

Project 3 | 16th October 2020

For any doubts regarding the assignment, ask questions in the AWS Group in the Community.

Submit Assignments by **16 January 2021 11:59 PM.**

Assignment Submit Form: <https://forms.gle/Hgkz3CoTcUr5KA689>

Submit assignments in Appropriate Dropdowns.

Project Question: Provision EC2 instance with Lambda

Launch an EC2 Instance with Lambda

Tasks

1. Log into the AWS Management Console.
2. Create an IAM Policy and an IAM Role.
3. Create a lambda function.
4. Configure a test event.
5. Trigger the lambda function manually using the test event.
Test the new EC2 instance.

Create an IAM Policy

As a prerequisite for creating Lambda function, we need to create a user role with a custom policy.

Go to [services](#) and select IAM .

Click on [policies](#) and click create policy .

Click on the JSON tab and copy / paste the below policy statement into the editor:

Policy JSON:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "ec2:Describe*",
        "ec2:CreateKeyPair",
        "ec2:CreateSecurityGroup",
        "ec2:AuthorizeSecurityGroupIngress",
        "ec2:AuthorizeSecurityGroupEgress",
        "ec2:CreateTags",
        "ec2:DescribeTags",
        "ec2:RunInstances"
      ],
      "Resource": "*",
      "Condition": {
        "StringEquals": {
          "ec2:Region": "us-east-1"
        }
      }
    }
  ]
}
```

Click on Review policy.

On Create Policy page:

Policy Name : mypolicy.

Click on the create policy button.



An IAM Policy named mypolicy is now created.

Create an IAM Role

In the left menu, click on Roles. Click on the create role button.

Select Lambda from the AWS Services list.

Click on Next:permissions .

Filter Policies: Search for your policy by name (mypolicy).

Select your policy and click on the Next :tags.

Add Tags: Provide a key-value pair for the role:

Key : name

Value : myrole

Click on the Next:review button.

Role Name:

Role name : myrole

Click on the create role button.

You have successfully created an IAM role by the name myrole.

Create a Lambda Function

Go to the services menu and click on lambda.

Make sure you are in the US East (N. Virginia) us-east-1 region.

Click on the create function button.

Choose an author from scratch.

Function name : myEC2LambdaFunction

Runtime : Select Python 3.8

Role : In the permissions section, click on to use an existing role.

Existing role : Select myrole

Click on create function.

Configuration Page: Here we need to configure our lambda function. If you scroll down, you can see the Function code section. Here we need to write some Python code to provision an EC2 instance.

You will be using boto3 SDK for AWS to write the python code.

Remove the existing code in the lambda_function.py file. Copy the below code and paste it into your lambda_function.py file.

Note: We will not get into the details of the python code in this lab, but at a high level, it will provision an EC2 instance when it is triggered.

```
import json
```

```
import boto3
```

```
import time
```

```
from botocore.exceptions import ClientError
```

```
def lambda_handler(event, context):
```

```
    # Provision and launch the EC2 instance
```

```
    ec2_client = boto3.client('ec2')
```

```
    try:
```

```
response = ec2_client.run_instances(ImageId='ami-0b69ea66ff7391e80',

                                     InstanceType='t2.micro',

                                     MinCount=1,

                                     MaxCount=1)

print(response['Instances'][0], "EC2 Instance Created")

return {

    'statusCode': 200,

    'body': json.dumps("success")

}

except ClientError as e:

    print("Detailed error: ",e)

    return {

        'statusCode': 500,

        'body': json.dumps("error")

    }

except Exception as e:

    print("Detailed error: ",e)

    return {

        'statusCode': 500,

        'body': json.dumps("error")

    }
```

7. Save the function by clicking on `deploy` in the top right corner.
8. Now scroll down the page and you will be able to see Basic settings click on the `button`.
9. In the Timeout set seconds as 6 and then click on the save button.

Configure a Test Event

Click on the Test button at the top right corner of the page (under the ARN).

In Configure test event page,

Event Name: Enter `ec2`

Leave other fields as default.

Click on create.

Provision an EC2 Instance using a Lambda Function

Once the `ec2` is configured, we can trigger the lambda manually using this simple test.

Click on the Test button.

The lambda function now gets executed and an EC2 instance will be provisioned.

Once it's completed, you will be seeing a success message similar to the example shown below. It will display details such as:

Duration : Lambda execution time.

Log Output: Details of the EC2 instance provisioned.

etc...

Check that the EC2 instance launched successfully.
Navigate to the EC2 page from the services menu.



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Switch off the New EC2 experience. Edit the feedback message and select yes for the experience. Click on . This will allow us to use the old console.

Go to Instances in the left menu.

Please wait until the ec2 instance is in running state

You can see the EC2 instance that has been provisioned by the Lambda function.

FAQs

Q. How to upload a jupyter notebook as a part of an assignment?

- A. 1. Click "File" option in notebook
- 2. Go to "Download As" -> "Notebook(.ipynb)"
- 3. Upload the downloaded .ipynb file to github and share the link in google form.

Q. When do I submit the Assignments and how?

- A. The assignments for the week should be submitted by weekend i.e. Sunday 11:59 PM IST. You can use Jupyter Notebook or python files or even Google Colab to Solve your Assignments

Q. Where do I get class links for next session?

- A. All sessions will be Live on the Learning Management System. It will be also updated in the Community Group in the pinned post.
- B.

Q. I have some doubt, whom do I ask?

- A. (a) Post your Queries on the community, someone will help you out.
- (b) We have a discussion group which you can access by Joining LetsUpgrade AIML Telegram Channel. Link will be in a pinned post in the AI ML Community Group.

Q. *Sir don't have anaconda so how can I solve the assignment ?*

- A. Use Google Colab : [Click me](#)

Q. Can we submit multiple .py or .ipynb assignment solution files for each question separately?

- A. Solve all assignments for a day in a single notebook. Make sure you are submitting a single file.



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