**Automated EC2 Instance Start/Stop Using AWS Lambda and EventBridge Scheduler**

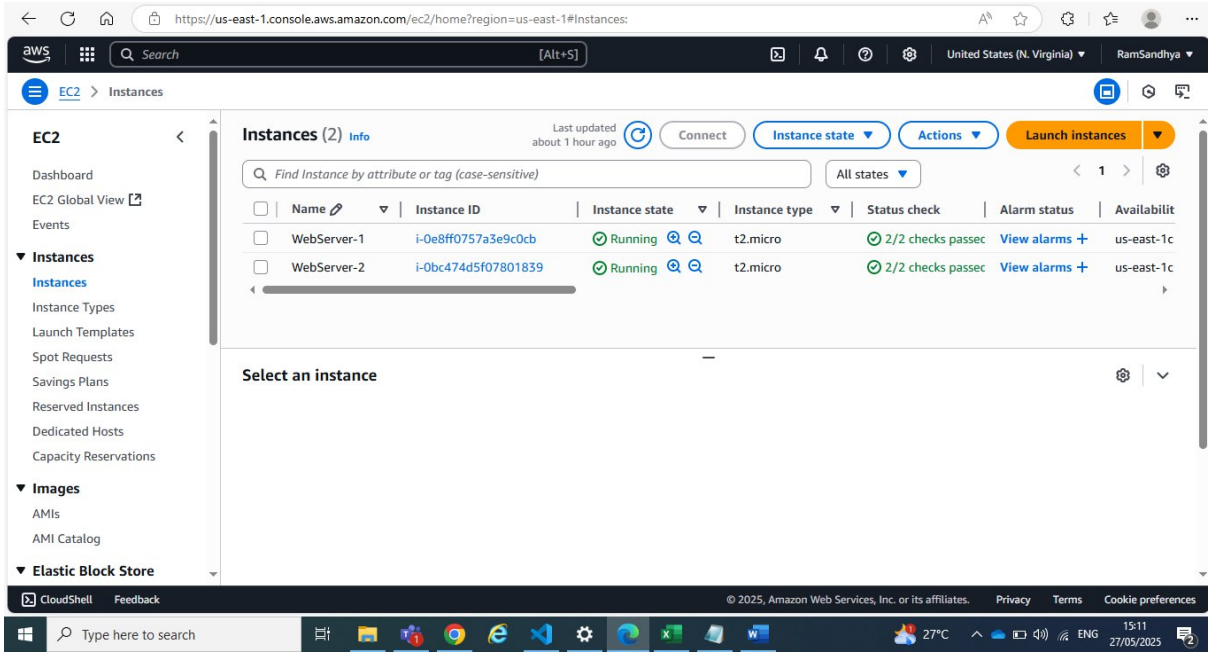
**<u>Purpose of this document:</u>**

The purpose of this document is to outline the process for automating the start and stop of Amazon EC2 instances using AWS Lambda and Amazon Event Bridge Scheduler. This automation helps in reducing unnecessary resource usage and optimizing cost, especially for development or non-production environments that do not require 24/7 uptime.

To automatically stop and start an EC2 instance using AWS Lambda and Amazon Event Bridge (CloudWatch Events), follow this step-by-step guide.

==========

We have a Development Environment in AWS



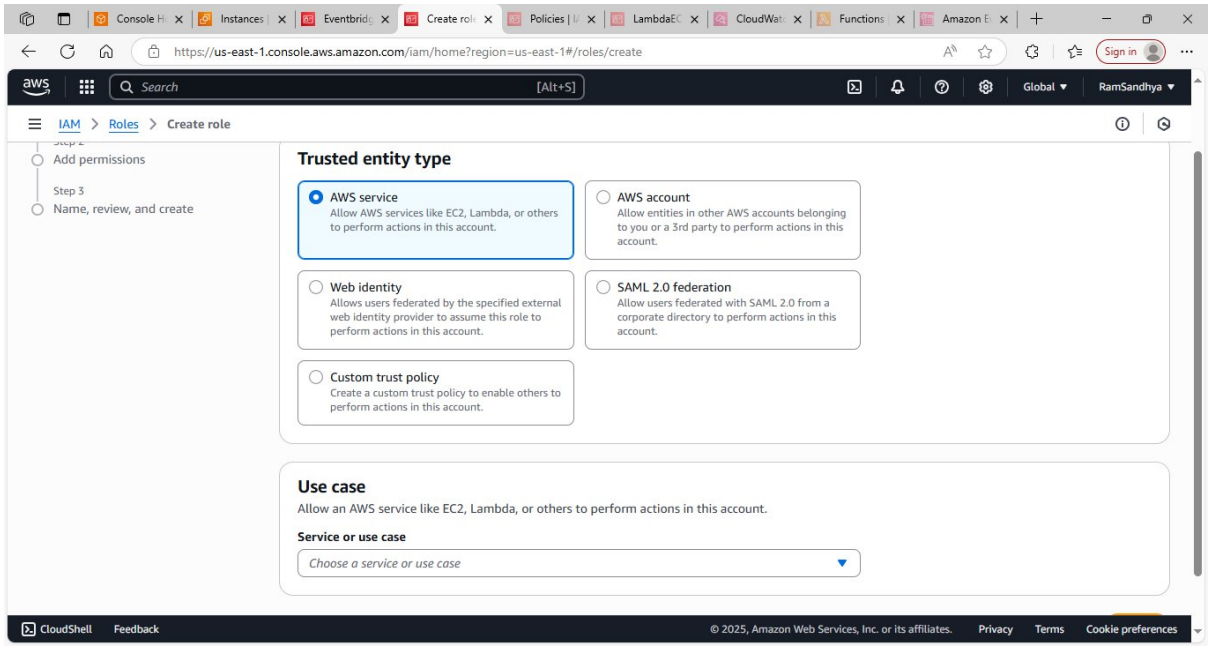

àWe need to create IAM role.

**Step 1: Create IAM Role for Lambda**

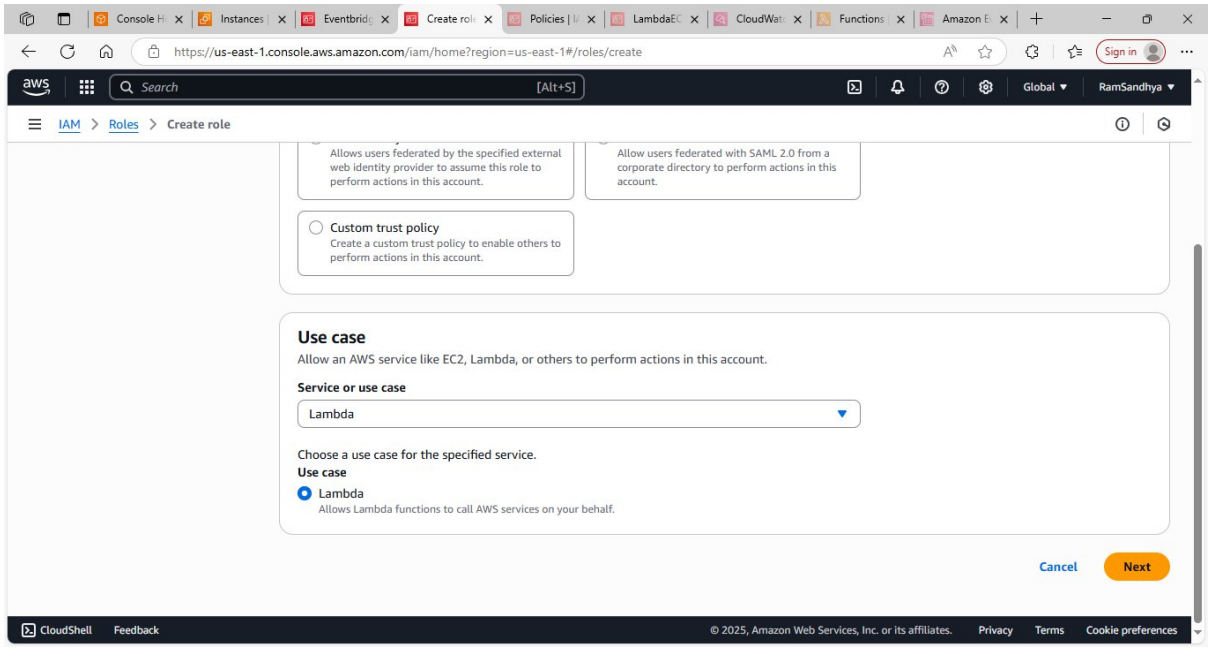
- Go to **IAM** > **Roles** > Click **Create Role**.
- **Trusted Entity**: Choose **Lambda**.
- Attach **Policies**:

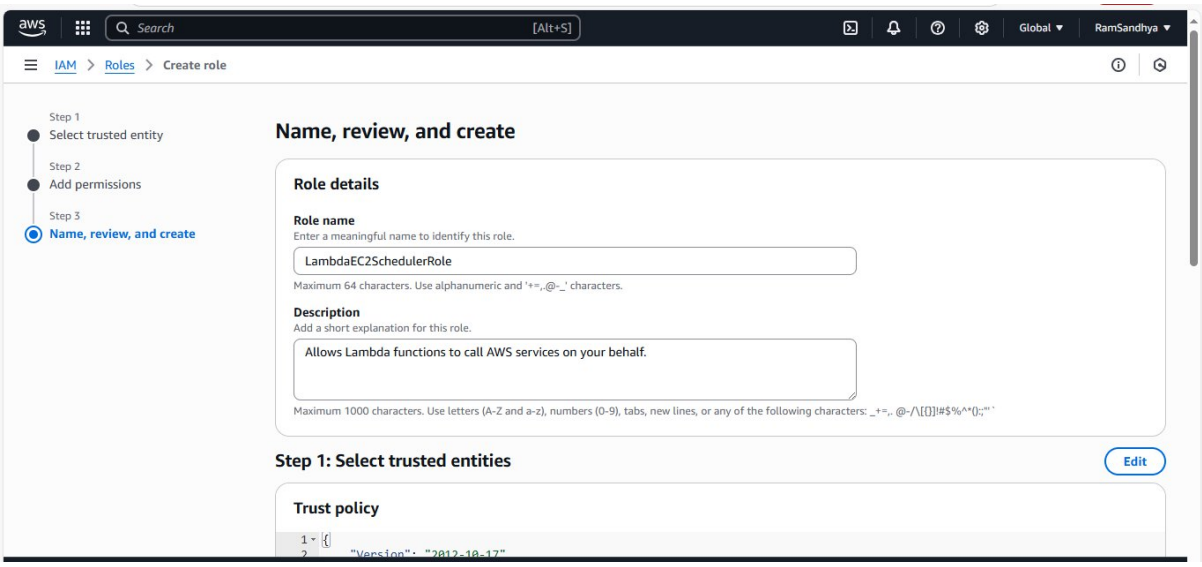
- AmazonEC2FullAccess (or fine-tuned permissions)
- AWSLambdaBasicExecutionRole
- Give it a name like: LambdaEC2SchedulerRole.
- Create the role.

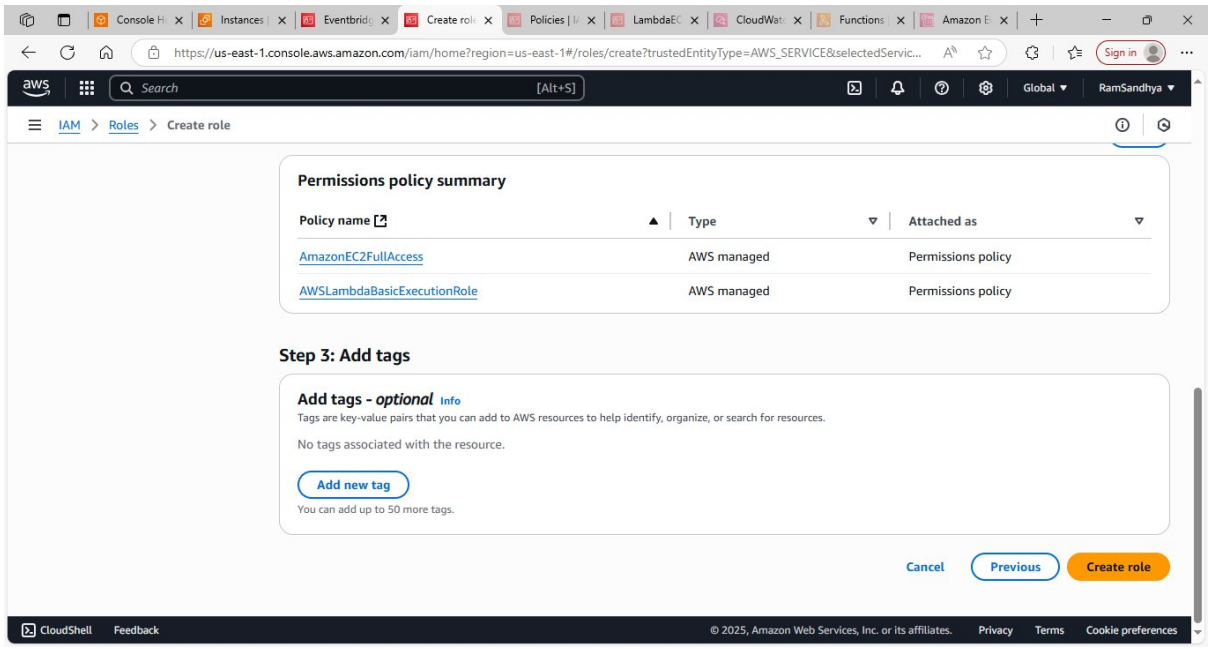
==========



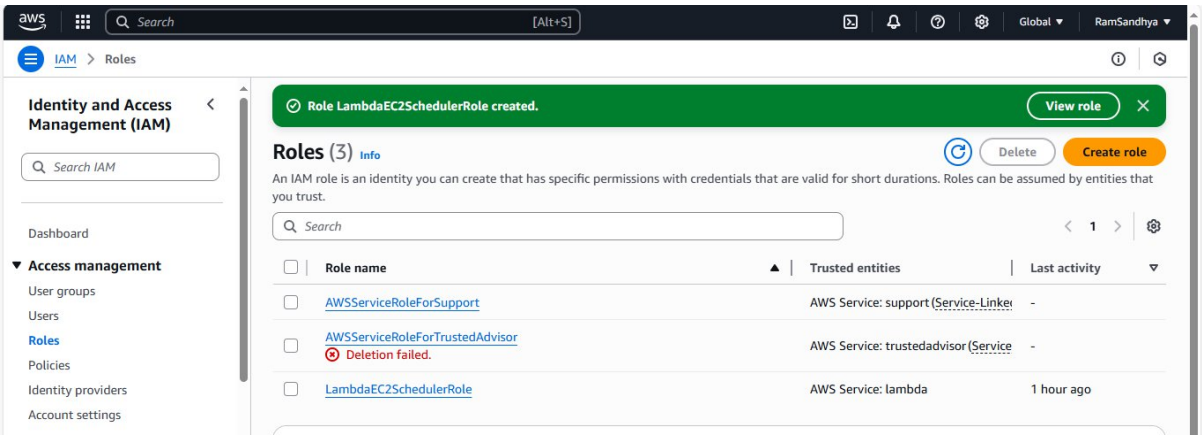

Selected lambda as use case






Role has been created.



- Step 2: Create Lambda Function to Start/Stop EC2

Go to Lambda > Click Create Function.

Function Name: StartEC2Instance

Runtime: Python 3.13

Choose the role: LambdaEC2SchedulerRole.

Click Create Function.

Python Code for Stopping EC2

---

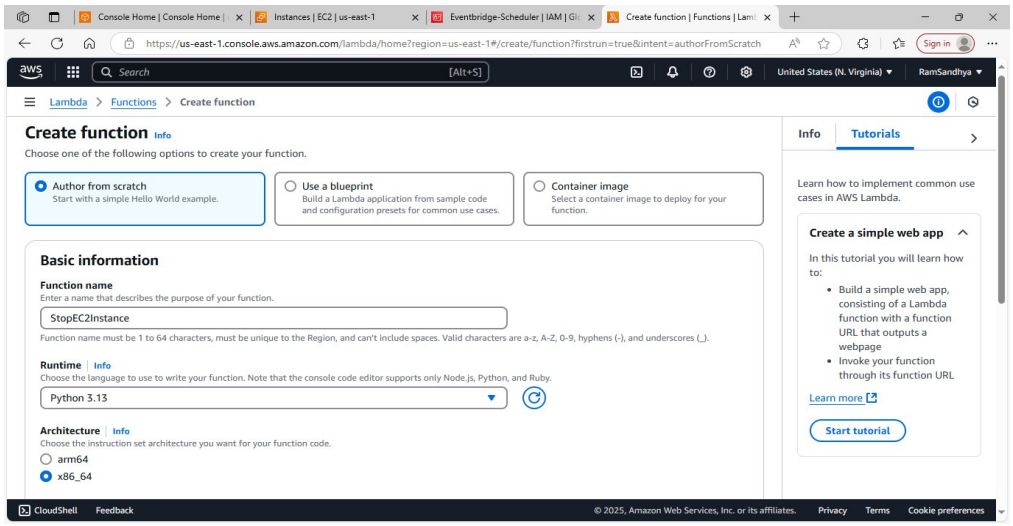
```
import boto3

def lambda_handler(event, context):
    print("Lambda triggered")  # This should appear in CloudWatch logs

    ec2 = boto3.client('ec2', region_name='us-east-1')
    instance_ids = ['i-0e8ff0757a3e9c0cb', 'i-0bc474d5f07801839']
    response = ec2.start_instances(InstanceIds=instance_ids)
    print(response)
```

==========

**Practical's for creating Function:**



Console Home | Console Home | Instances | EC2 | us-east-1 | Eventbridge-Scheduler | IAM | Gl | Create function | Functions | Lam

https://us-east-1.console.aws.amazon.com/lambda/home?region=us-east-1#/create/function?firstrun=true&intent=authorFromScratch

Lambda > Functions > Create function

**Permissions** Info

By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.

▼ **Change default execution role**

**Execution role**

Choose a role that defines the permissions of your function. To create a custom role, go to the IAM console.

- ○ Create a new role with basic Lambda permissions
- ◉ Use an existing role
- ○ Create a new role from AWS policy templates

**Existing role**

Choose an existing role that you've created to be used with this Lambda function. The role must have permission to upload logs to Amazon CloudWatch Logs.

LambdaEC2SchedulerRole

View the LambdaEC2SchedulerRole role on the IAM console.

▶ **Additional Configurations**

Use additional configurations to set up code signing, function URL, tags, and Amazon VPC access for your function.

Cancel | Create function

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

Learn more

Start tutorial

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Console Home | Console Home | Instances | EC2 | us-east-1 | Eventbridge-Scheduler | IAM | Gl | StopEC2Instance | Functions | Lam

https://us-east-1.console.aws.amazon.com/lambda/home?region=us-east-1#/functions/StopEC2Instance?newFunction=true&tab=code

Lambda > Functions > StopEC2Instance

Successfully created the function **StopEC2Instance**. You can now change its code and configuration. To invoke your function with a test event, choose "Test".

## StopEC2Instance

Throttle | Copy ARN | Actions

**Function overview** Info

Export to Infrastructure Composer | Download

Diagram | Template

StopEC2Instance

Layers (0)

+ Add trigger

+ Add destination

**Description**

-

**Last modified**

5 seconds ago

**Function ARN**

arn:aws:lambda:us-east-1:037655796146:function:StopEC2Instance

**Function URL** Info

-

Code | Test | Monitor | Configuration | Aliases | Versions

Info | Tutorials

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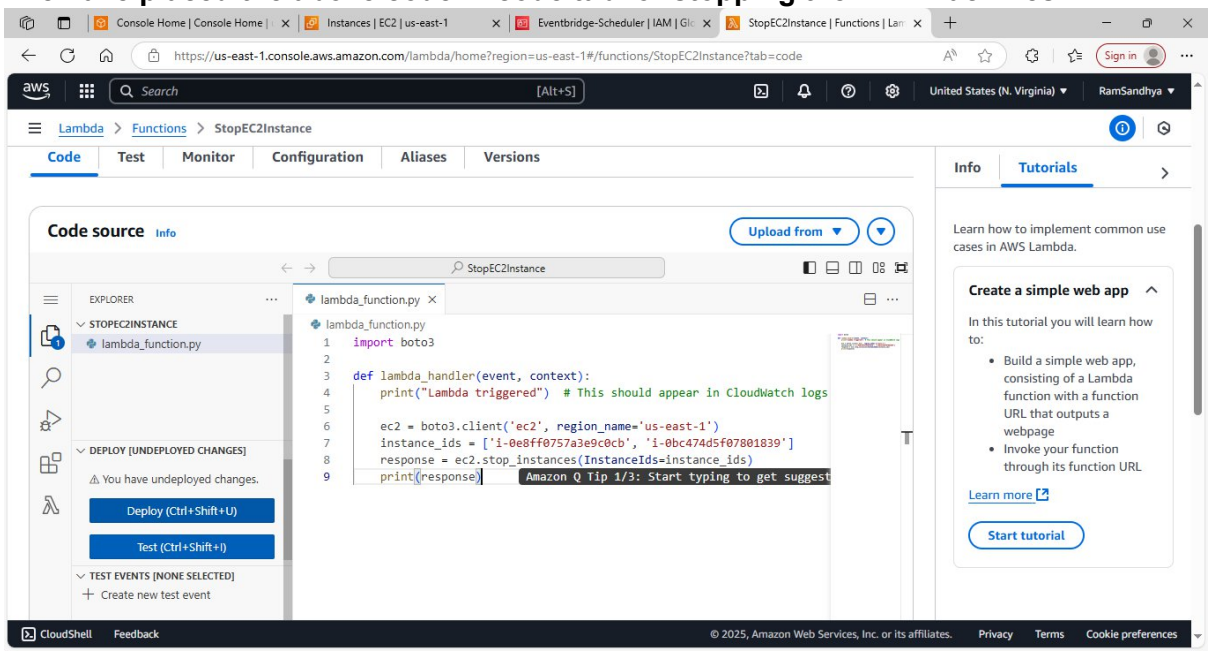
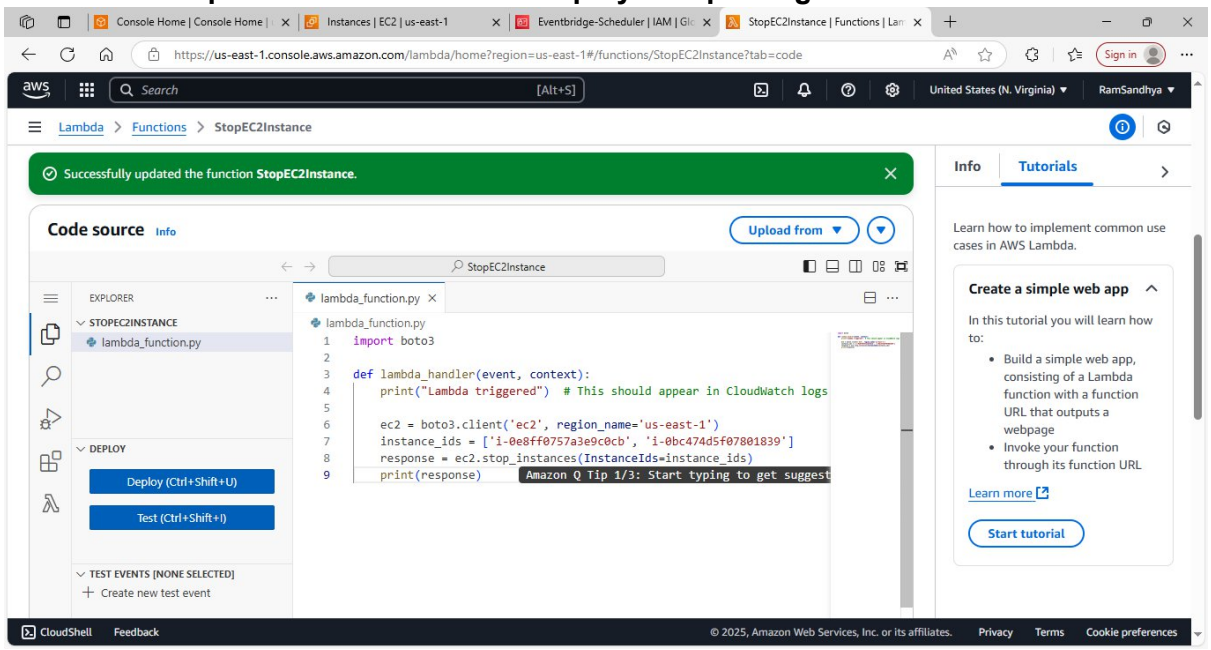
**We have placed the above code in code tab for stopping the EC2 machines**




**Once we have placed then we need to deploy for updating the code.**

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**Step 3: Lets Create IAM role now.**

**In AWS, to invoke a Lambda function means to execute it. When using EventBridge Scheduler, AWS needs permission to trigger (invoke) your Lambda at the scheduled time.**

**So, "invoke your Lambda" = "run your Lambda function automatically based on the schedule."**

**Create a Custom IAM Role Manually and attach custom policy for this Role**

**Go to IAM > Roles > Create Role**

- **Trusted entity type: Choose Custom trust policy**
- **Paste the following trust policy JSON:**

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Principal": {
        "Service": "scheduler.amazonaws.com"
      },
      "Action": "sts:AssumeRole"
    }
  ]
}
```

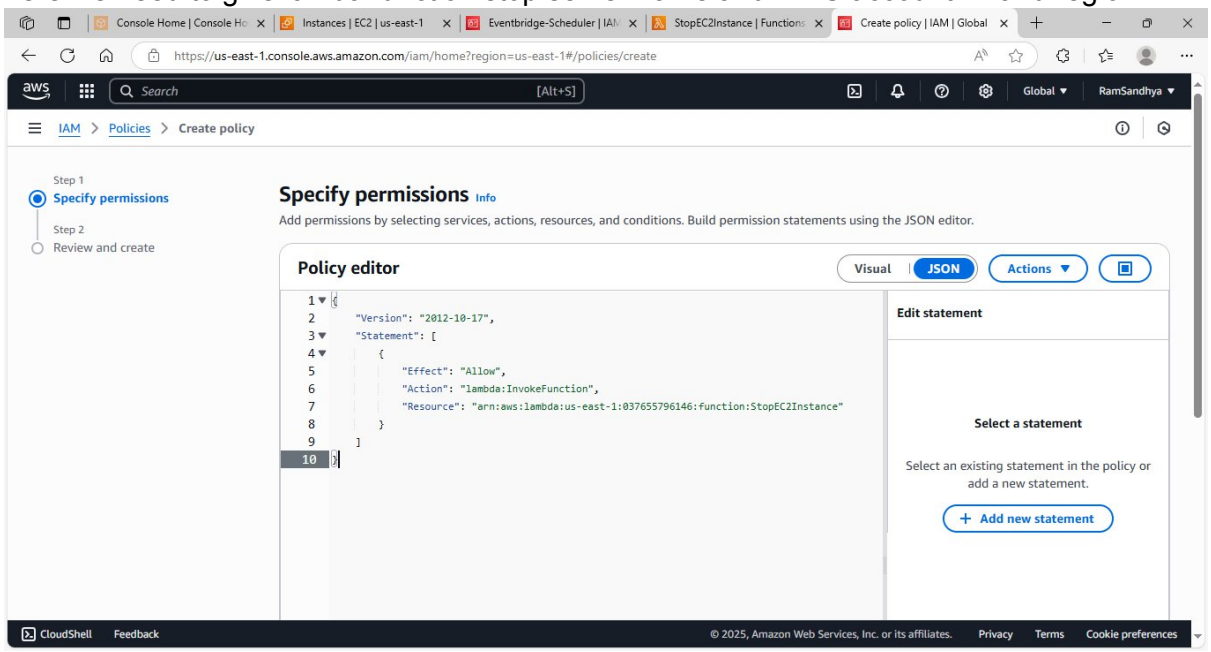
**==========**

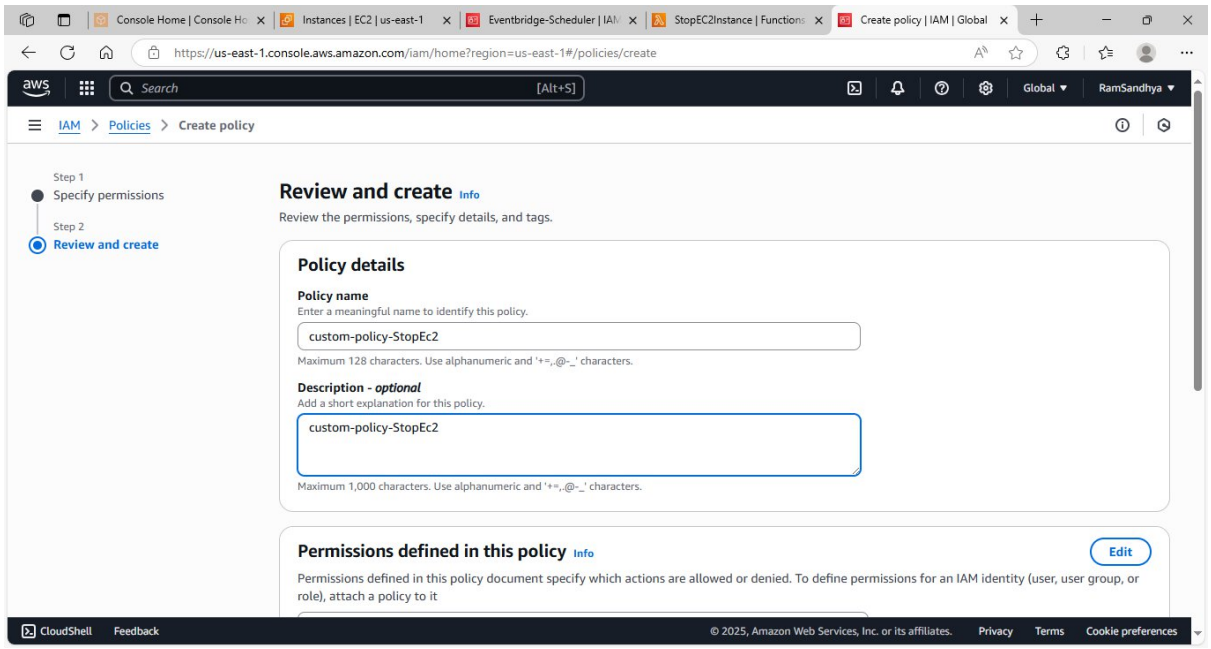
**Create custom policy under policies as below**

```
{
   "Version": "2012-10-17",
   "Statement": [
      {
         "Effect": "Allow",
         "Action": "lambda:InvokeFunction",
         "Resource": "arn:aws:lambda:us-east-
1:037655796146:function:StopEC2Instance"
      }
   ]
}
```

**==========**

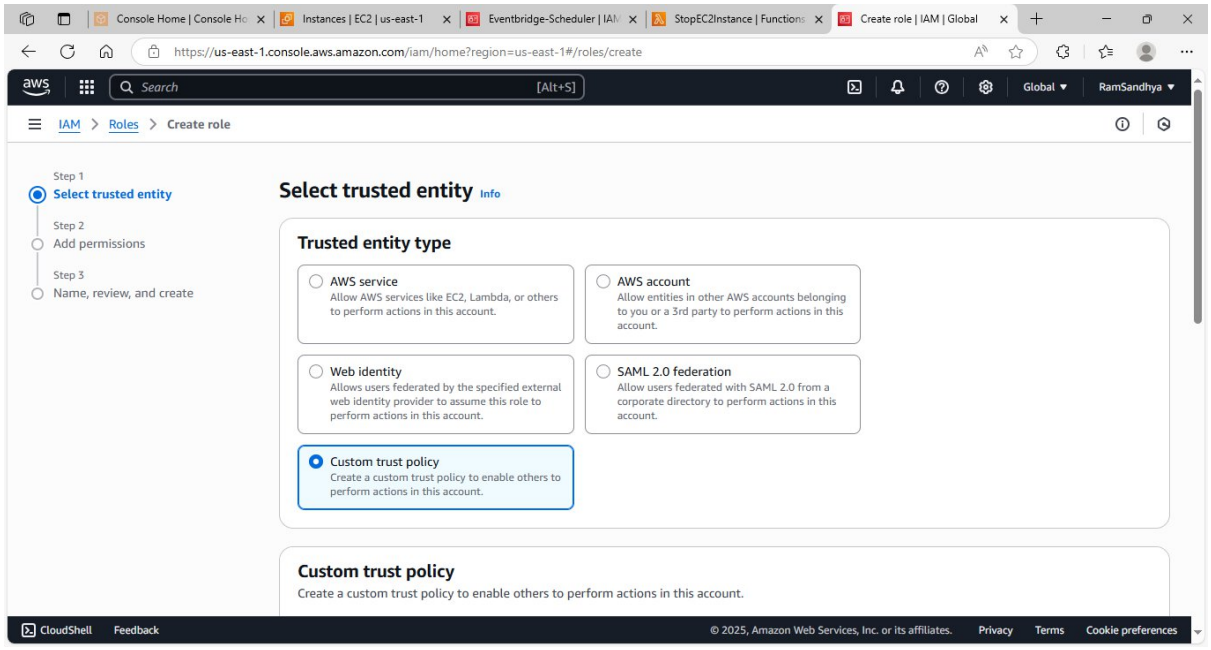
Click on create policy then click on JSON.
here we need to give lamda function stop server name and AWS account ID and region



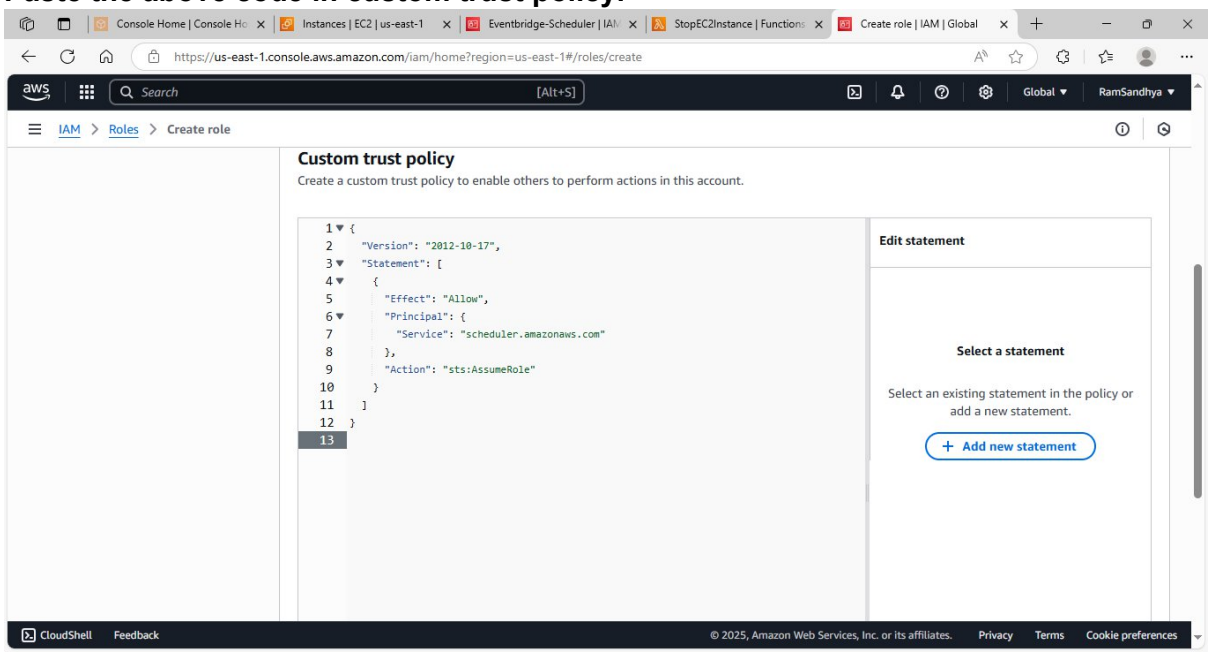




**custom policy has been created.**
**Lets Attach this custom policy to Custom IAM role.**

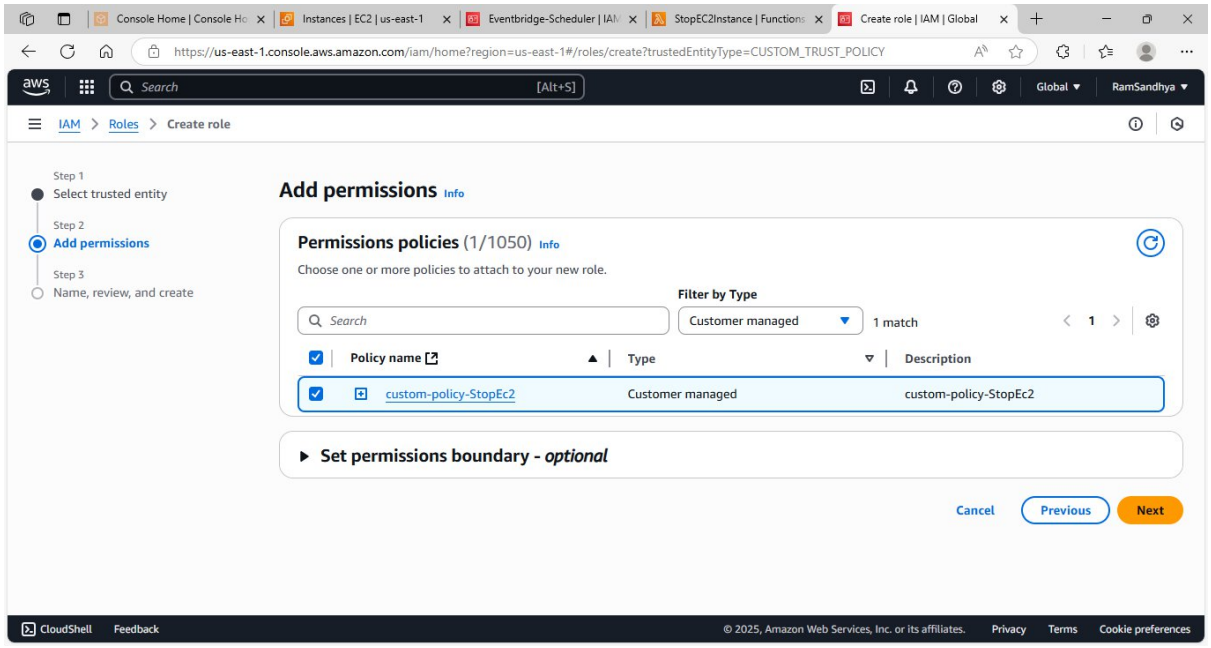
## Create IAM role.



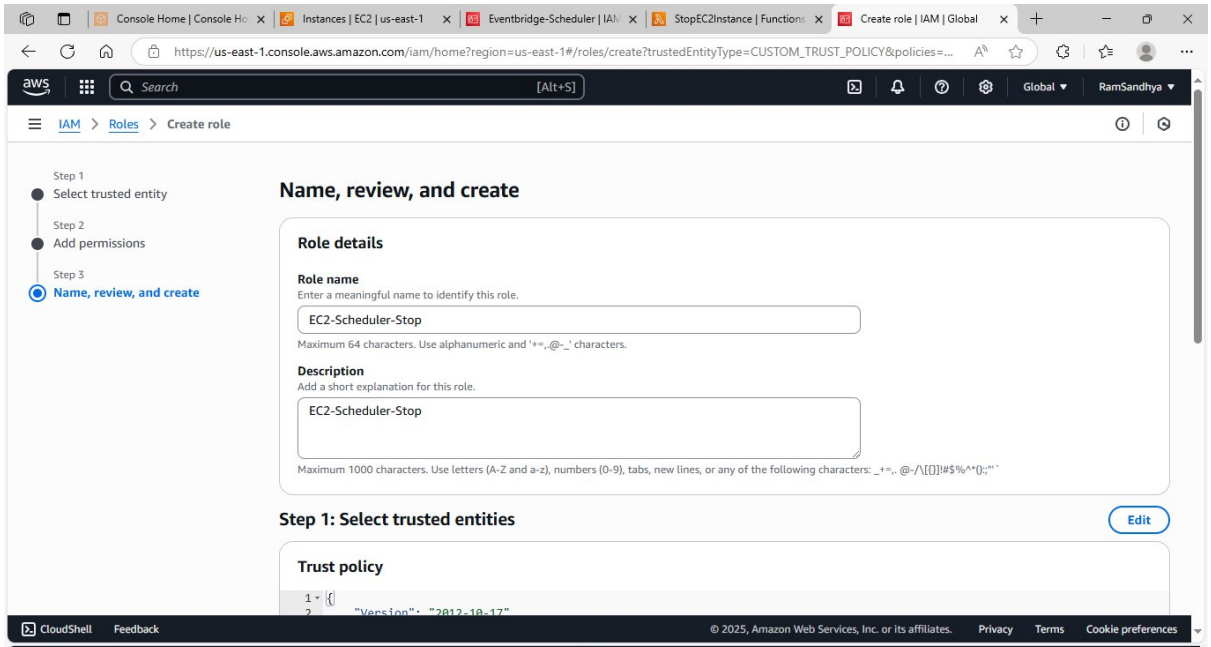

## Paste the above code in custom trust policy.

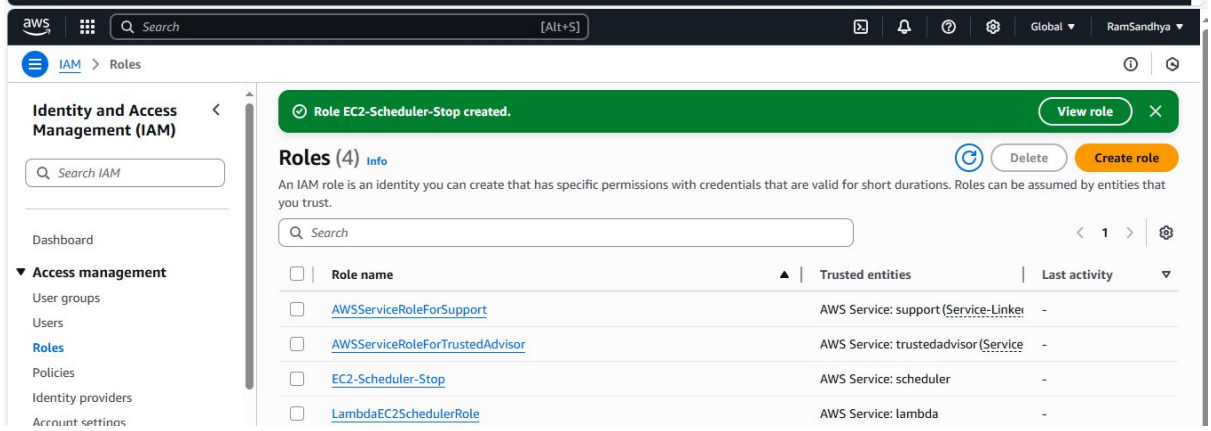



## attached custom policy to the custom IAM role as below.



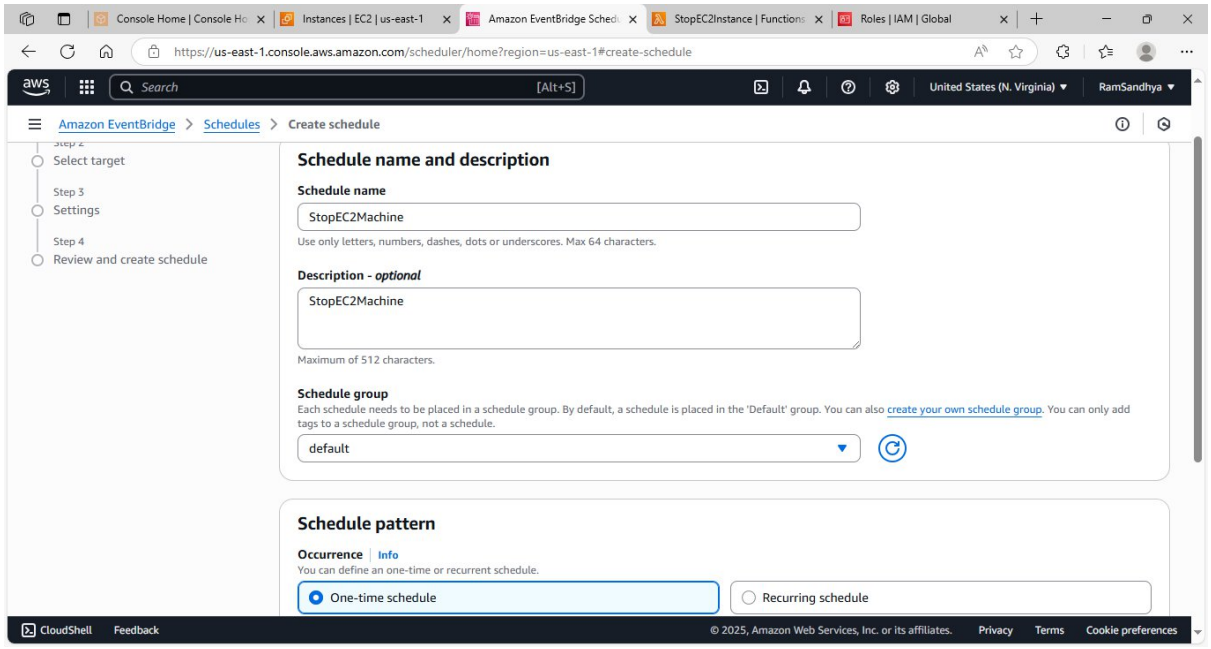

## Give Role name



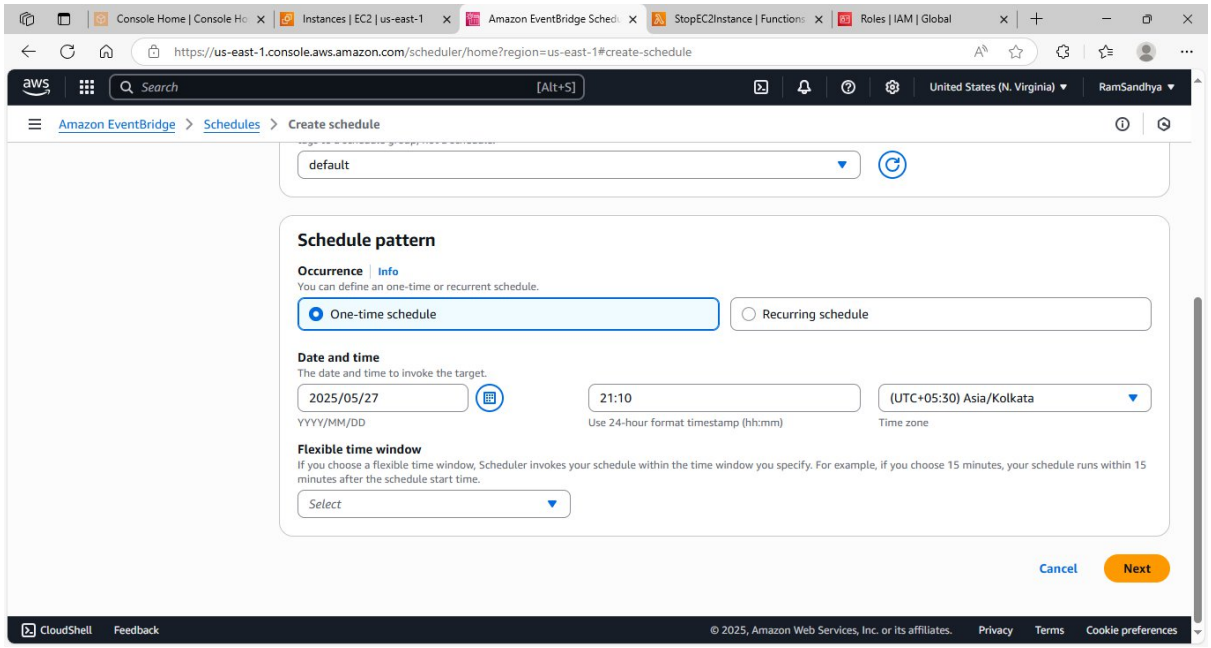



**Step 4: Lets create AWS Event Bridge Scheduler and attach the custom IAM role.**

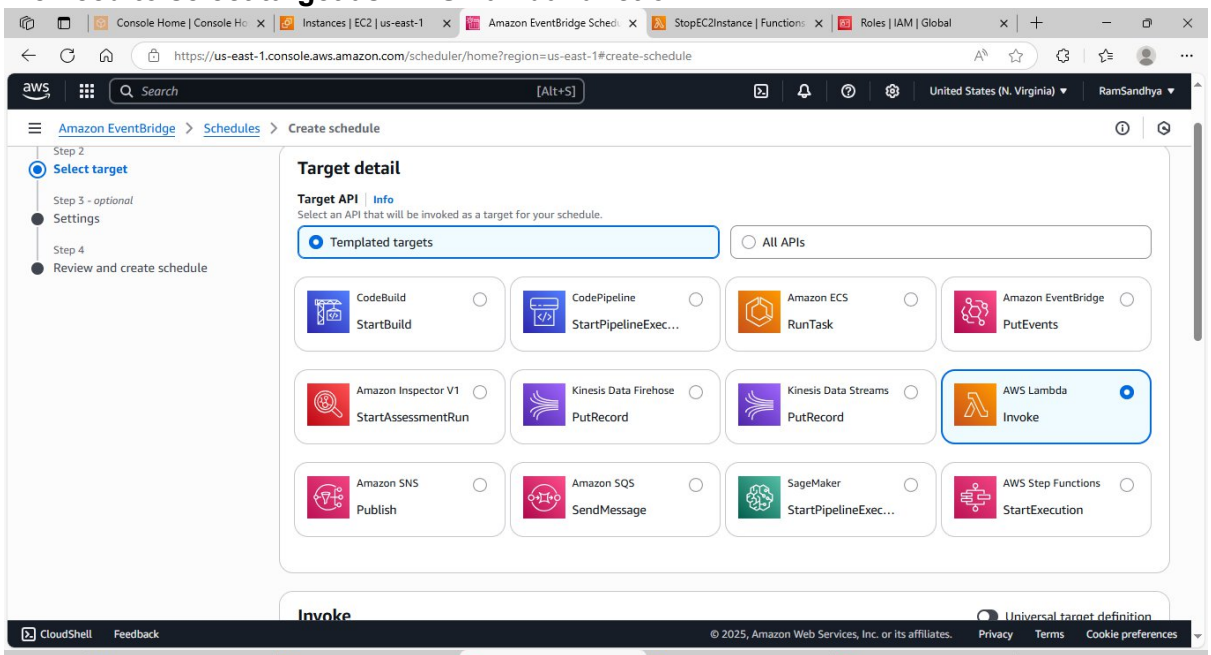
**Go to AWS Event Bridge**
**Click on Schedules**

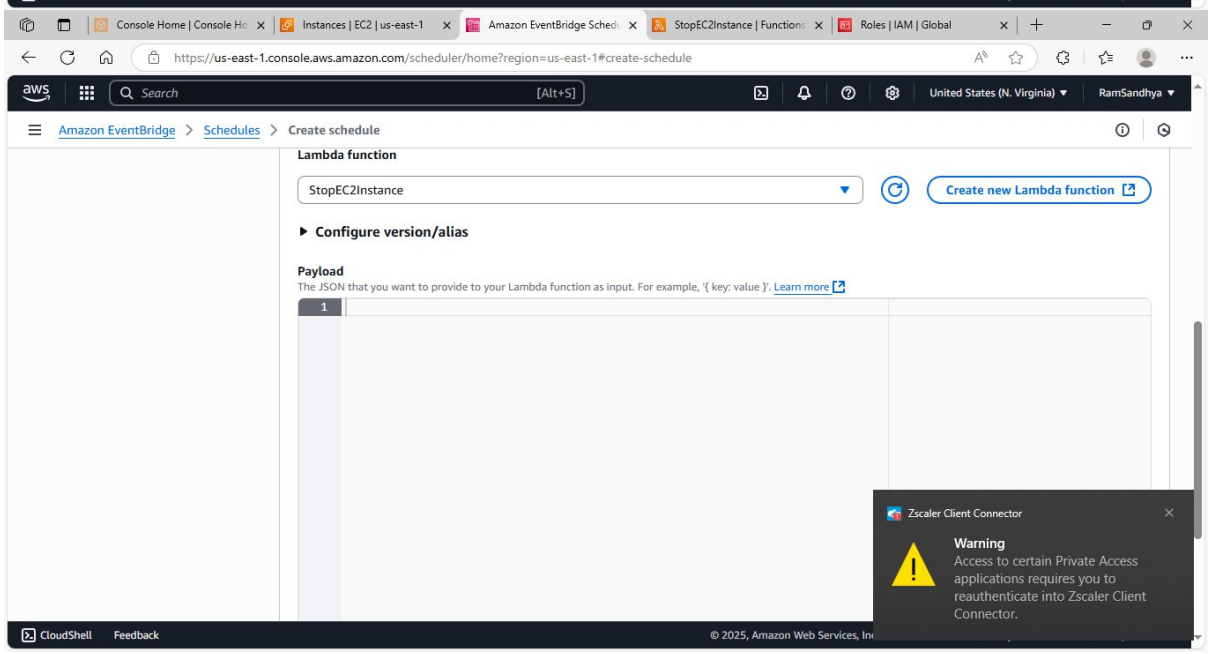



**we can change schedule pattern as cron job also.**
**Time Zone : Asia/Kolkata as Indian standard time**

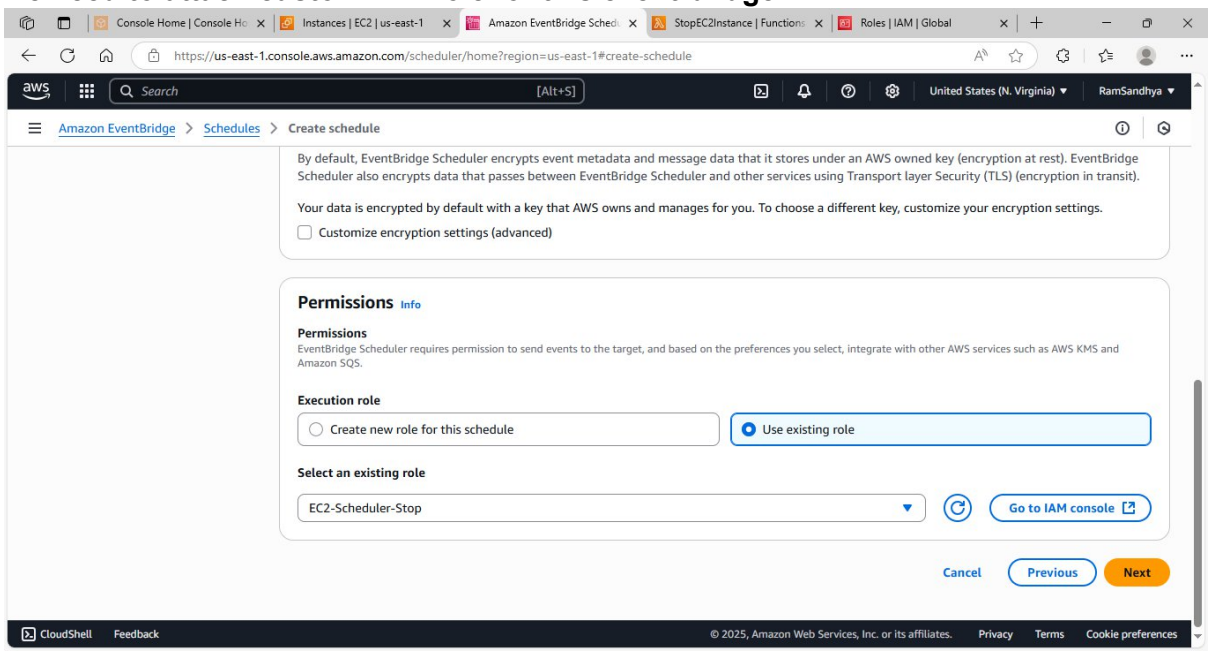


## We need to select target as AWS Lamda function

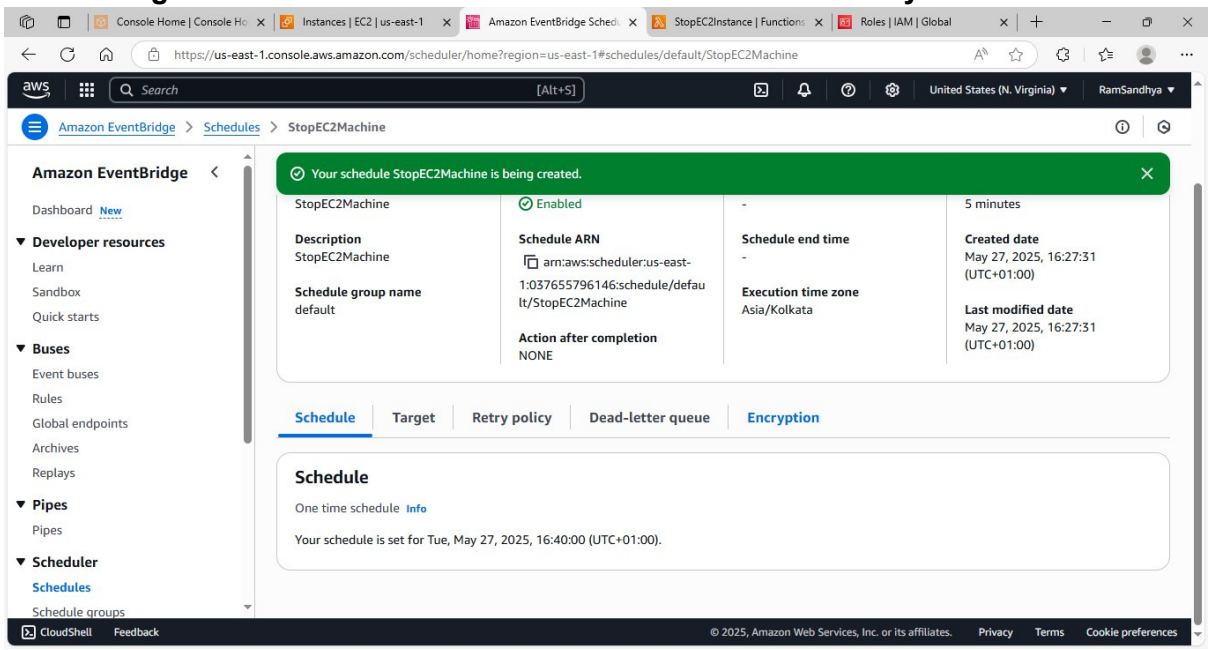


**we need to attach custom IAM role for this event bridge.**



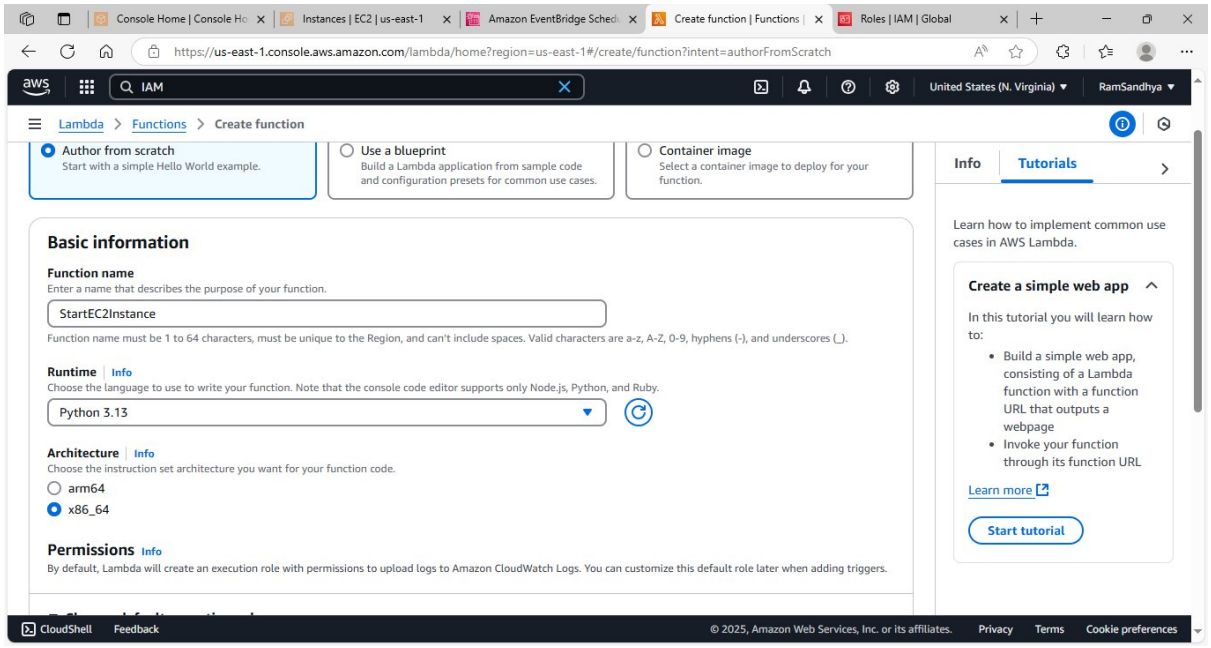

**Event Bridge scheduler has been created at 9:10 PM IST for today.**



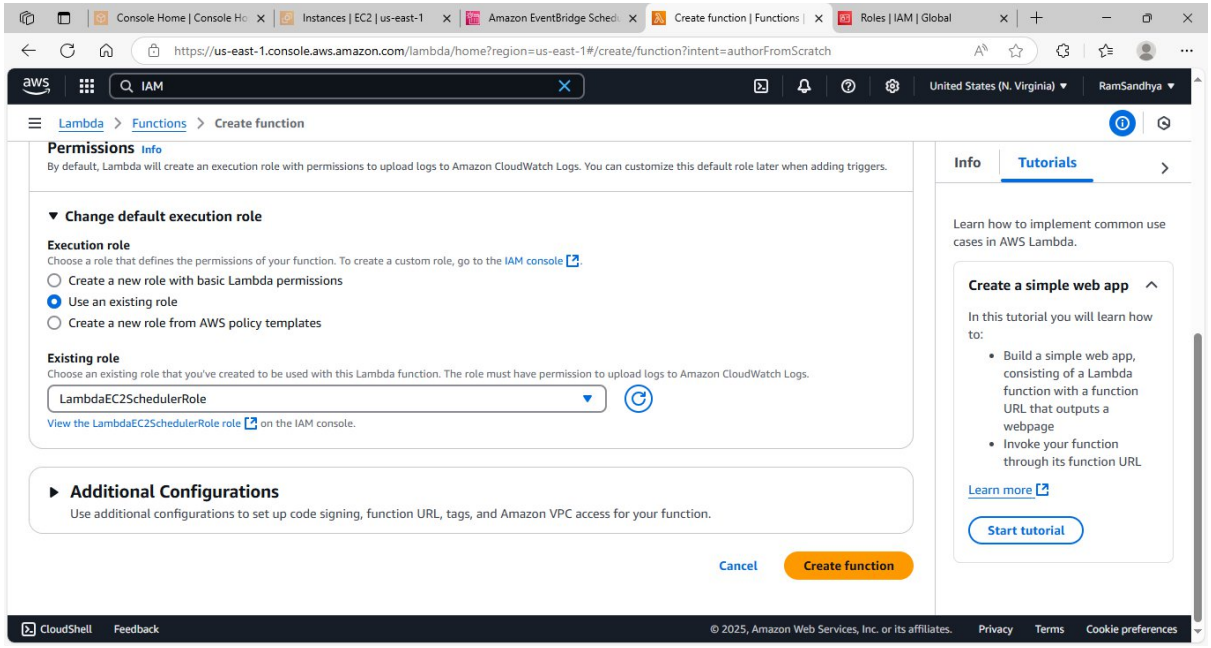
**For Stopping the EC2 machines using Lambda and AWS Event Bridge Scheduler.**
**==========**

**Step 1: We have already created IAM role for Lambda so we can use it for attaching the same to the Start Lambda function.**

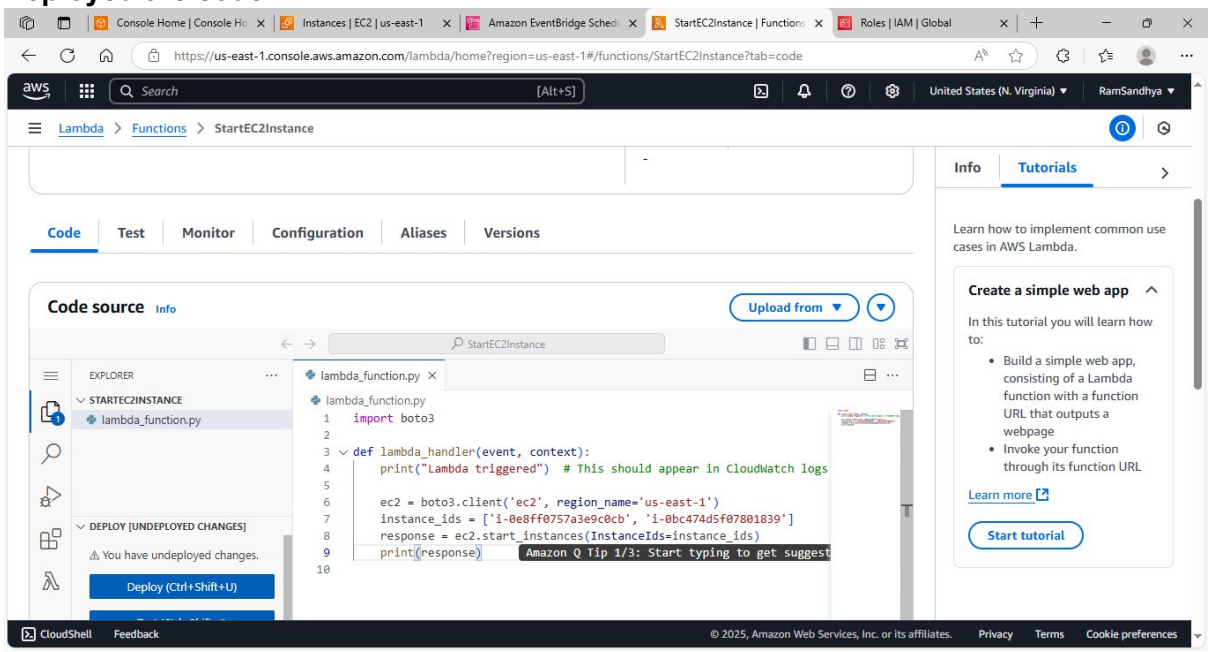
**Step 2: Lets create lambda function for stopping the EC2 Machine and paste the python code in code tab.**




**Attaching the IAM role for interacting the EC2 Machines and executing the functions as well**

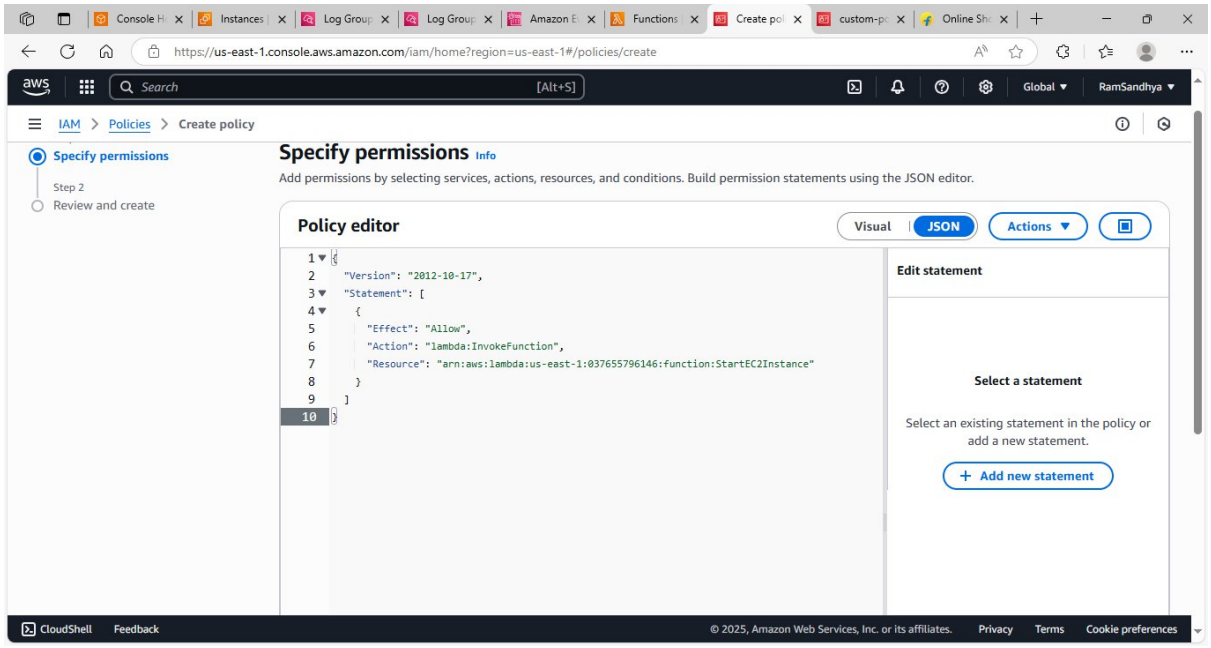


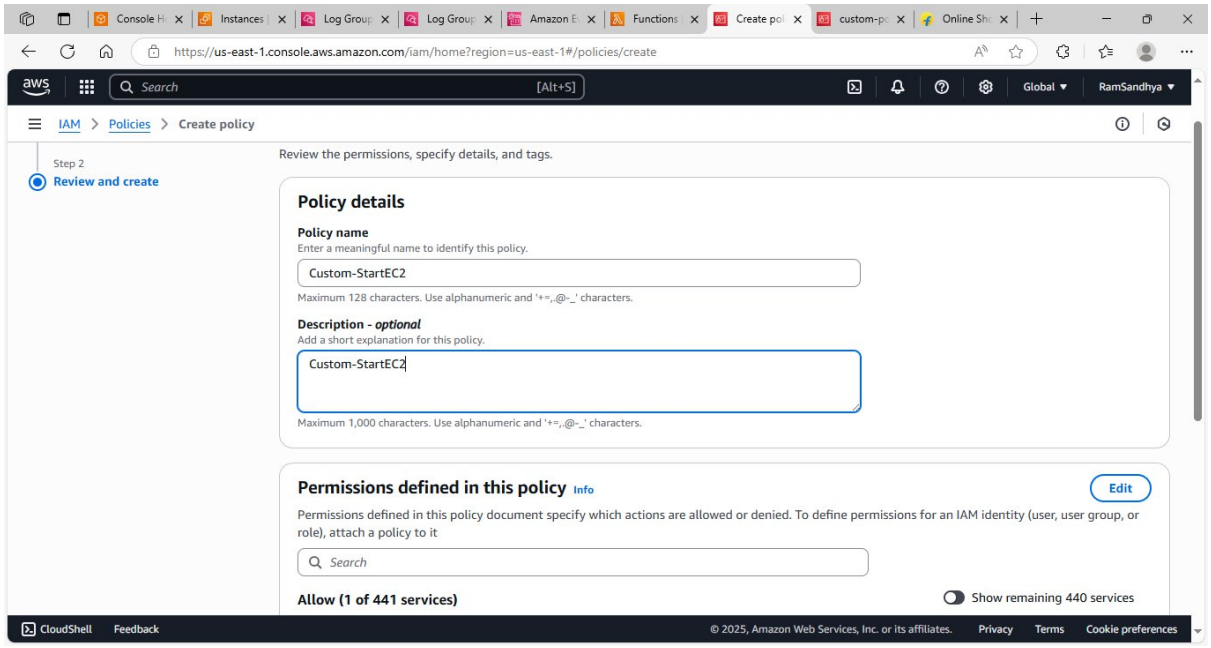
## Deployed the code



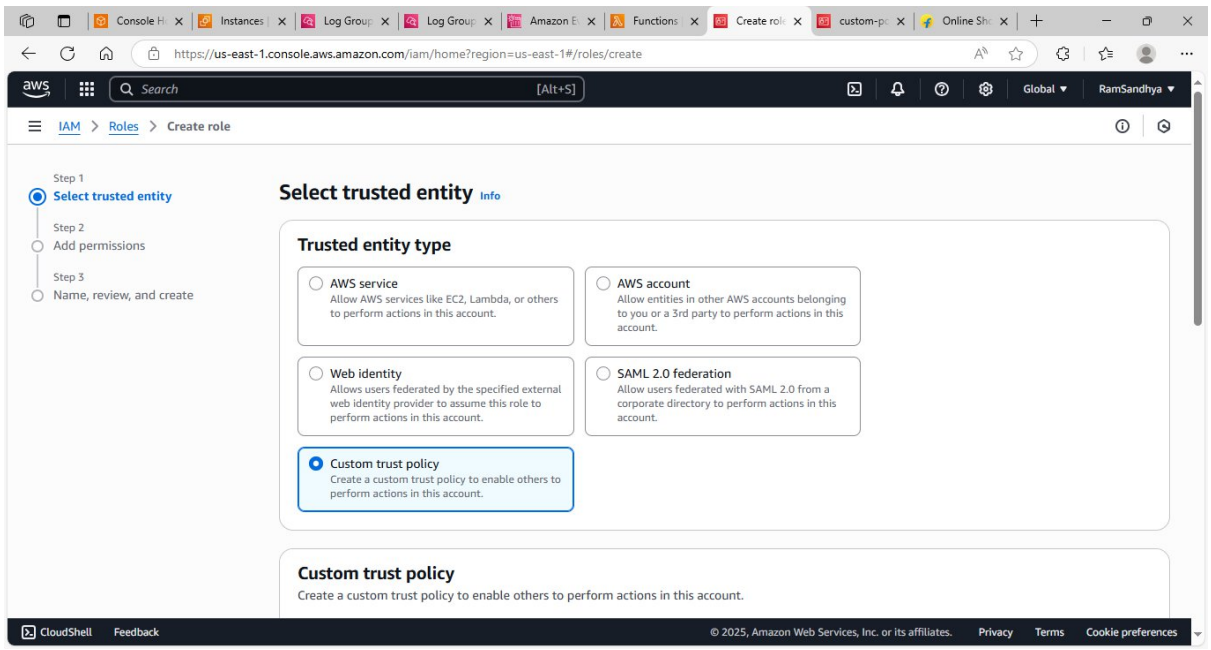

## Step 3 : Create Custom IAM Role  and attach custom Policy

## Creating custom policy

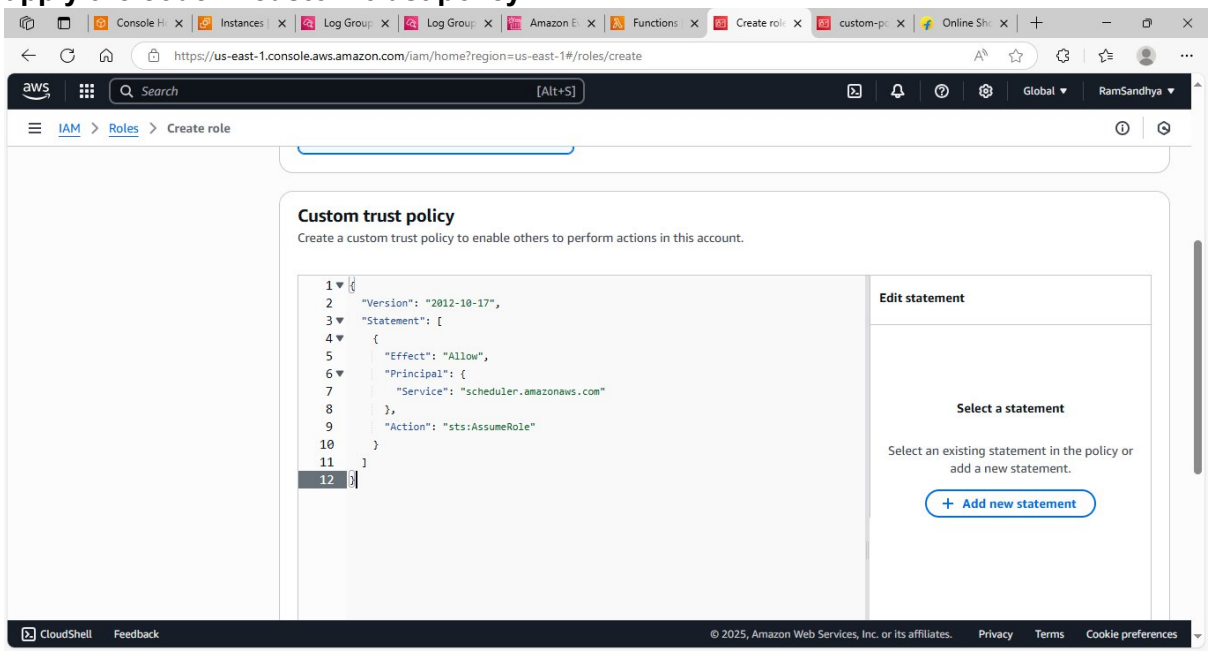




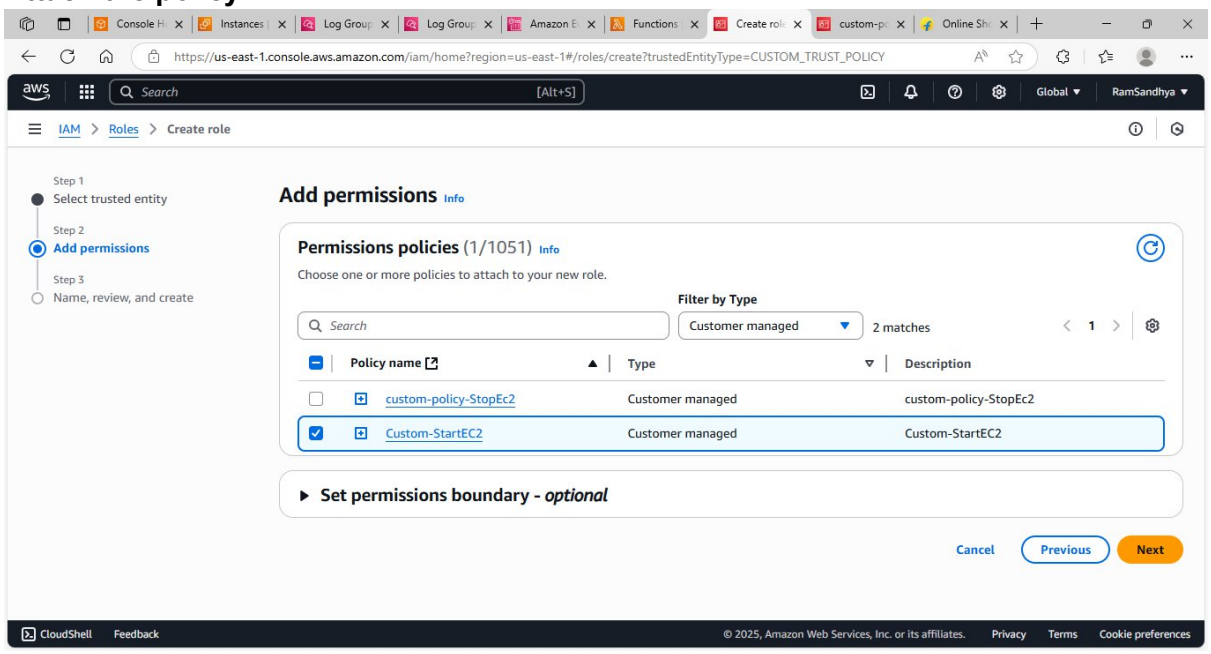

## Create Custom IAM role

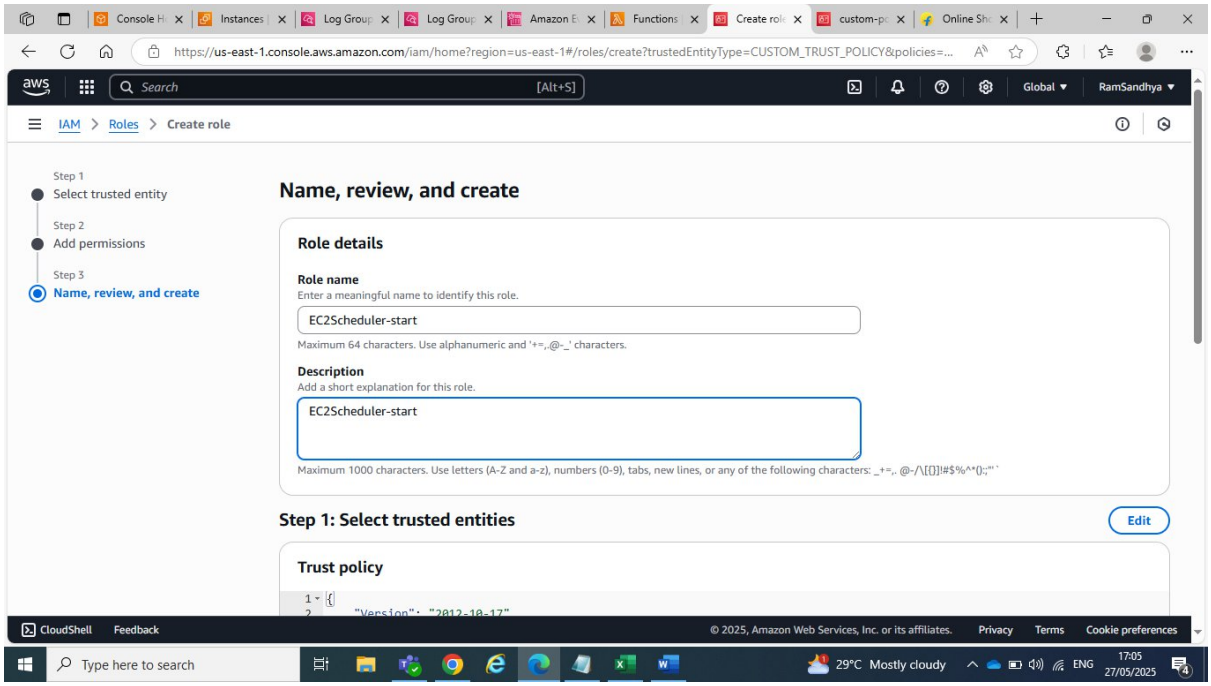


## apply the code in custom trust policy

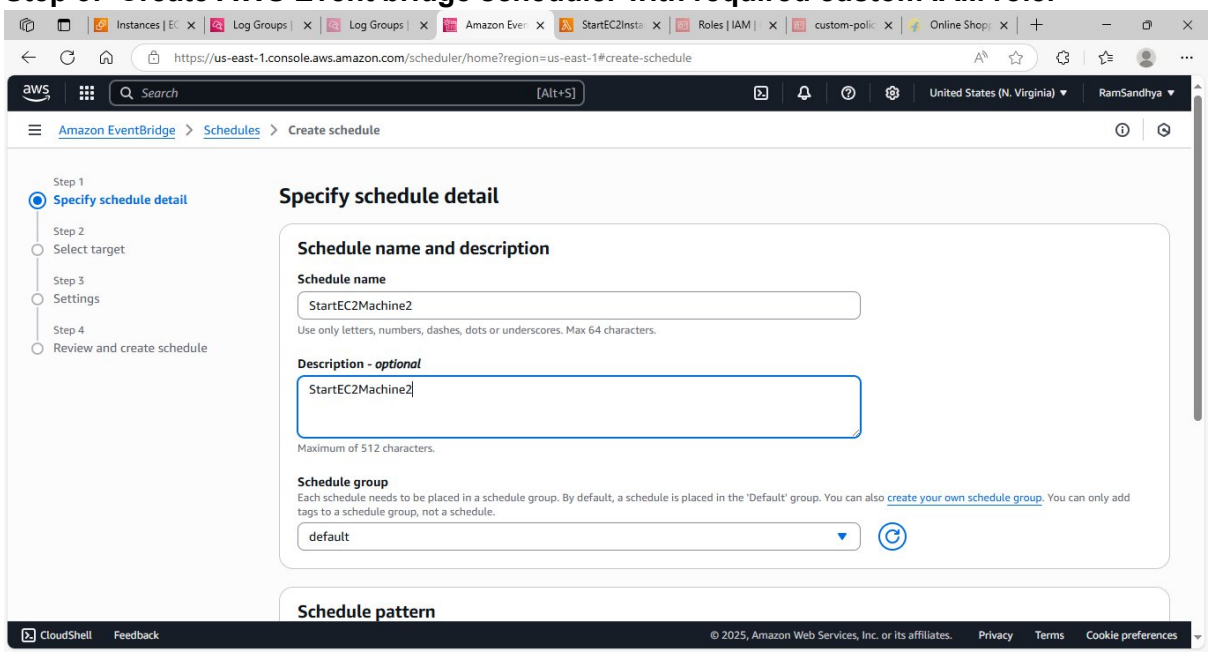



## Attach the policy

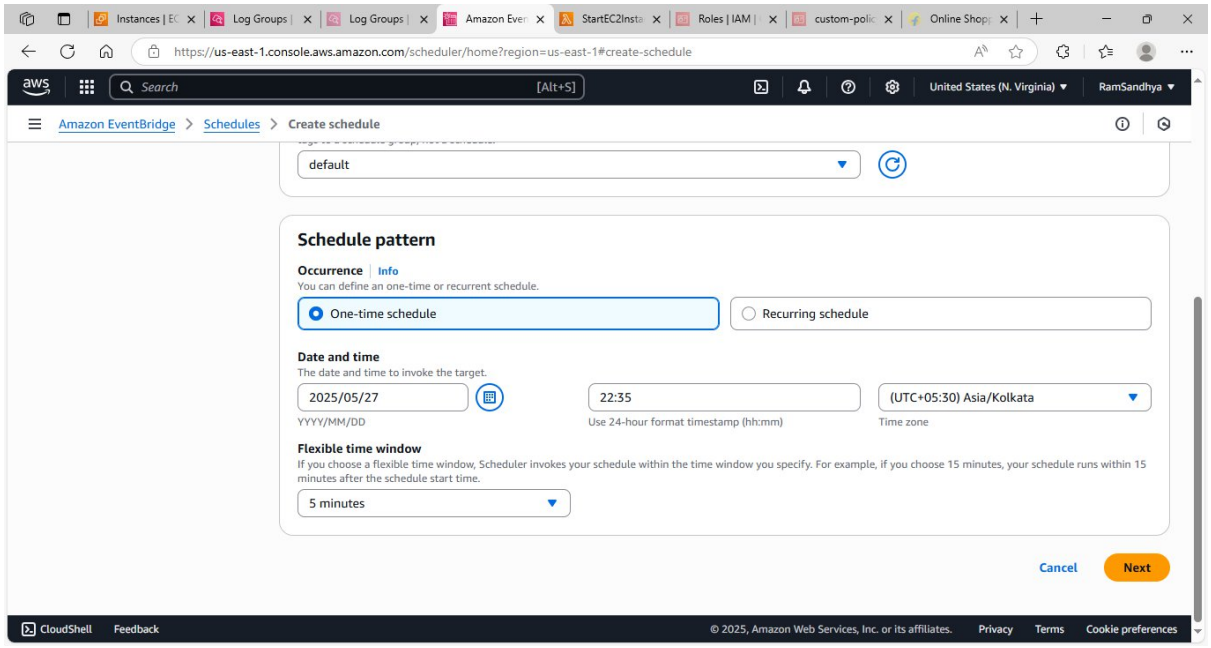




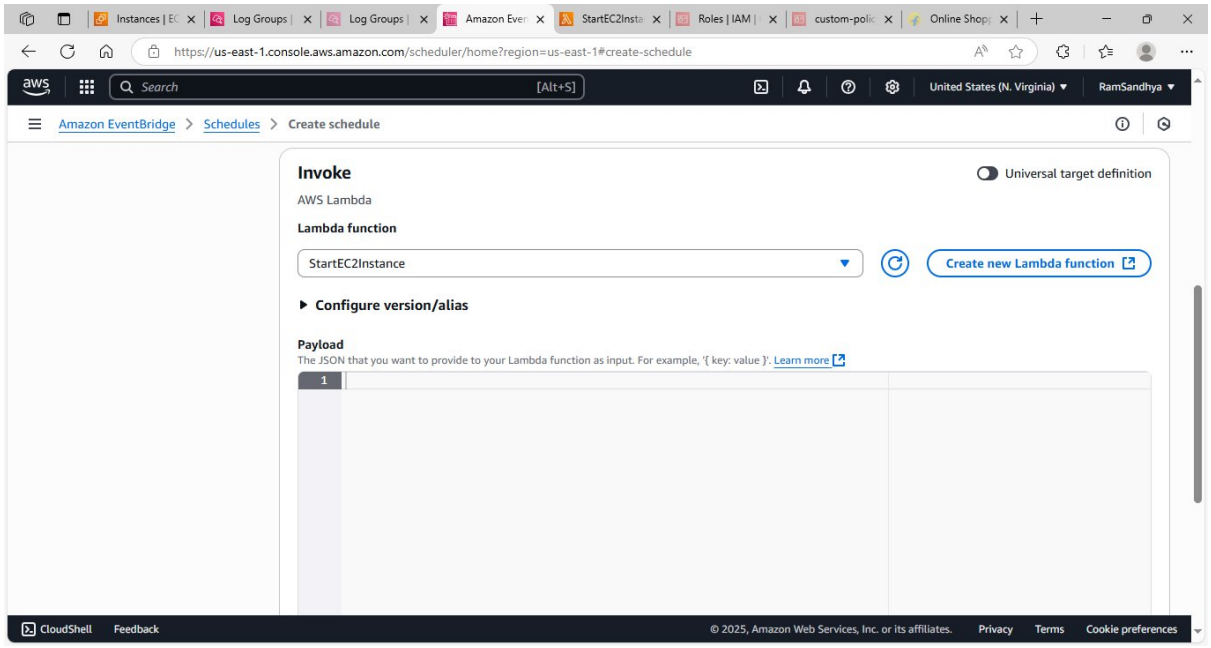

## Step 3: Create AWS Event bridge scheduler with required custom IAM role.



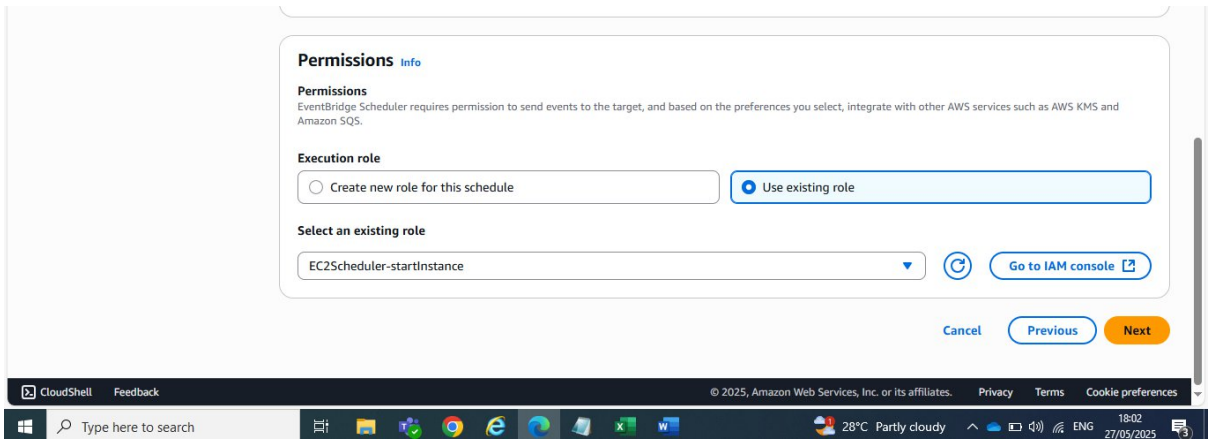

## Keep scheduled time or we can set Cron Job as well

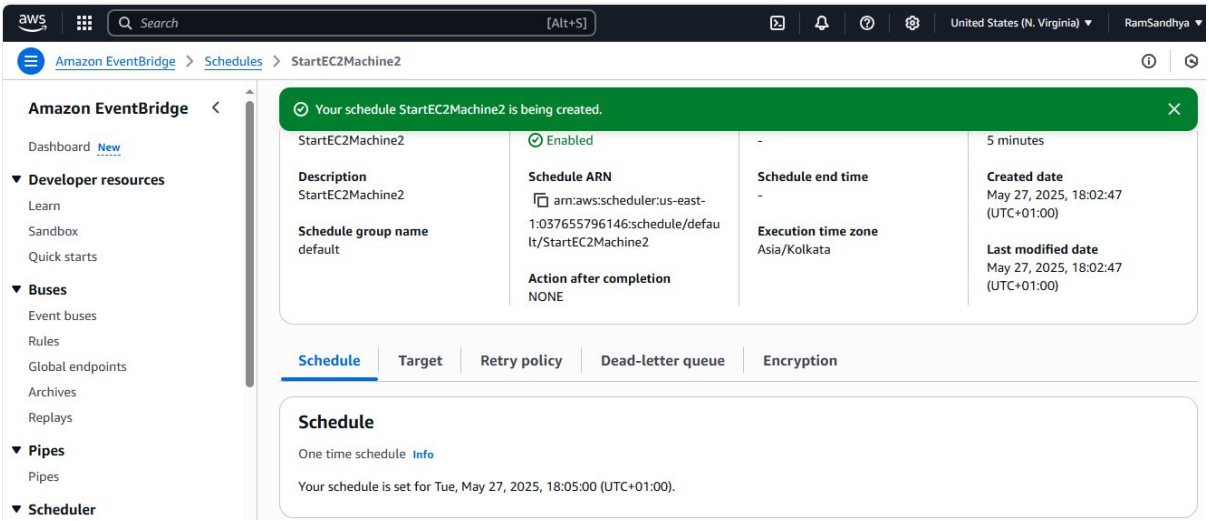



## select Lambda Function

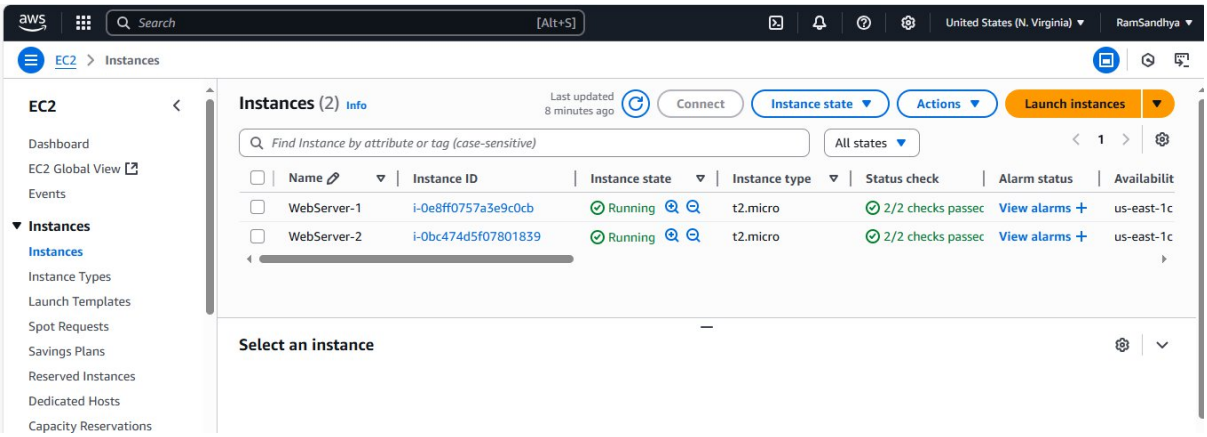



## select custom IAM role




Search
[Alt+S]
United States (N. Virginia)
RamSandhya
Amazon EventBridge > Schedules > StartEC2Machine2
Amazon EventBridge
Dashboard New
Developer resources
Learn
Sandbox
Quick starts
Buses
Event buses
Rules
Global endpoints
Archives
Replays
Pipes
Pipes
Scheduler
Your schedule StartEC2Machine2 is being created.
StartEC2Machine2
Enabled
5 minutes
Description
StartEC2Machine2
Schedule group name
default
Schedule ARN
arn:aws:scheduler:us-east-1:037655796146:schedule/default/StartEC2Machine2
Action after completion
NONE
Schedule end time
-
Execution time zone
Asia/Kolkata
Created date
May 27, 2025, 18:02:47 (UTC+01:00)
Last modified date
May 27, 2025, 18:02:47 (UTC+01:00)
Schedule
Target
Retry policy
Dead-letter queue
Encryption
Schedule
One time schedule Info
Your schedule is set for Tue, May 27, 2025, 18:05:00 (UTC+01:00).

## OutPut:


Search
[Alt+S]
United States (N. Virginia)
RamSandhya
EC2 > Instances
EC2
Dashboard
EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Instances (2) Info
Last updated 8 minutes ago
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
All states
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availabilit
WebServer-1
i-0e8ff0757a3e9c0cb
Running
t2.micro
2/2 checks passed
View alarms
us-east-1c
WebServer-2
i-0bc474d5f07801839
Running
t2.micro
2/2 checks passed
View alarms
us-east-1c
Select an instance