# Creating an EC2 Instance with Lambda in AWS

Introduction

In this AWS hands-on lab, we will write a Lambda function that will create an EC2 instance. This Lambda function will be written in Python using the Boto3 library. We will also create a custom Lambda execution policy for our IAM role. When we're done, we will be able to log in to the new EC2 instance via SSH. Make sure you're in the eu-west-3 (Paris) region throughout the lab.
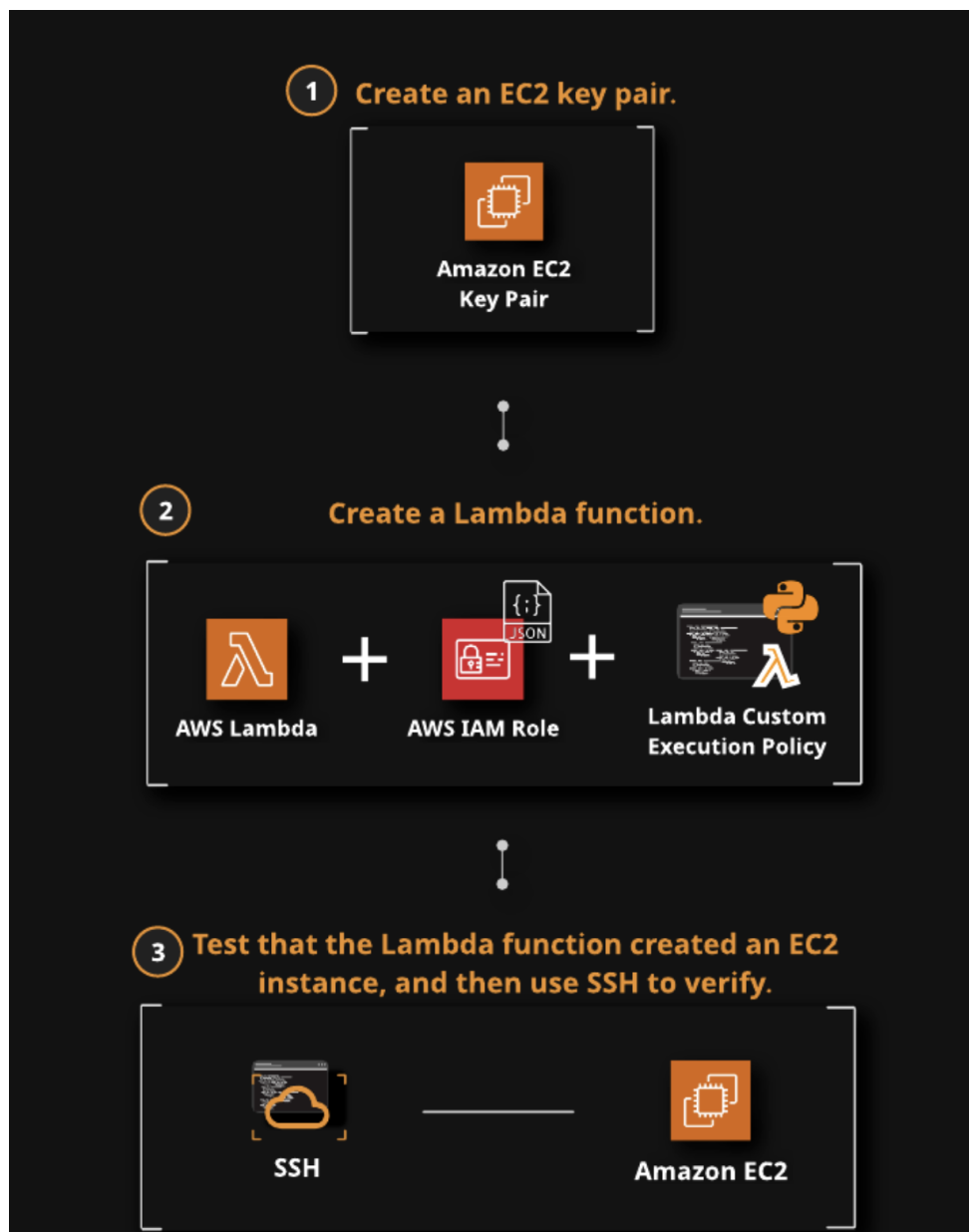
1. Create EC2 Key Pair

1. Navigate to EC2.

2. In the navigation pane, under **NETWORK & SECURITY**, choose **Key Pairs**.

3. Choose **Create Key Pair**.

4. Enter a name for the new key pair (e.g., "LambdaEC2keypair") in the **Key pair name** field of the **Create Key Pair** dialog box, and then choose **Create**.

5. Save the private key file in a safe place. **Note**: Make sure you remember the name of your private key file and save it somewhere easily accessible.

2. Create a Lambda Function

1. Navigate to Lambda.

2. Click **Create a function**.

3. Choose **Author from scratch** and use the following settings:

   - *Name*: **CreateEC2**

   - *Runtime*: **Python 3.7**

   - *Role*: **Create a custom role**

4. Expand *Choose or create an execution role*.

5. Set *Execution role* to **Create a new role with basic Lambda permissions**.

6. Copy the execution role name that appears (it will be something like *CreateEC2-role-*). Paste it into a text file for use later in the lab.

7. Click **Create function**.

8. In a new browser tab, navigate to IAM.

9. Click **Roles** in the left-hand menu.

10. In the search box, type in the name of the role we just created.

11. Select the role.

12. Click the policy that's currently attached to the role.

13. Click **{} JSON**.

14. Click **Edit policy** > **JSON**.

15. Paste in the following policy:

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

16. Click **Review policy** and then **Save changes**.

17. Back in the Lambda console, refresh the page.

18. On the CreateEC2 function page, scroll down to the *Function code* section.

19. Paste in the Python source code:

```
import os
import boto3

AMI = os.environ['AMI']
INSTANCE_TYPE = os.environ['INSTANCE_TYPE']
KEY_NAME = os.environ['KEY_NAME']
SUBNET_ID = os.environ['SUBNET_ID']

ec2 = boto3.resource('ec2')
```

```
def lambda_handler(event, context):

    instance = ec2.create_instances(
        ImageId=AMI,
        InstanceType=INSTANCE_TYPE,
        KeyName=KEY_NAME,
        SubnetId=SUBNET_ID,
        MaxCount=1,
        MinCount=1
    )

    print("New instance created:", instance[0].id)
```

20. Click **Save**.

21. Scroll down to the **Environment variables** section.

22. Set the following environment variables:

- AMI

    - *Key*: **AMI**

    - *Value*: Open **EC2** in a new browser tab, click **Launch Instance**, and copy and paste the ami value listed after Amazon Linux 2.

- INSTANCE_TYPE

    - *Key*: **INSTANCE_TYPE**

    - *Value*: **t2.micro**

- KEY_NAME

    - *Key*: **KEY_NAME**

    - *Value*: The name of the EC2 key pair you created earlier.

- SUBNET_ID

    - *Key*: **SUBNET_ID**

    - *Value*: Navigate to **VPC** > **Subnets**, and copy and paste the ID of one of the public subnets in your VPC.

23. Save the Lambda function.

3. Test Lambda Function

1. Click **Test**.

2. Define an empty test event. Its contents can simply be {}.

3. Give it any name you like.

4. Click **Create**.

5. Click **Test**.

6. Navigate to **EC2** > **Instances**, and observe that an EC2 instance is initializing.

4. Connect to the Instance via SSH

1. Open a terminal session, and change directory to where your .pem file is saved from earlier.

2. Set the permissions of your private key file so that only you can read it:
   chmod 400 <KEY PAIR>.pem

   Replace <KEY-PAIR> with your key pair name.

3. Connect via the public IP of the EC2 instance:

   ssh -i <KEY-PAIR>.pem ec2-user@<IP ADDRESS>

   Remember to replace <IP ADDRESS> with the public IP of the EC2 instance you created.

   Alternatively, you can get the connection command by clicking **Connect** with the instance selected in the EC2 console.