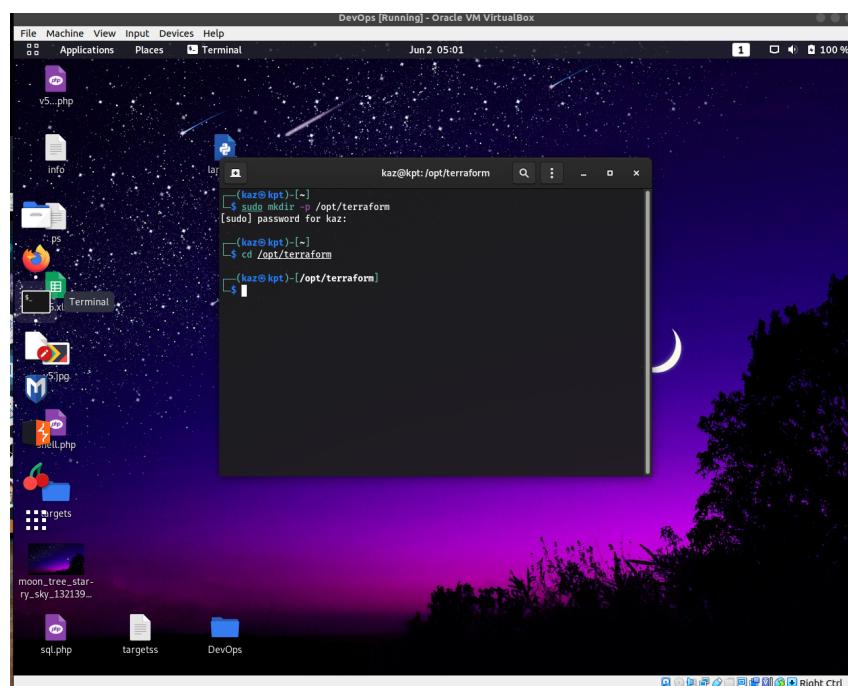
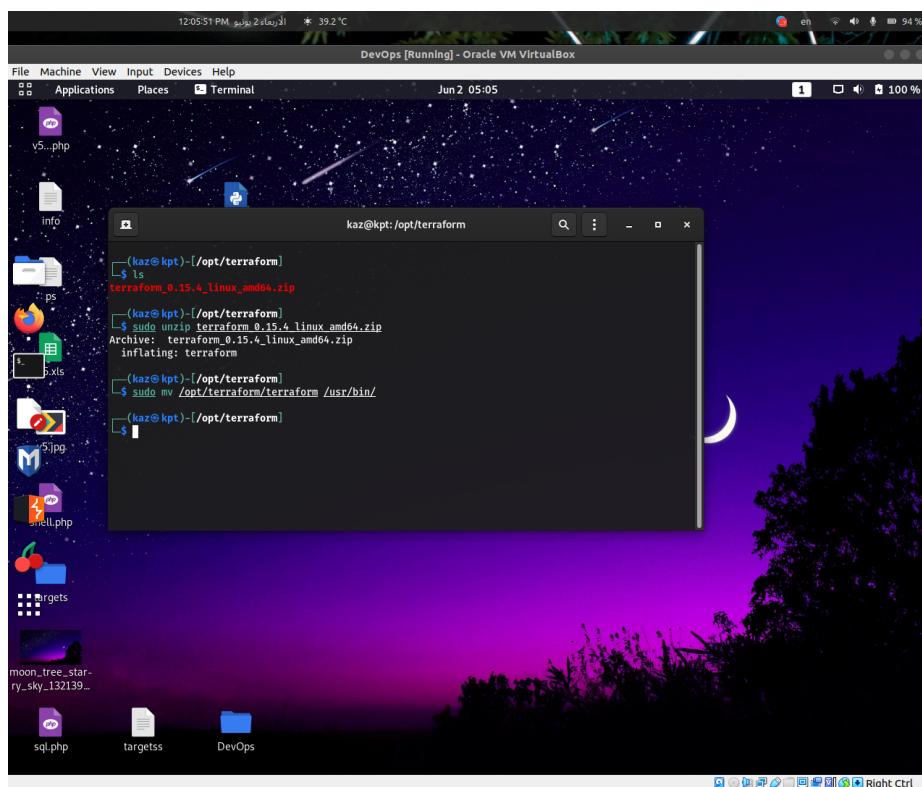
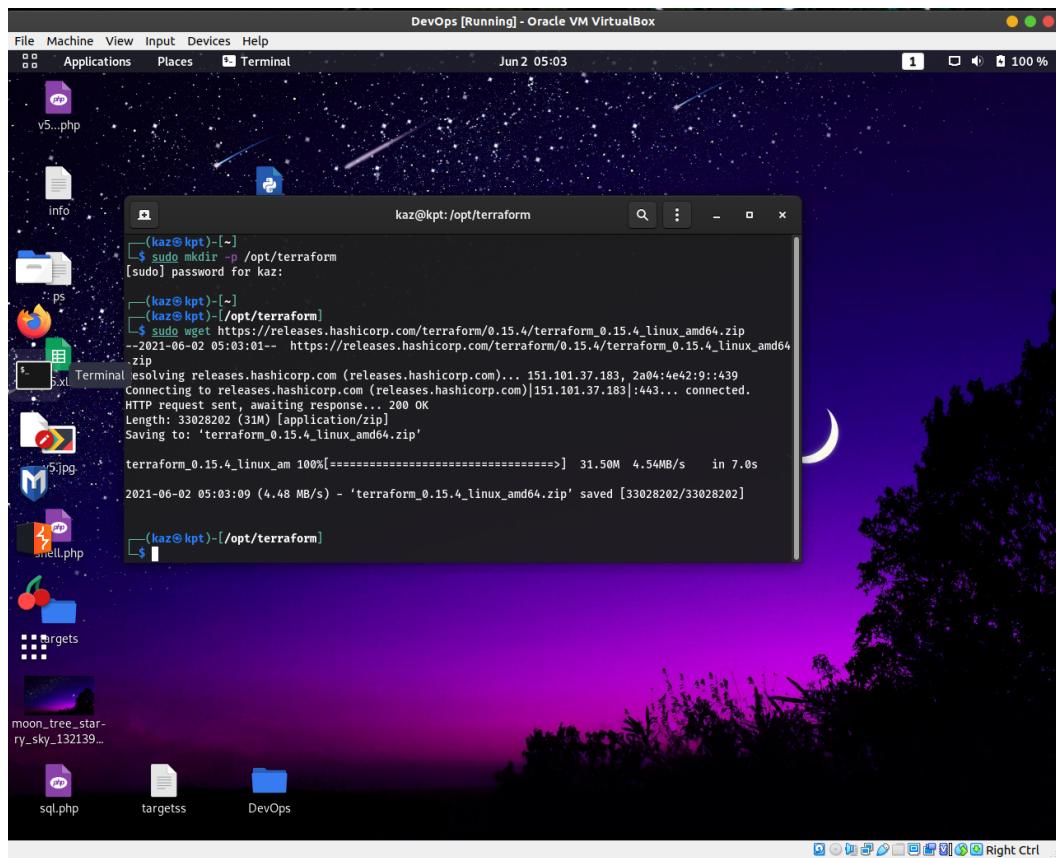


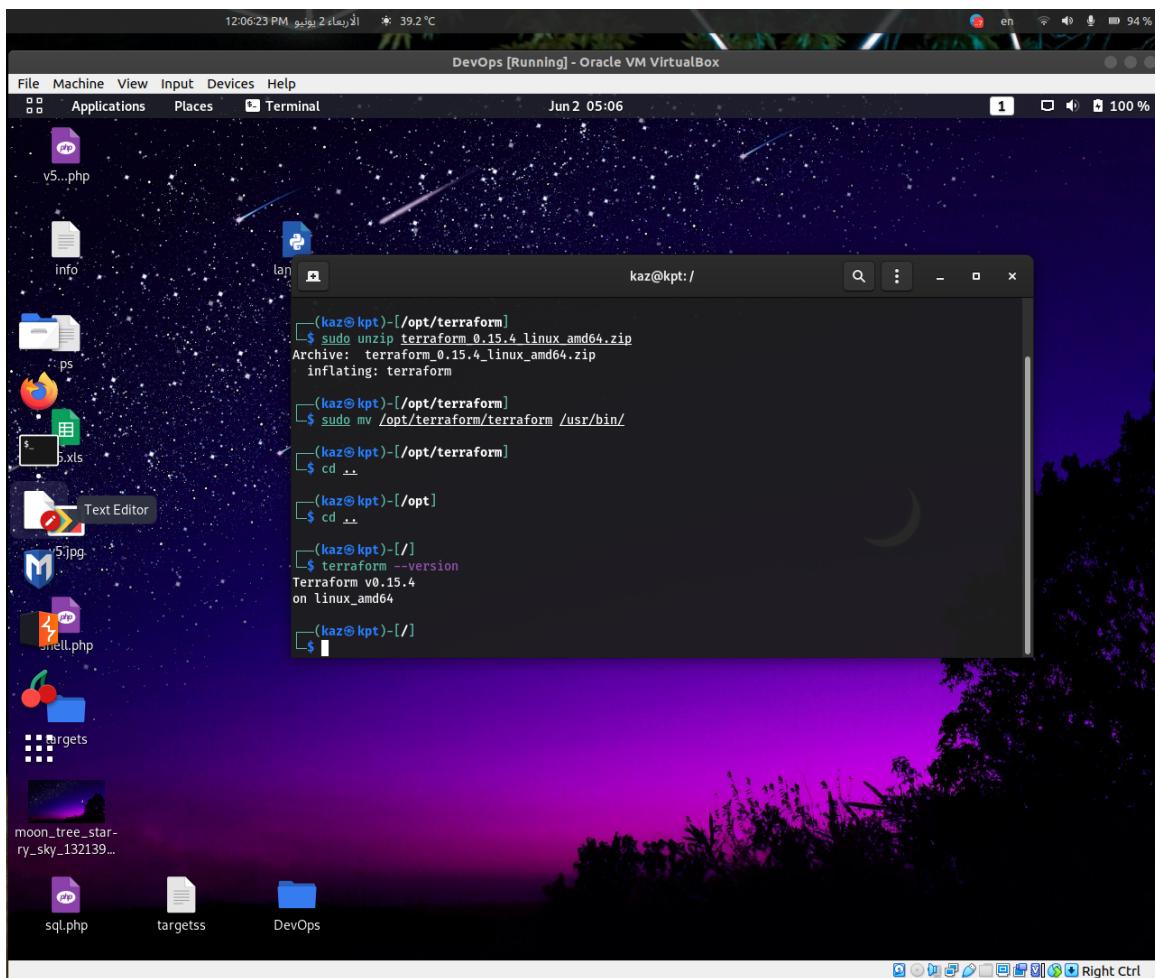
## Automating Infrastructure using Terraform.

Name : Khaled Mofdhi Khaled Alshammri  
Email : i5irh.a@gmail.com

The screenshot shows the AWS Management Console homepage. On the left, there's a vertical toolbar with various icons. The main area features a "Build a solution" section with eight quick-launch options: Launch a virtual machine (With EC2, 2-3 minutes), Build a web app (With Elastic Beanstalk, 6 minutes), Build using virtual servers (With Lightsail, 1-2 minutes), Register a domain (With Route 53, 3 minutes), Connect an IoT device (With AWS IoT, 5 minutes), Start migrating to AWS (With CloudEndure Migration, 1-2 minutes), Start a development project (With CodeStar, 5 minutes), and Deploy a serverless microservice (With Lambda, API Gateway, 2 minutes). Below this is a "Getting Started with AWS" section. To the right, there are sections for "Explore AWS" featuring "Introducing Amazon FSx File Gateway", "Free AWS Training", "AWS Application Migration Service", and "AWS Global Summit Online Program". A sidebar on the right says "Stay connected to your AWS resources on-the-go" and mentions the AWS Console Mobile App.







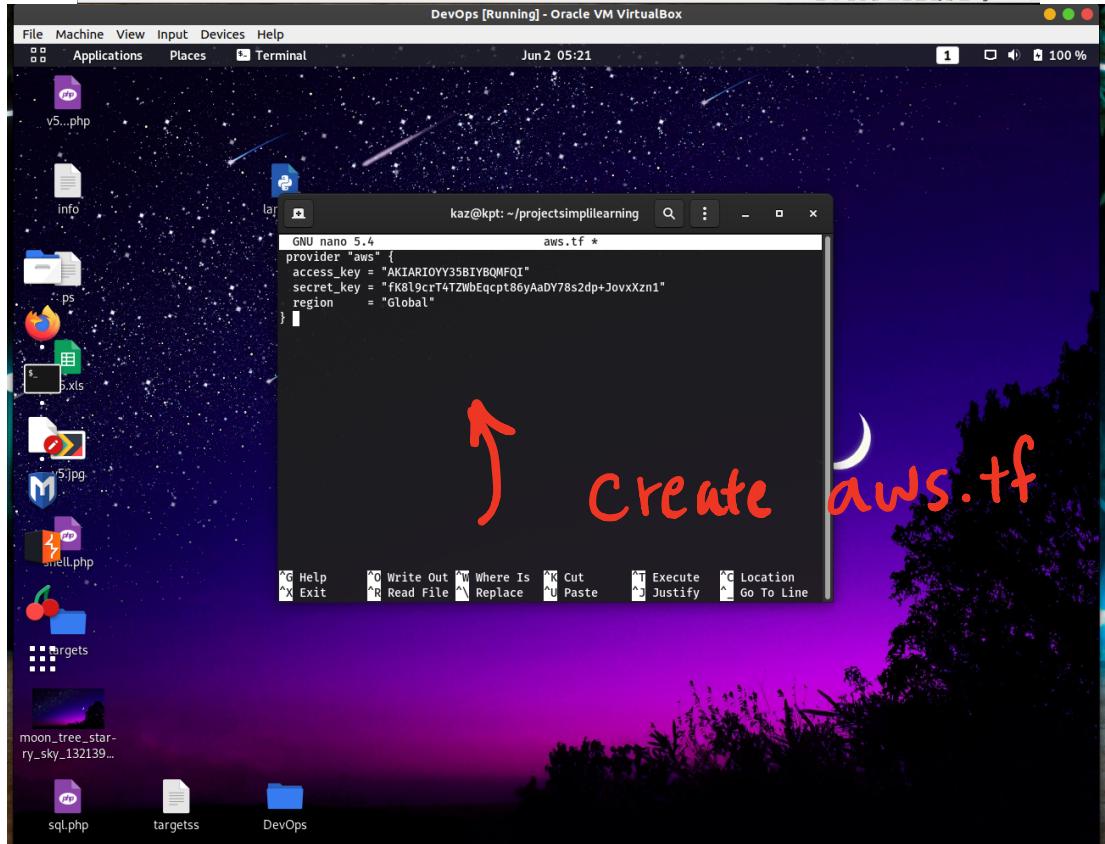
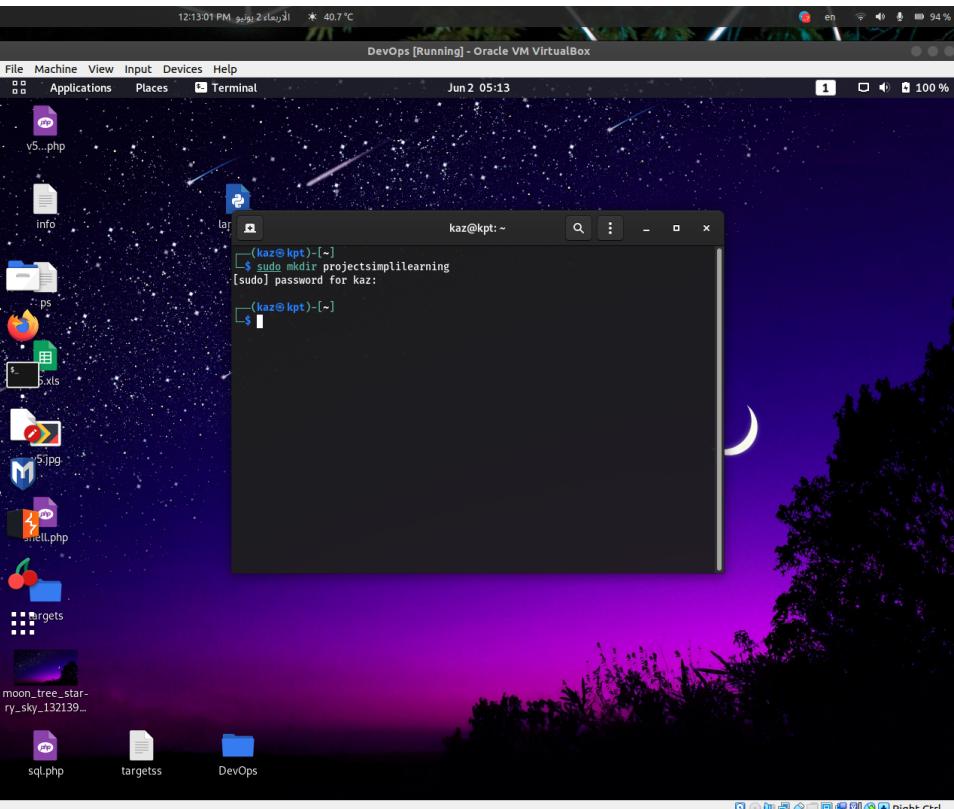
A screenshot of the AWS IAM Security Credentials page. The URL is [https://console.aws.amazon.com/iam/home?region=us-east-2#security\\_credentials](https://console.aws.amazon.com/iam/home?region=us-east-2#security_credentials). The left sidebar shows the IAM navigation menu. The main content area displays the 'Your Security Credentials' section, which includes a note about password security and links for changing the password, creating a multi-factor authentication (MFA) device, and managing access keys, CloudFront key pairs, X.509 certificates, and account identifiers. A red arrow points from the text 'Click here to change the password, name, or email address for your root AWS account.' to the 'Sign Out' button in the top right corner of the sidebar.

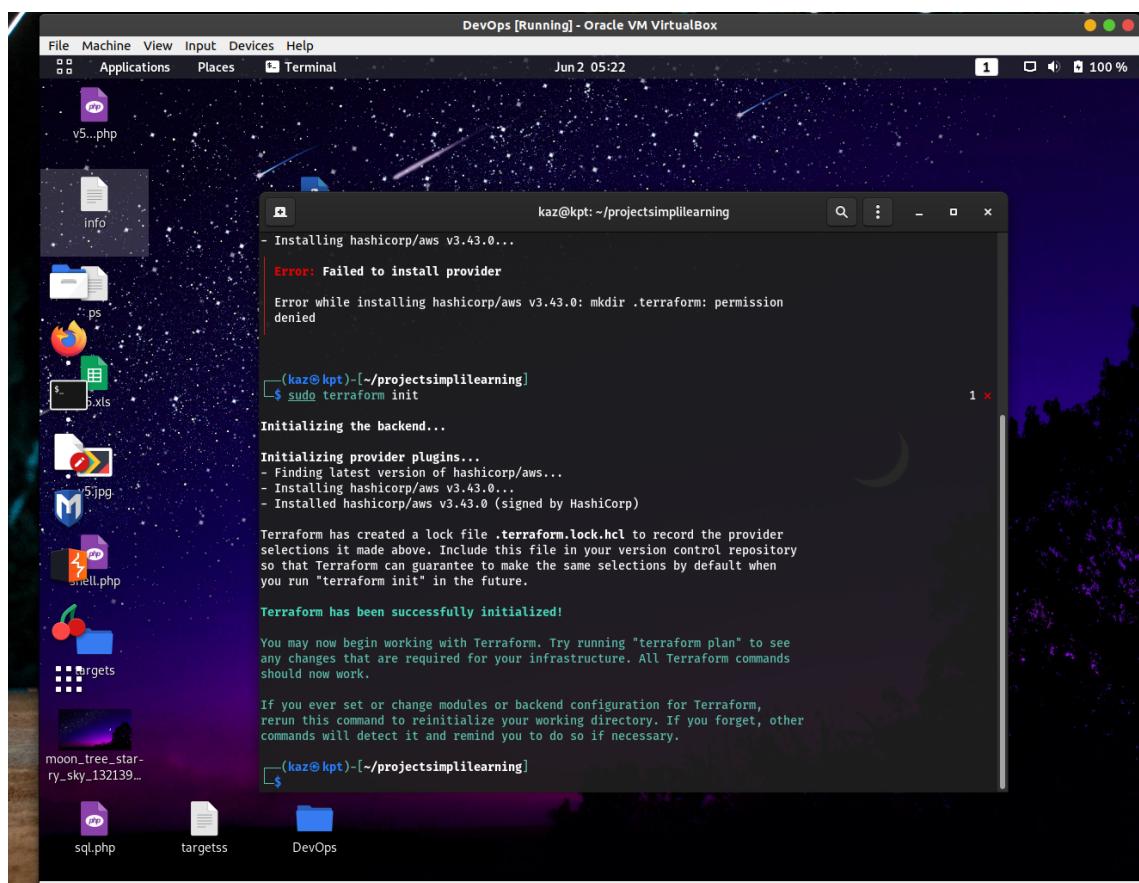
The screenshot shows the AWS Identity and Access Management (IAM) console. The left sidebar has 'Identity and Access Management (IAM)' selected. The main content area is titled 'Your Security Credentials'. It lists several types of credentials: Password, Multi-factor authentication (MFA), and Access keys (access key ID and secret access key). A red arrow points to the 'Create New Access Key' button, which is highlighted with a blue background. Below the table, there is a note about root user access keys providing unrestricted access to the entire AWS account.

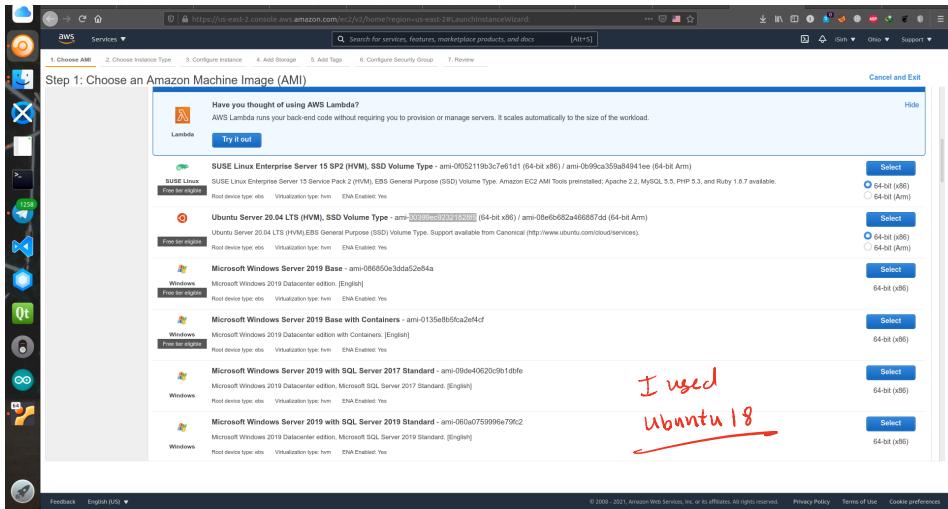
Created	Access Key ID	Last Used	Last Used Region	Last Used Service	Status	Actions
Jun 2nd 2021	AKUARIOY35B1YBQMFQI	N/A	N/A	N/A	Active	<a href="#">Make Inactive   Delete</a>

This screenshot shows the same AWS IAM Security Credentials page after a new access key has been created. The table now displays one row of data. A red checkmark is placed next to the 'Access Key ID' column to indicate the key has been copied.

Created	Access Key ID	Last Used	Last Used Region	Last Used Service	Status	Actions
Jun 2nd 2021	AKUARIOY35B1YBQMFQI	N/A	N/A	N/A	Active	<a href="#">Make Inactive   Delete</a>







DevOps [Running] - Oracle VM VirtualBox

```

File Machine View Input Devices Help
Applications Places Terminal Jun 2 06:15
kaz@kpt: ~/projectsimplilearning

+ {
+   cidr_blocks      = [
+     "+ "0.0.0.0/0",
+   ]
+   description      = ""
+   from_port        = 22
+   ipv6_cidr_blocks = []
+   prefix_list_ids = []
+   protocol         = "tcp"
+   security_groups  = []
+   self              = false
+   to_port           = 22
},
+
+ {
+   cidr_blocks      = [
+     "+ "0.0.0.0/0",
+   ]
+   description      = ""
+   from_port        = 8080
+   ipv6_cidr_blocks = []
+   prefix_list_ids = []
+   protocol         = "tcp"
+   security_groups  = []
+   self              = false
+   to_port           = 8080
},
]
+ name                = "security_jenkins_port"
+ name_prefix          = (known after apply)
+ owner_id             = (known after apply)
+ revoke_rules_on_delete = false
+ tags                = {
+   + "Name" = "security_jenkins_port"
}
+ tags_all             = {
tags + "Name" = "security_jenkins_port"
}
+ vpc_id               = (known after apply)
}

Plan: 3 to add, 0 to change, 0 to destroy.

Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.

(kaz@kpt)-[~/projectsimplilearning]
$
```

DevOps [Running] - Oracle VM VirtualBox

```
File Machine View Input Devices Help
Applications Places Terminal
Jun 2 06:21
kaz@kpt: ~/projectsimplilearning
}

Plan: 3 to add, 0 to change, 0 to destroy.

Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.

(kaz@kpt)-[~/projectsimplilearning]
$ sudo terraform apply
provider.aws.region
The region where AWS operations will take place. Examples
are us-east-1, us-west-2, etc.

Enter a value: us-east-1

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

# aws_eip.myFirstInstance will be created
+ resource "aws_eip" "myFirstInstance" {
  + allocation_id      = (known after apply)
  + association_id    = (known after apply)
  + carrier_ip         = (known after apply)
  + customer_owned_ip = (known after apply)
  + domain             = (known after apply)
  + id                 = (known after apply)
  + instance           = (known after apply)
  + network_border_group = (known after apply)
  + network_interface  = (known after apply)
  + private_dns        = (known after apply)
  + private_ip          = (known after apply)
  + public_dns          = (known after apply)
  + public_ip           = (known after apply)
  + public_ipv4_pool   = (known after apply)
  + tags               = [
    + "Name" = "jenkins_elastic_ip"
  ]
  + tags_all           = [
    + "Name" = "jenkins_elastic_ip"
  ]
  + vpc                = true
}

# aws_instance.myFirstInstance will be created
```

DevOps [Running] - Oracle VM VirtualBox

```
File Machine View Input Devices Help
Applications Places Terminal
Jun 2 07:06
kaz@kpt: ~/projectsimplilearning
kaz@kpt: ~/projectsimplilearning
}

+ network_interface_id = (known after apply)

+ root_block_device {
  + delete_on_termination = (known after apply)
  + device_name          = (known after apply)
  + encrypted            = (known after apply)
  + iops                  = (known after apply)
  + kms_key_id            = (known after apply)
  + tags                 = (known after apply)
  + throughput            = (known after apply)
  + volume_id             = (known after apply)
  + volume_size           = (known after apply)
  + volume_type            = (known after apply)
}

Plan: 2 to add, 0 to change, 0 to destroy.

Do you want to perform these actions?
Terraform will perform the actions described above.
Only 'yes' will be accepted to approve.

Enter a value: yes

aws_instance.myFirstInstance: Creating...
aws_instance.myFirstInstance: Still creating... [10s elapsed]
aws_instance.myFirstInstance: Still creating... [20s elapsed]
aws_instance.myFirstInstance: Creation complete after 29s [id=i-001bd6d9a901bc831]
aws_eip.myFirstInstance: Creating...
aws_eip.myFirstInstance: Creation complete after 3s [id=eipalloc-058f348e22d062d73]

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.

(kaz@kpt)-[~/projectsimplilearning]
$
```

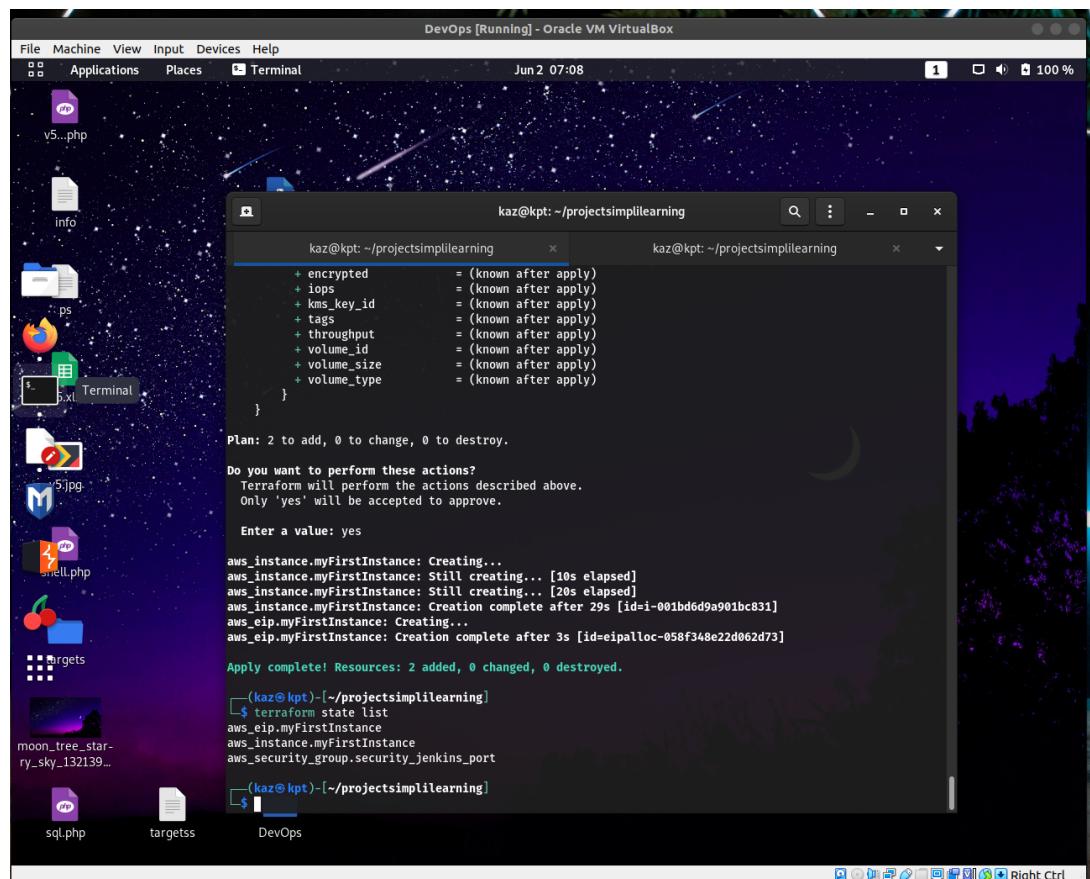
Welcome to the new Instances experience!

We're redesigning the EC2 console to make it easier to use. To switch between the old console and the new console, use the New EC2 Experience toggle above the navigation panel. We'll release updates continuously based on customer feedback.

**Instances (2) Info**

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 IP	Elastic IP
Jenkins_Instance	i-001bd6d9a901bc831	Running	t2.micro	Initializing	No alarms	us-east-2b	ec2-13-59-226-92.us-east-2.amazonaws.com	13.59.226.92	13.59.221.125
-	i-09dca36798b8e196a	Running	t2.micro	2/2 checks passed	No alarms	us-east-2c	ec2-18-117-90-125.us-east-2.amazonaws.com	18.117.90.125	-

Select an instance above



The screenshot shows the AWS EC2 Instances page. The left sidebar has 'Instances' selected under 'Instances'. The main area displays two instances:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 IP	Elastic IP
Jenkins_Instance	i-001bd6d9a901bc831	Running	t2.micro	2/2 checks passed	No alarms	us-east-2b	ec2-13-59-226-92.us-east-2.eca...	15.59.226.92	15.59.226.92
-	i-09dca36798b0e196a	Running	t2.micro	2/2 checks passed	No alarms	us-east-2c	ec2-18-117-90-125.us-east-2.eca...	18.117.90.125	-

A red arrow points to the 'Launch instances' button at the top right of the instance list.

The screenshot shows a terminal session on an Ubuntu 18.04 LTS instance. The session starts with the user logging in:

```
ubuntu@ip-172-31-23-183: ~
[login as: ubuntu]
[Authenticating with public key "simplelearningsda"]
Welcome to Ubuntu 18.04.5 LTS (GNU/Linux 5.4.0-1045-aws x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage
```

System information follows:

```
System information as of Wed Jun 2 12:54:42 UTC 2021

System load: 0.08      Processes:         92
Usage of /: 14.7% of 7.69GB   Users logged in:    0
Memory usage: 19%
Swap usage:  0%
```

There are no updates available:

```
0 packages can be updated.
0 of these updates are security updates.
```

The terminal ends with the prompt:

```
ubuntu@ip-172-31-23-183:~$
```

A large red circle highlights the entire terminal window, and a red arrow points from the bottom right of the terminal area towards the bottom right corner of the screen.

# Java

ubuntu@ip-172-31-23-183: ~

```
Do you want to continue? [Y/n]
Get:1 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libpython2.7-minimal amd64 2.7.17-1~18.04ubuntu1.6 [335 kB]
Get:2 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 python2.7-minimal amd64 2.7.17-1~18.04ubuntu1.6 [1291 kB]
Get:3 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 python-minimal amd64 2.7.15~rc1-1 [28.1 kB]
Get:4 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 libpython2.7-stdlib amd64 2.7.17-1~18.04ubuntu1.6 [1917 kB]
Get:5 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic-updates/main amd64 python2.7 amd64 2.7.17-1~18.04ubuntu1.6 [248 kB]
Get:6 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 libpython-stdlib amd64 2.7.15~rc1-1 [7620 B]
Get:7 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 python amd64 2.7.15~rc1-1 [140 kB]
Fetched 3967 kB in 0s (34.6 MB/s)
Selecting previously unselected package libpython2.7-minimal:amd64.
(Reading database ... 73290 files and directories currently installed.)
Preparing to unpack .../0-libpython2.7-minimal_2.7.17-1~18.04ubuntu1.6_amd64.deb ...
Unpacking libpython2.7-minimal:amd64 (2.7.17-1~18.04ubuntu1.6) ...
Selecting previously unselected package python2.7-minimal.
Preparing to unpack .../1-python2.7-minimal_2.7.17-1~18.04ubuntu1.6_amd64.deb ...
Unpacking python2.7-minimal (2.7.17-1~18.04ubuntu1.6) ...
Selecting previously unselected package python-minimal.
Preparing to unpack .../2-python-minimal_2.7.15~rc1-1_amd64.deb ...
Unpacking python-minimal (2.7.15~rc1-1) ...
Selecting previously unselected package libpython2.7-stdlib:amd64.
Preparing to unpack .../3-libpython2.7-stdlib_2.7.17-1~18.04ubuntu1.6_amd64.deb ...
Unpacking libpython2.7-stdlib:amd64 (2.7.17-1~18.04ubuntu1.6) ...
Selecting previously unselected package python2.7.
Preparing to unpack .../4-python2.7_2.7.17-1~18.04ubuntu1.6_amd64.deb ...
Unpacking python2.7 (2.7.17-1~18.04ubuntu1.6) ...
Selecting previously unselected package libpython-stdlib:amd64.
Preparing to unpack .../5-libpython-stdlib_2.7.15~rc1-1_amd64.deb ...
Unpacking libpython-stdlib:amd64 (2.7.15~rc1-1) ...
Setting up libpython2.7-minimal:amd64 (2.7.17-1~18.04ubuntu1.6) ...
Setting up python2.7-minimal (2.7.17-1~18.04ubuntu1.6) ...
Linking and byte-compiling packages for runtime python2.7...
Setting up python-minimal (2.7.15~rc1-1) ...
Selecting previously unselected package python.
(Reading database ... 73998 files and directories currently installed.)
Preparing to unpack .../python_2.7.15~rc1-1_amd64.deb ...
Unpacking python (2.7.15~rc1-1) ...
Setting up libpython2.7-stdlib:amd64 (2.7.17-1~18.04ubuntu1.6) ...
Setting up python2.7 (2.7.17-1~18.04ubuntu1.6) ...
Setting up libpython-stdlib:amd64 (2.7.15~rc1-1) ...
Setting up python (2.7.15~rc1-1) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
Processing triggers for mime-support (3.60ubuntu1) ...
ubuntu@ip-172-31-23-183:$
```

Python ✓

```
ubuntu@ip-172-31-23-183: ~
Get:6 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 libpython-stdlib amd64 2.7.15~rc1-1 [7620 B]
Get:7 http://us-east-2.ec2.archive.ubuntu.com/ubuntu bionic/main amd64 python amd64 2.7.15~rc1-1 [140 kB]
Fetched 3967 kB in 0s (34.6 MB/s)
Selecting previously unselected package libpython2.7-minimal:amd64.
(Reading database ... 73250 files and directories currently installed.)
Preparing to unpack .../0-libpython2.7-minimal_2.7.17-1~18.04ubuntu1.6_amd64.deb ...
Unpacking libpython2.7-minimal:amd64 (2.7.17-1~18.04ubuntu1.6) ...
Selecting previously unselected package python2.7-minimal.
Preparing to unpack .../1-python2.7-minimal_2.7.17-1~18.04ubuntu1.6_amd64.deb ...
Unpacking python2.7-minimal (2.7.17-1~18.04ubuntu1.6) ...
Selecting previously unselected package python-minimal.
Preparing to unpack .../2-python-minimal_2.7.15~rc1-1_amd64.deb ...
Unpacking python-minimal (2.7.15~rc1-1) ...
Selecting previously unselected package libpython2.7-stdlib:amd64.
Preparing to unpack .../3-libpython2.7-stdlib_2.7.17-1~18.04ubuntu1.6_amd64.deb ...
Unpacking libpython2.7-stdlib:amd64 (2.7.17-1~18.04ubuntu1.6) ...
Selecting previously unselected package python2.7.
Preparing to unpack .../4-python2.7_2.7.17-1~18.04ubuntu1.6_amd64.deb ...
Unpacking python2.7 (2.7.17-1~18.04ubuntu1.6) ...
Selecting previously unselected package libpython-stdlib:amd64.
Preparing to unpack .../5-libpython-stdlib_2.7.15~rc1-1_amd64.deb ...
Unpacking libpython-stdlib:amd64 (2.7.15~rc1-1) ...
Setting up libpython2.7-minimal:amd64 (2.7.17-1~18.04ubuntu1.6) ...
Setting up python2.7-minimal (2.7.17-1~18.04ubuntu1.6) ...
Linking and byte-compiling packages for runtime python2.7...
Setting up python-minimal (2.7.15~rc1-1) ...
Selecting previously unselected package python.
(Reading database ... 73998 files and directories currently installed.)
Preparing to unpack .../python_2.7.15~rc1-1_amd64.deb ...
Unpacking python (2.7.15~rc1-1) ...
Setting up libpython2.7-stdlib:amd64 (2.7.17-1~18.04ubuntu1.6) ...
Setting up python2.7 (2.7.17-1~18.04ubuntu1.6) ...
Setting up libpython-stdlib:amd64 (2.7.15~rc1-1) ...
Setting up python (2.7.15~rc1-1) ...
Processing triggers for man-db (2.8.3-2ubuntu0.1) ...
Processing triggers for mime-support (3.60ubuntu1) ...
ubuntu@ip-172-31-23-183:~$ java -version
openjdk version "1.8.0_292"
OpenJDK Runtime Environment (build 1.8.0_292-8u292-b10-0ubuntu1~18.04-b10)
OpenJDK 64-Bit Server VM (build 25.292-b10, mixed mode)
ubuntu@ip-172-31-23-183:~$ python -version
Unknown option: -e
usage: python [option] ... [-c cmd | -m mod | file | -] [arg] ...
Try 'python -h' for more information.
ubuntu@ip-172-31-23-183:~$
```

Java & Python

Done