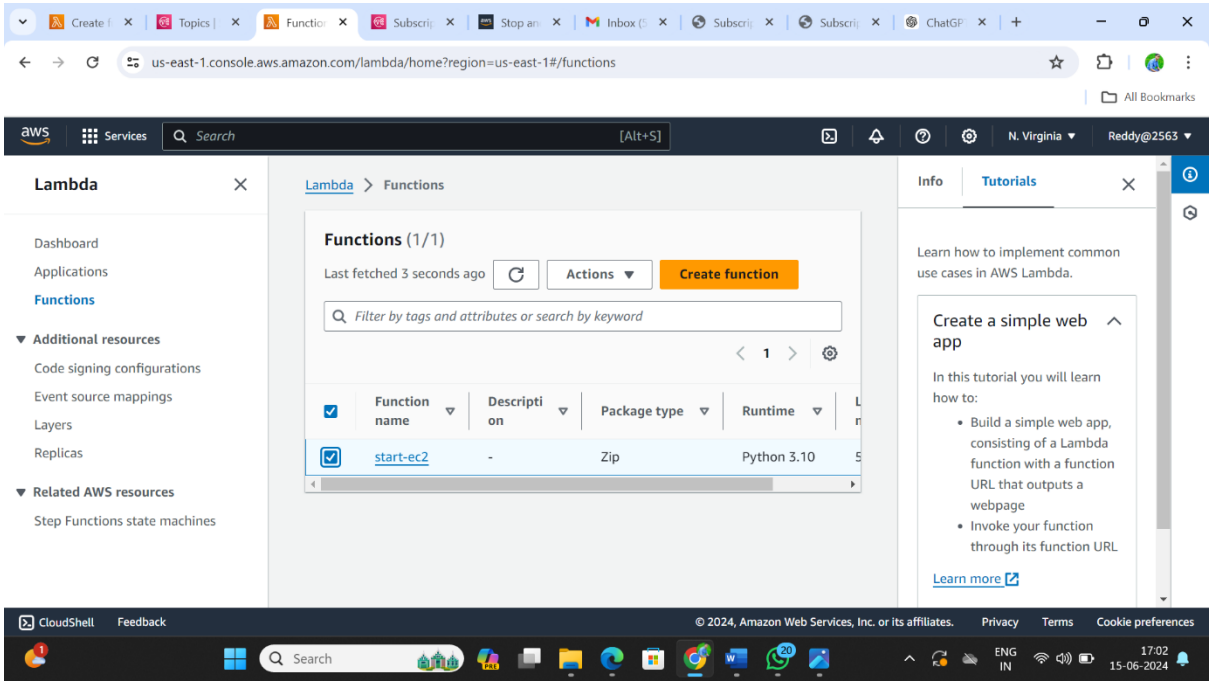


Test1event name create the running excutation test code successfully





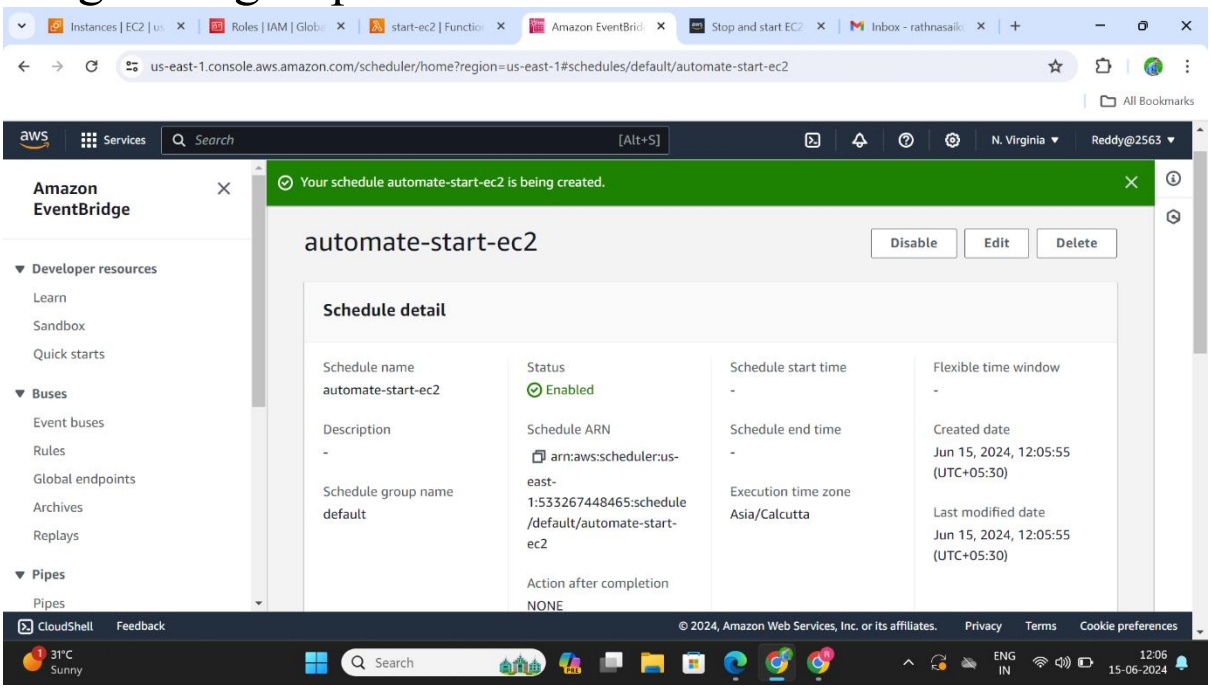
Excutation results in output is working.

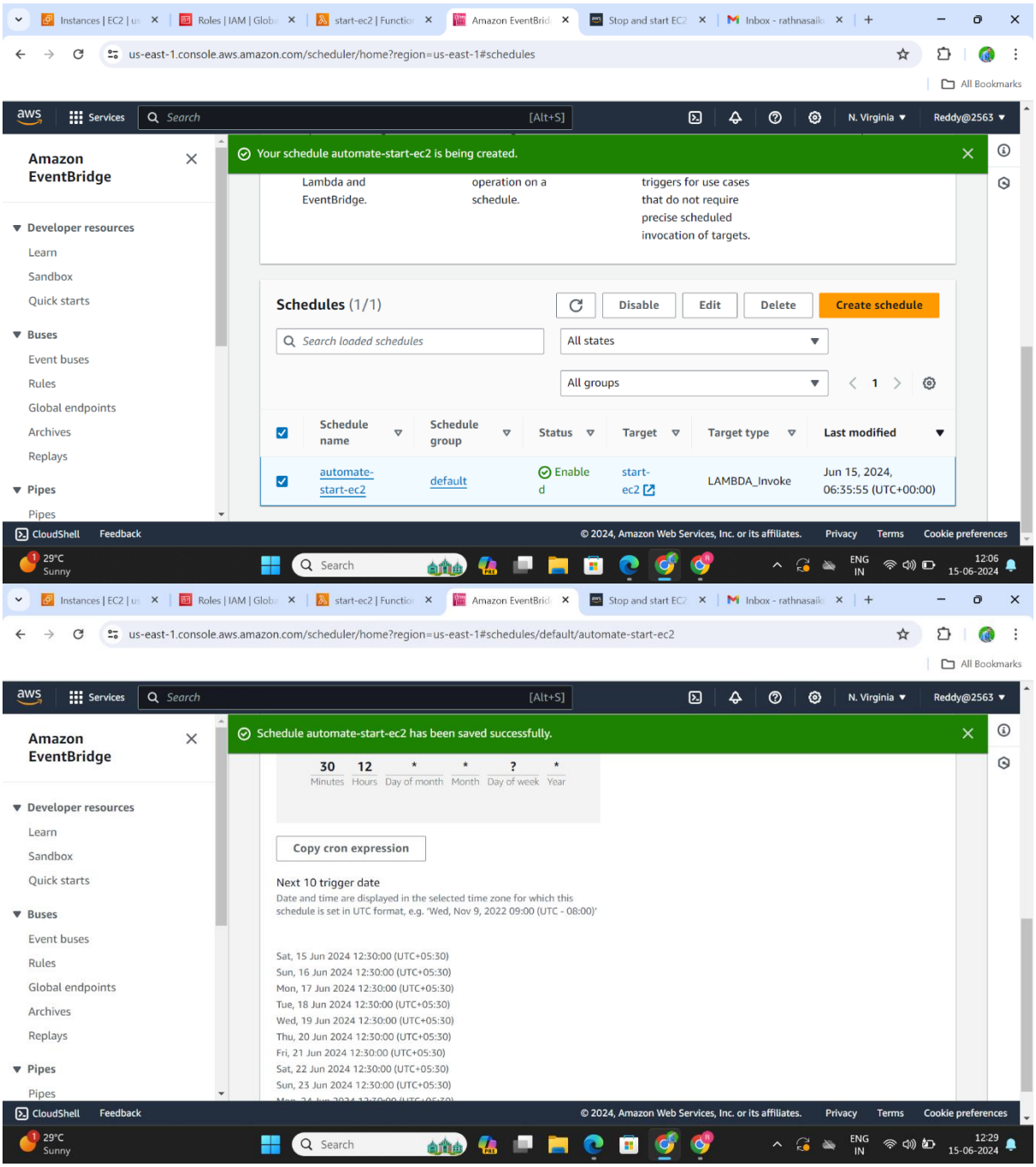


- **CLOUDWATCH:-**

Creation give the cloudwatch dashboard if use for the events and schedules

After the events in rules create the role name ‘automate ec2’
Rule event with an pattern
Next after event service “EC2” select option
After next event type “EC2 instance state -change notification
After select the a target “SNS Topic”
The previous create the topic “snstopic_create after the succssfully for notification in ec2 instance refresh automatically stopped to running etc. afternoon12:30pm startinstance and end closed 17:30pm automatically stopped in lambda funtion.
Target the group in schedule.





- **SNS TOPIC:-**

  Create service in the amazon SNS

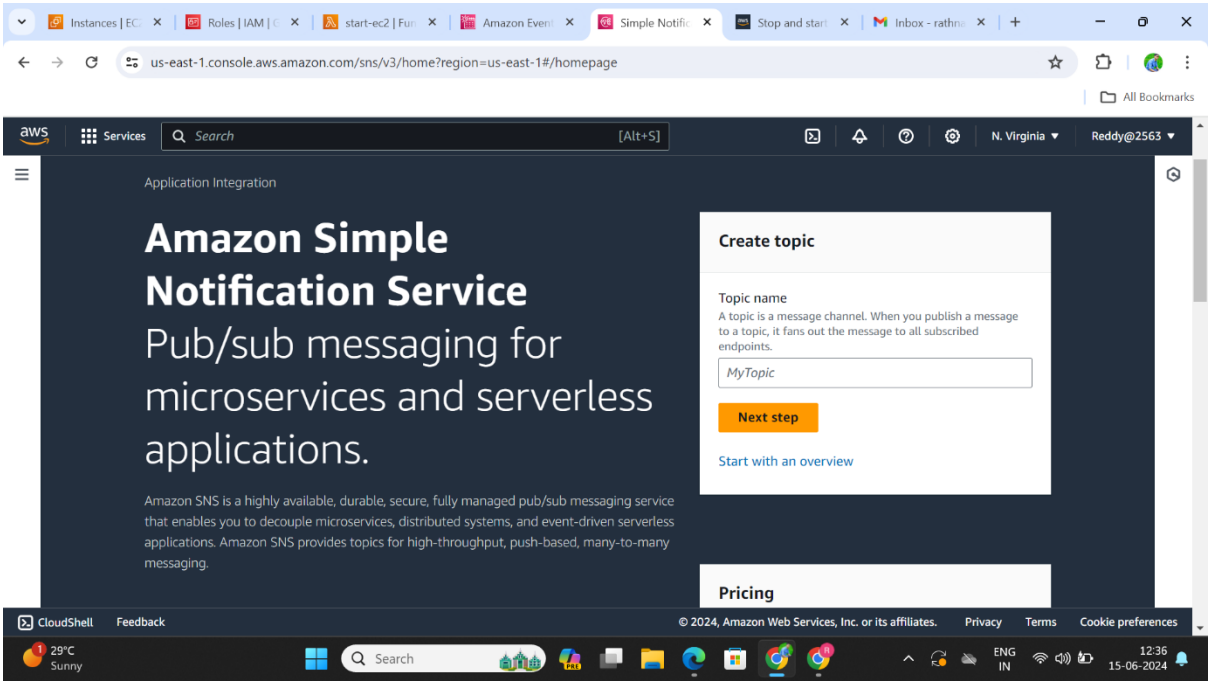
  - Click on "Create topic" button.
  - Enter a name for your SNS topic (e.g., MyTopic).

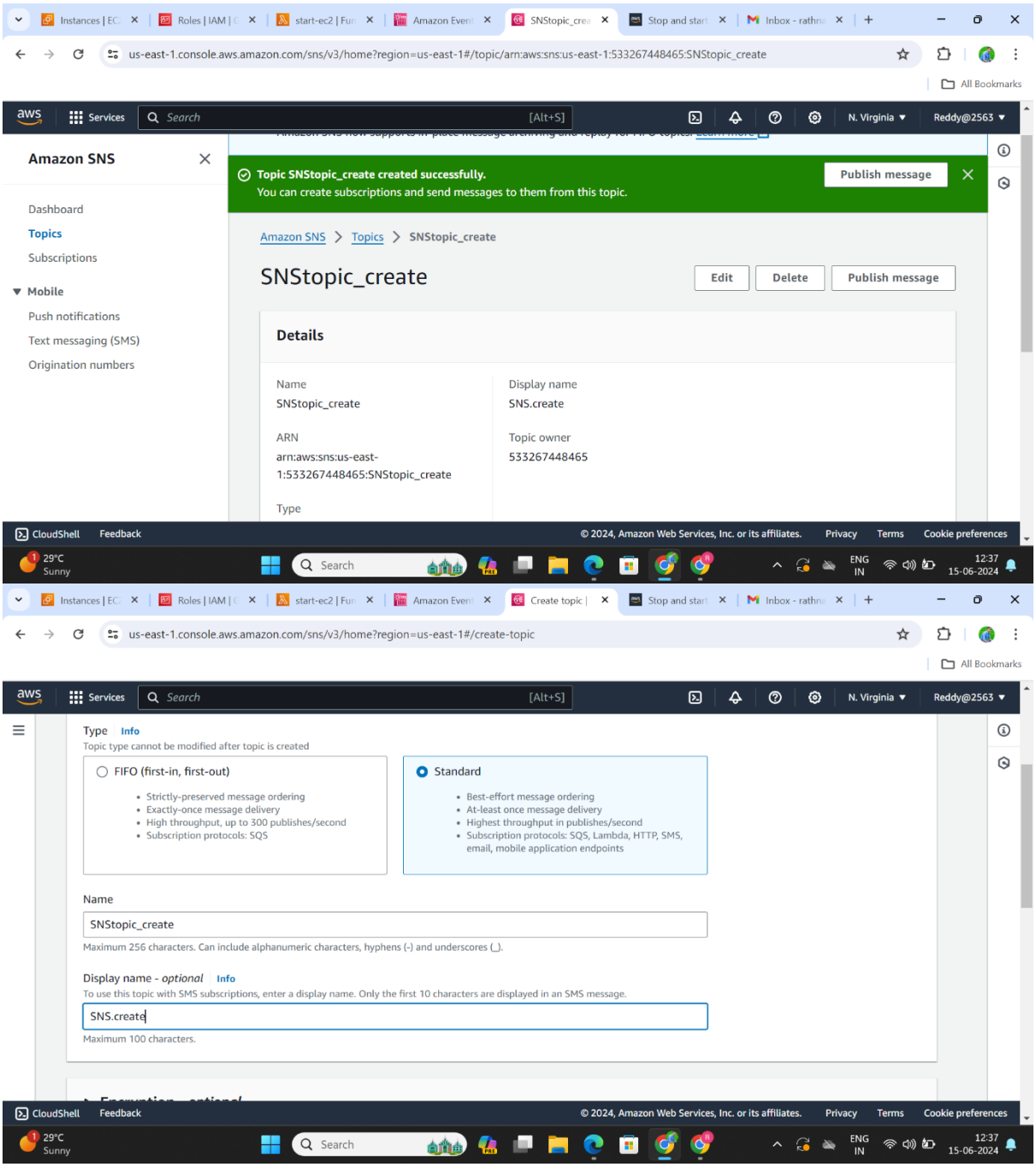
Display name optional: Optionally, provide a display name for your topic.

Optionally, select a KMS key to encrypt messages published to the topic.

Access Policy (Optional): Optionally, define a policy to control access to the topic.

Click on "Create topic" to finalize and create your SNS topic
Once created, you can view details such as ARN (Amazon Resource Name) and manage subscriptions under the "Subscriptions" tab
Go to Gmail verification subscriptions verify after select is email only if will come the notification in mail registered which have the mail if will come notification.




us-east-1.console.aws.amazon.com/sns/v3/home?region=us-east-1#/topic/arn:aws:sns:us-east-1:533267448465:SNStopic_create
Amazon SNS
Dashboard
Topics
Subscriptions
Mobile
Push notifications
Text messaging (SMS)
Origination numbers
Topic SNStopic_create created successfully.
You can create subscriptions and send messages to them from this topic.
Publish message
Amazon SNS > Topics > SNStopic_create
SNStopic_create
Edit
Delete
Publish message
Details
Name
SNStopic_create
Display name
SNS.create
ARN
arn:aws:sns:us-east-1:533267448465:SNStopic_create
Topic owner
533267448465
Type
CloudShell
Feedback
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us-east-1.console.aws.amazon.com/sns/v3/home?region=us-east-1#/create-topic
Type Info
Topic type cannot be modified after topic is created
FIFO (first-in, first-out)
Strictly-preserved message ordering
Exactly-once message delivery
High throughput, up to 300 publishes/second
Subscription protocols: SQS
Standard
Best-effort message ordering
At-least once message delivery
Highest throughput in publishes/second
Subscription protocols: SQS, Lambda, HTTP, SMS, email, mobile application endpoints
Name
SNStopic_create
Maximum 256 characters. Can include alphanumeric characters, hyphens (-) and underscores (_).
Display name - optional Info
To use this topic with SMS subscriptions, enter a display name. Only the first 10 characters are displayed in an SMS message.
SNS.create
Maximum 100 characters.
CloudShell
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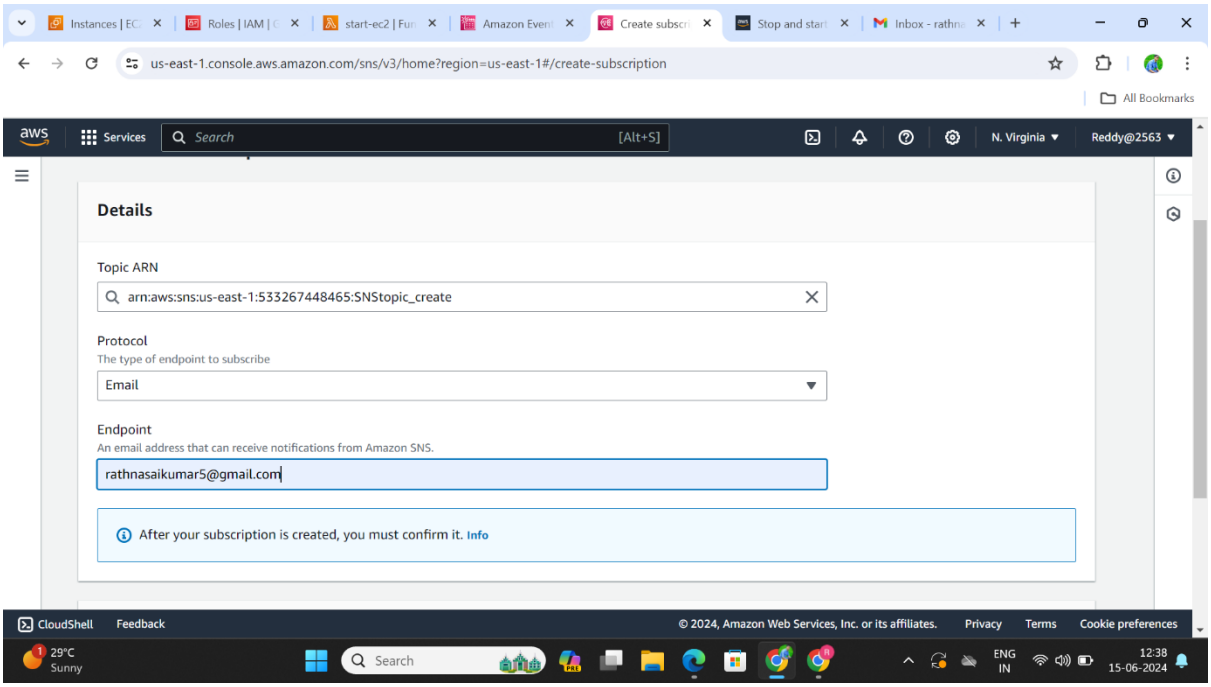
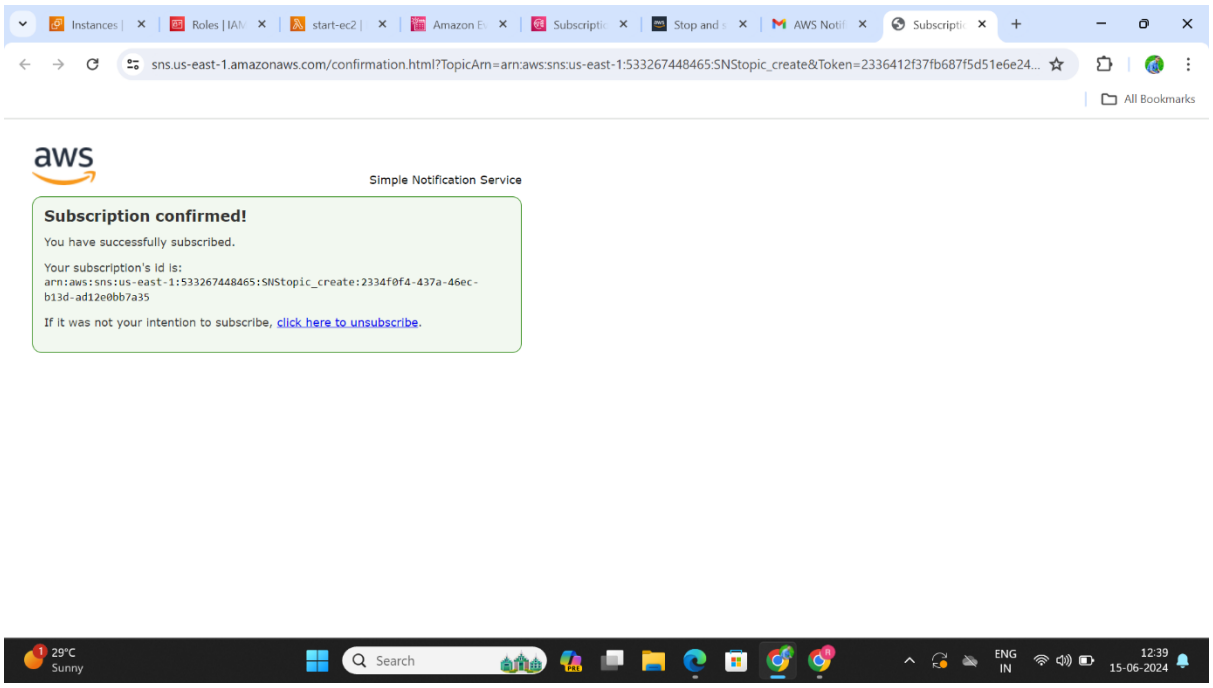
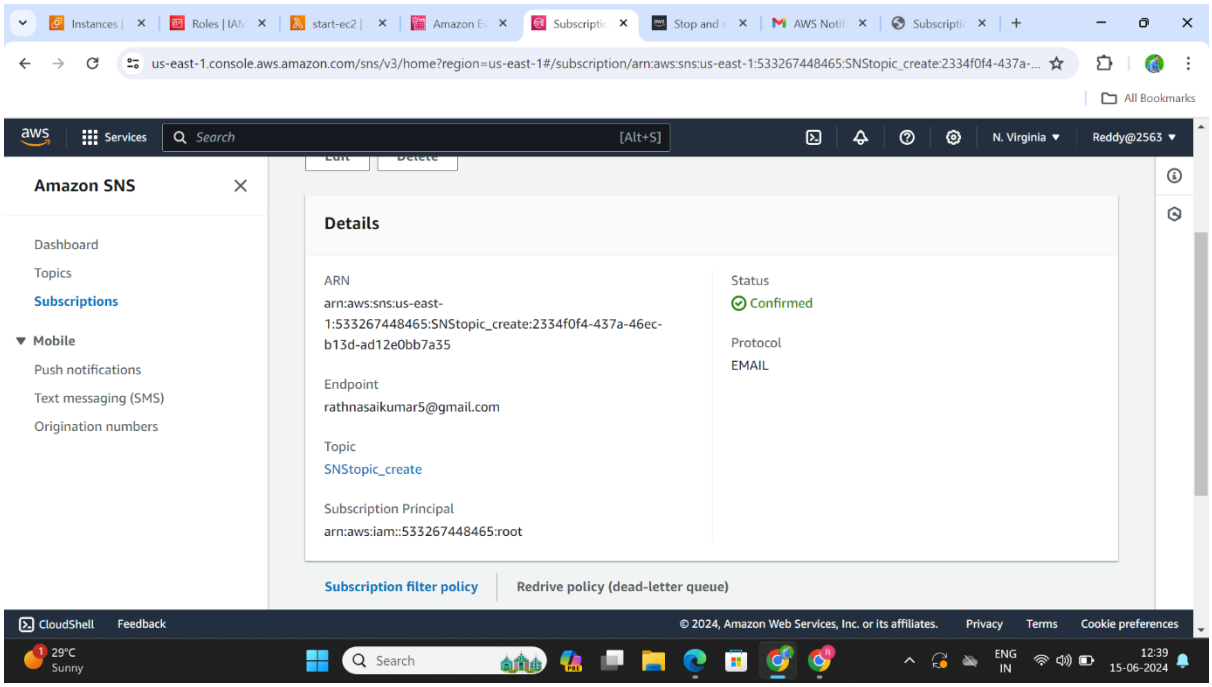


Subscription confirmed is gmail id




Instances
Roles | IAM
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All Bookmarks
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Services
Search
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N. Virginia
Reddy@2563
Amazon SNS
Dashboard
Topics
Subscriptions
Mobile
Push notifications
Text messaging (SMS)
Origination numbers
Details
ARN
arn:aws:sns:us-east-1:533267448465:SNStopic_create:2334f0f4-437a-46ec-b13d-ad12e0bb7a35
Endpoint
rathnasaikumar5@gmail.com
Topic
SNStopic_create
Subscription Principal
arn:aws:iam::533267448465:root
Status
Confirmed
Protocol
EMAIL
Subscription filter policy
Redrive policy (dead-letter queue)
CloudShell
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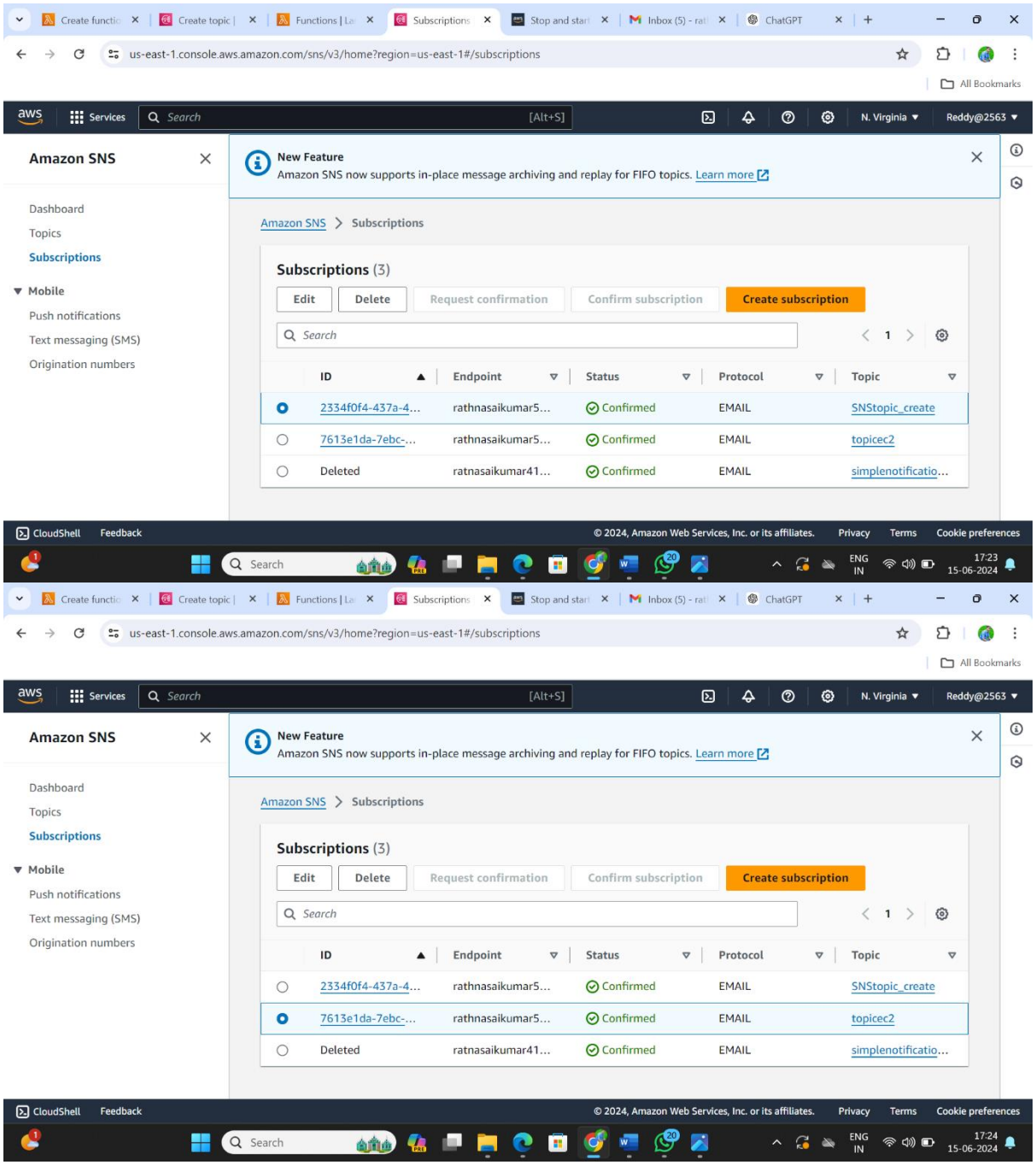
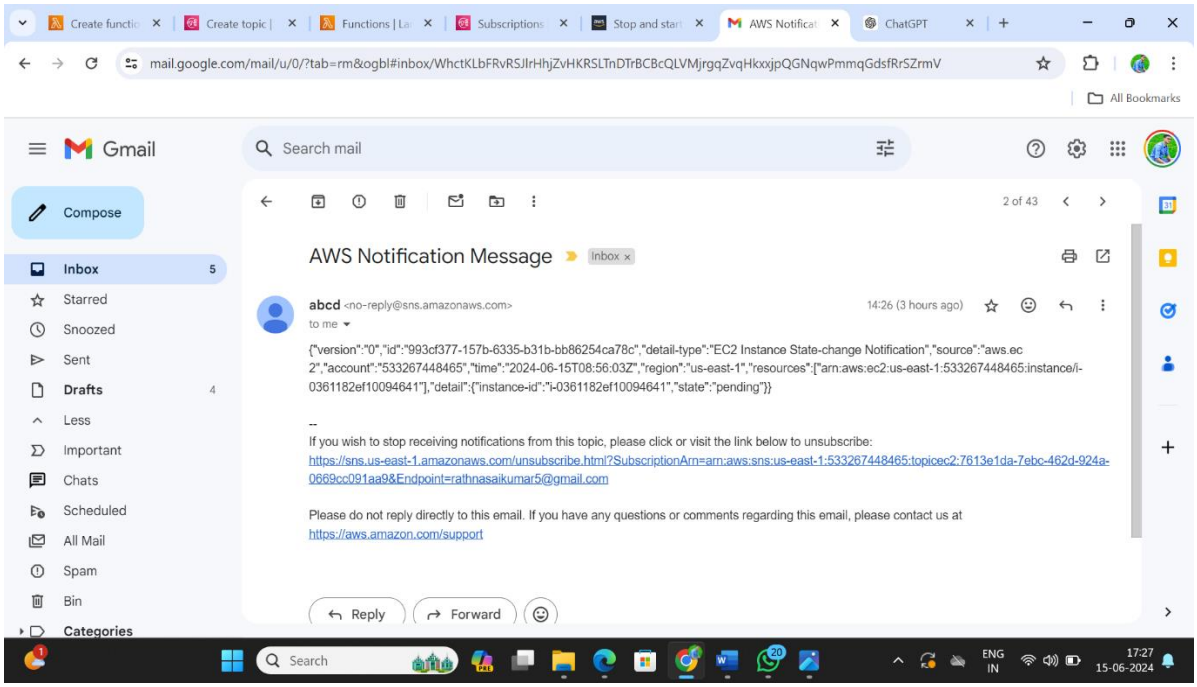


Topicec2 if will came notification Gmail Id ec2 lunch stopped for the start instance in running automatically the if will came to Gmail id notification.

Final if will came notification Gmail ID



Gmail is notification if came the initial state I will changed the start instance the verification will be completed finally…..

Project Done By

R. Sai Kumar

Submitted To

Ajay Sir(GA Foundation)