1. Install AWS CLI and Python Boto3 Library

```
pip install awscli boto3
```

2. Create a User and get AWS Access ID and Secret Key

Create your user credentials on the AWS console, so that AWS services can be access programmatically.

- ✓ Launch the Identity and Access Management console (IAM) in AWS.
- ✓ Click Users on the navigation menu on the left of the screen.
- ✓ In the popup window, click on Add User.
- ✓ In the new window, provide a user name and choose the ***'Programmatic Access'*** access type, then click next.
- ✓ To set the permissions, choose 'Attach Existing Policies Directly' and in the Policy Filter type '***AmazonEC2FullAccess***', you can choose any permission level or whatever kind of access you want to provide and then click the 'next' button.
- ✓ Finally, review the user and permission levels, and click on the 'Create User' button.
- ✓ The next page will show your keys. ***These are only available once, so it is a good idea to download and save then safely in a secure location***.

3. Configure AWS Credentials Locally

```
aws configure
```

It will prompt you to provide the ***Access Key ID***, ***Secret Key***, ***Default AWS region***, and output format. Once those are provided, credentials are saved in a local file at path `~/.aws/credentials` and other configurations like region are stored in `~/.aws/config` file

Let's now check if the credentials work fine using the AWS CLI tools. Run the following command:

```
aws ec2 describe-instances
```

and grab the ***ImageId (AMI)***

This should return details of any EC2 instance running on AWS in JSON format if the credentials are good. otherwise, an error is thrown, which means the credentials do not work.

4. Create Key Pair for EC2 Instance

```
import boto3
ec2 = boto3.resource('ec2')
# create a file to store the key locally
outfile = open('ec2-keypair.pem','w')
# call the boto ec2 function to create a key pair
key_pair = ec2.create_key_pair(KeyName='ec2-keypair')
# capture the key and store it in a file
KeyPairOut = str(key_pair.key_material)
print(KeyPairOut)
outfile.write(KeyPairOut)
```

The above program creates a key pair & also captures and stores it on your local machine. Change the permission of the key pair file to read-only

```
chmod 400 ec2-keypair.pem
```

5. Create a New EC2 Instance

```
# create a new EC2 instance
instances = ec2.create_instances(
ImageId='ami-xxxxxxxx',
MinCount=n,
MaxCount=n,
InstanceType='t2.micro',
KeyName='ec2-keypair'
 )
```

Where:

ImageID specifies the Amazon Machine Image (AMI) ID of the instance we want to create

MinCount and ***MaxCount*** are used to define the number of EC2 instances to launch. That means if MinCount=1 and MaxCount=10, then 10 instances will be launched.

InstanceType is the size of the instance, like t2.micro etc.

KeyName defines the name of the key pair that will allow access to the instance.

Now if you go to your EC2 dashboard in AWS console, you'll observe new EC2 instances being provisioned and in initialization state, which completes in a few minutes. Once that is complete, your virtual machines are ready to be used.