

## Linux

Q1)

```
#!/bin/bash
# TO check leap year
read -p "Enter the year:" y

if [[ $(( y % 4 )) -eq 0 && $(( y % 100 )) -ne 0 || $(( y % 400 )) -eq 0 ]]
then
    echo "$y is a leap year"
else
    echo "$y is not a leap year"
fi
```

```
mayur@avm: ~/exam
mayur@avm:~/exam$ nano 1.sh
mayur@avm:~/exam$ bash 1.sh
Enter the year:2020
2020 is a leap year
```

Q2)

```
GNU nano 6.2 2.sh
#!/bin/bash
#fibonacci serise

read -p "Enter the given number: " n
# Initiaalizing 1st number
a=0
# Initializing 2nd number
b=1

for (( i=1; i<=n; i++ ))
do
    echo $a
    fn=$((a + b))
    a=$b
    b=$fn
done
```

```
mayur@avm:~/exam$ nano 2.sh
mayur@avm:~/exam$ bash 2.sh
Enter the given number: 5
0
1
1
2
3
mayur@avm:~/exam$
```

Q3)

i)

```
mayur@avm:~/exam$ rm -r mack
mayur@avm:~/exam$ tree
.
├── 1.sh
├── 2.sh
└── 3.sh

0 directories, 3 files
mayur@avm:~/exam$
```

ii)

```
mayur@avm: ~/exam
mayur@avm:~/exam$ mv mayur mack
mayur@avm:~/exam$ tree
.
├── 1.sh
├── 2.sh
├── 3.sh
└── mack

1 directory, 3 files
mayur@avm:~/exam$
```

iii)

```
mayur@avm: ~/assignment
mayur@avm:~/assignment$ touch file.txt
mayur@avm:~/assignment$ mv file.txt /home/mayur/exam
mayur@avm:~/assignment$ tree /home/mayur/exam
/home/mayur/exam
├── 1.sh
├── 2.sh
├── 3.sh
└── file.txt

0 directories, 4 files
mayur@avm:~/assignment$
```

iv)

```
mayur@avm:~/exam$ mkdir name
mayur@avm:~/exam$ tree
.
├── 1.sh
├── 2.sh
├── 3.sh
├── file.txt
└── name

1 directory, 4 files
mayur@avm:~/exam$ rm -r name
mayur@avm:~/exam$ tree
.
├── 1.sh
├── 2.sh
├── 3.sh
└── file.txt

0 directories, 4 files
mayur@avm:~/exam$
```

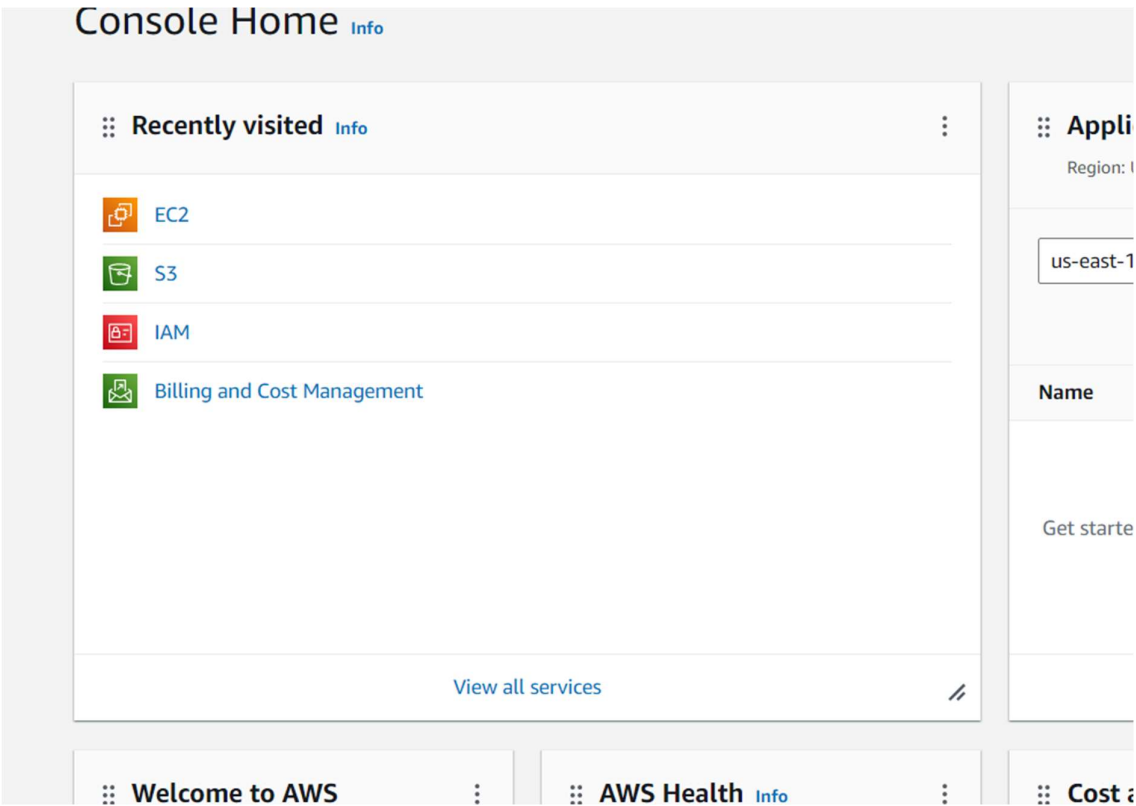
v)

```
mayur@avm:~/exam$ touch file1.txt
mayur@avm:~/exam$ ln file1.txt newfile1.txt
mayur@avm:~/exam$ tree
.
├── 1.sh
├── 2.sh
├── 3.sh
├── file1.txt
└── newfile1.txt

0 directories, 5 files
mayur@avm:~/exam$
```

Cloud

Q1) To create EC2 instance and access through putty



### Resources

EC2 Global view

You are using the following Amazon EC2 resources in the US East (N. Virginia) Region:

Instances (running)	1	Auto Scaling Groups	0	Dedicated Hosts	0
Elastic IPs	0	Instances	1	Key pairs	1
Load balancers	0	Placement groups	0	Security groups	7
Snapshots	0	Volumes	1		

#### Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

Launch instance

Migrate a server

Note: Your instances will launch in the US East (N. Virginia) Region

#### Service health

AWS Health Dashboard

Region  
US East (N. Virginia)

Status  
 This service is operating normally.

#### Zones

Here we click on EC2 and launch it

## Launch an instance [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

### Name and tags [Info](#)

Name

[Add additional tags](#)

### ▼ Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images


After launching we give name to our instance

▼ Key pair (login) [Info](#)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*

CDAC 1 ▼

 [Create new key pair](#)

▼ Network settings [Info](#)

Edit

Network [Info](#)

vpc-0d5180f9c8cb033b4

Subnet [Info](#)

No preference (Default subnet in any availability zone)

Auto-assign public IP [Info](#)

Enable

Firewall (security groups) [Info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

After that we create a key pair

▼ Network settings [Info](#)

Edit

Network [Info](#)

vpc-0d5180f9c8cb033b4

Subnet [Info](#)

No preference (Default subnet in any availability zone)

Auto-assign public IP [Info](#)

Enable

Firewall (security groups) [Info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☒ Create security group

☐ Select existing security group

We'll create a new security group called 'launch-wizard-7' with the following rules:

☒ Allow SSH traffic from

Helps you connect to your instance

Anywhere  
0.0.0.0/0

☒ Allow HTTPS traffic from the internet

To set up an endpoint, for example when creating a web server

☒ Allow HTTP traffic from the internet

To set up an endpoint, for example when creating a web server

after creating key we allow HTTPS traffic

security group rules to allow access from known IP addresses only.

Configure storage [Info](#)

Advanced

3 GiB gp3 Root volume (Not encrypted)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage

Add new volume

Click refresh to view backup information

Tags that you assign determine whether the instance will be backed up by any Lifecycle Manager policies.

Use systems

Advanced details [Info](#)

Number of instances [Info](#)

1

Software Image (AMI)

Amazon Linux 2023 AMI 2023.3.2...[read more](#)

ami-0d7a109bf30624c99

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which

Cancel

Launch instance

[Review commands](#)

Then we launch our instance

Find Instance by attribute or tag (case-sensitive) Any state < 1 > ⚙

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4
cdac	i-0b985a2a7dc4d128d	Shutting-d...	t2.micro	2/2 checks passed	View alarms +	us-east-1b	ec2-54-221
<b>dac</b>	<b>i-094ca71fddf735862</b>	<b>Running</b>	t2.micro	-	View alarms +	us-east-1c	ec2-34-203

---

**Instance: i-094ca71fddf735862 (dac)** ⚙ ×

Instance ID

i-094ca71fddf735862 (dac)

IPv6 address

-

Hostname type

IP name: ip-172-31-37-99.ec2.internal

34.203.237.144 [open address](#)

Instance state

**Running**

Private IP DNS name (IPv4 only)

ip-172-31-37-99.ec2.internal

Private IPv4 addresses

172.31.37.99

Public IPv4 DNS

ec2-34-203-237-144.compute-1.amazonaws.com [open address](#)

dac is our instance and we copy the public address

Category:

- Session
  - Logging
- Terminal
  - Keyboard
  - Bell
  - Features
- Window
  - Appearance
  - Behaviour
  - Translation
  - Selection
  - Colours
- Connection
  - Data
  - Proxy
  - SSH
  - Serial
  - Telnet
  - Rlogin
  - SUPDUP

**Basic options for your PuTTY session**

Specify the destination you want to connect to

Host Name (or IP address) Port

ec2-user@34.203.237.144 22

Connection type:

☒ SSH ☐ Serial ☐ Other: Telnet

Load, save or delete a stored session

Saved Sessions

Default Settings Load Save Delete

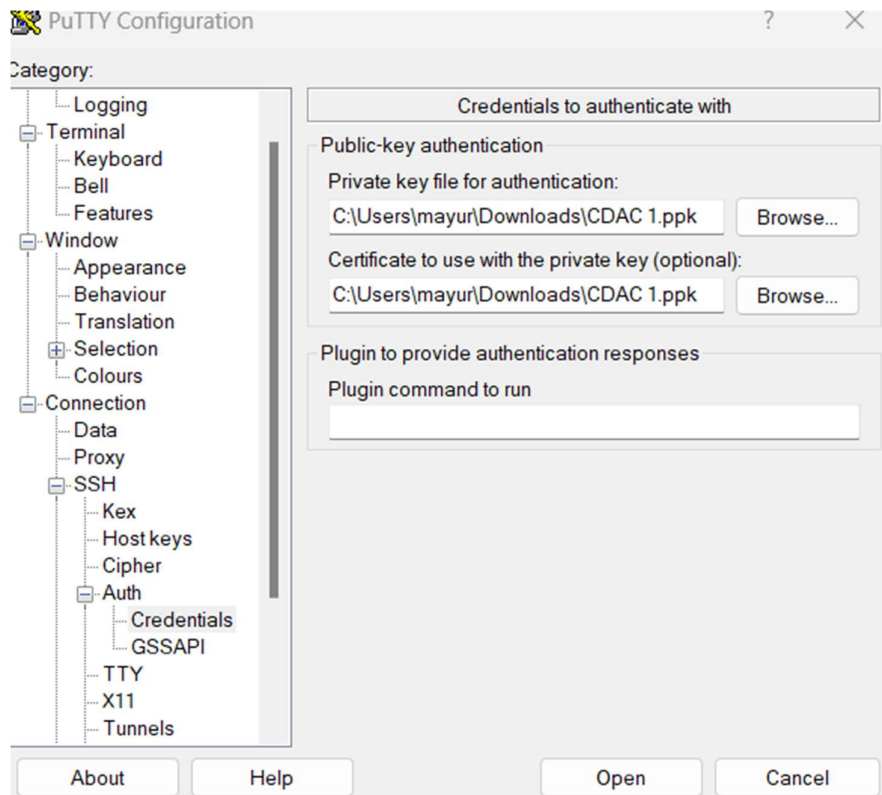
Close window on exit

☐ Always ☐ Never ☒ Only on clean exit

About Help Open Cancel

Here we put connect our ec2 instance to putty by putting [ec2-user@34.203.237.144](#) hostname





After that we gave credential authentication

```
Unable to use certificate file "C:\Users\mayur\Downloads\CDAC 1.ppk" (PuTTY
SH-2 private key)
Using username "ec2-user".
Authenticating with public key "CDAC 1"

#
##### Amazon Linux 2023
~\  #####\
~~  #####\
~~  \###|
~~  \#/  https://aws.amazon.com/linux/amazon-linux-2023
~~  v~'  ->
~~~
~~~  _
~~~  /m/  _
ec2-user@ip-172-31-37-99 ~]$
```

Our ec2 instance able to access putty

```
Unable to use certificate file "C:\Users\mayur\Downloads\CDAC 1.ppk" (PuTTY S
SH-2 private key)
Using username "ec2-user".
Authenticating with public key "CDAC 1"
```

```

#_
~\##### Amazon Linux 2023
~~\#####\
~~\#####|
~~\##/ https://aws.amazon.com/linux/amazon-linux-2023
~~V~'-'>
~~~~
~~~.-.
/m/'-

```

```
ec2-user@ip-172-31-37-99 ~]$ sudo -i
root@ip-172-31-37-99 ~)# yum install httpd -y
```

```

Installed:
apr-1.7.2-2.amzn2023.0.2.x86_64          apr-util-1.6.3-1.amzn2023.0.1.x86_64      apr-util-openssl-1.6.3-1.amzn2023.0.1.x86_64
httpd-2.4.58-1.amzn2023.x86_64          httpd-core-2.4.58-1.amzn2023.x86_64      httpd-filesystem-2.4.58-1.amzn2023.x86_64
libbrotli-1.0.9-4.amzn2023.0.2.x86_64  mailcap-2.1.49-3.amzn2023.0.3.noarch     mod_http2-2.0.11-2.amzn2023.x86_64

Complete!
[root@ip-172-31-37-99 ~]# systemctl start httpd
[root@ip-172-31-37-99 ~]# systemctl enable httpd
Created symlink /etc/systemd/system/multi-user.target.wants/httpd.service → /usr/lib/systemd/system/httpd.service.
[root@ip-172-31-37-99 ~]# cd /var/www/html
[root@ip-172-31-37-99 html]# vi index.html
[root@ip-172-31-37-99 html]#

```

A screenshot of a web browser window. The address bar shows the URL '34.203.237.144/'. The page content displays 'Hello world' in a large, bold, black font.

After running this 34.203.237.144/ IP address it will give Hello world because we type Hello world in our index.html file

Q2)

The screenshot displays the AWS Management Console interface. On the left is a navigation sidebar with a search bar and a list of services including cloud, sys, network, s, ts, lists, es, and tions. The main content area features a header with two buttons: 'Create VPC' (highlighted in orange) and 'Launch EC2 Instances'. Below these buttons is a note: 'Note: Your Instances will launch in the US East region.' The main section is titled 'Resources by Region' with a 'Refresh Resources' button. It states 'You are using the following Amazon VPC resources' and lists ten resources in a grid. Each resource card shows the resource name, a link to 'See all regions', and the count for the 'US East' region.

Resource	US East Count
VPCs	1
NAT Gateways	0
Subnets	6
VPC Peering Connections	0
Route Tables	1
Network ACLs	1
Internet Gateways	1
Security Groups	8
Egress-only Internet Gateways	0
Customer Gateways	0

Here we click on create vpc

## VPC settings

### Resources to create [Info](#)

Create only the VPC resource or the VPC and other networking resources.

☒ VPC only

☐ VPC and more

### Name tag - *optional*

Creates a tag with a key of 'Name' and a value that you specify.

cdac

### IPv4 CIDR block [Info](#)

☒ IPv4 CIDR manual input

☐ IPAM-allocated IPv4 CIDR block

### IPv4 CIDR

10.0.0.0/24

CIDR block size must be between /16 and /28.

### IPv6 CIDR block [Info](#)

☒ No IPv6 CIDR block

☐ IPAM-allocated IPv6 CIDR block

☐ Amazon-provided IPv6 CIDR block

☐ IPv6 CIDR owned by me

### Tenancy [Info](#)

Default

### IPv6 CIDR block [Info](#)

☒ No IPv6 CIDR block

☐ IPAM-allocated IPv6 CIDR block

☐ Amazon-provided IPv6 CIDR block

☐ IPv6 CIDR owned by me

### Tenancy [Info](#)

Default

## Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

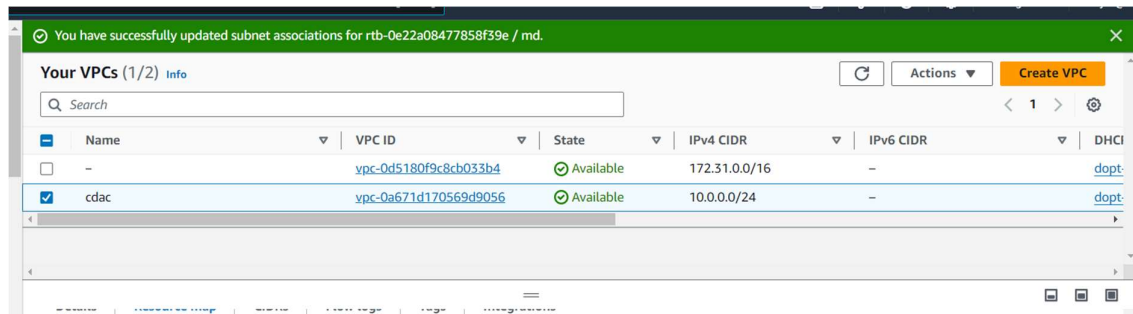
No tags associated with the resource

Add tag

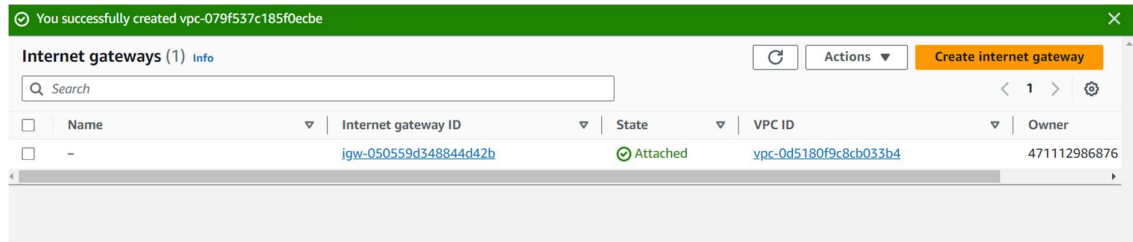
You can add 50 more tags

Cancel

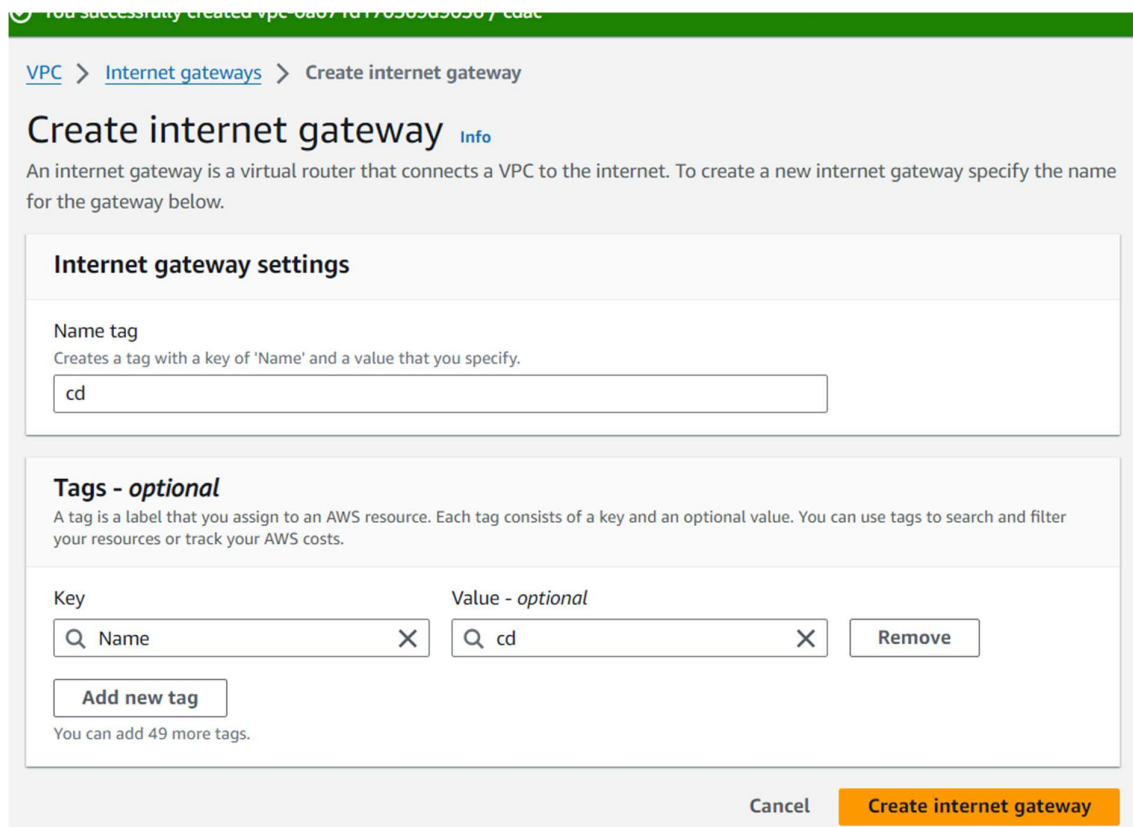
Create VPC

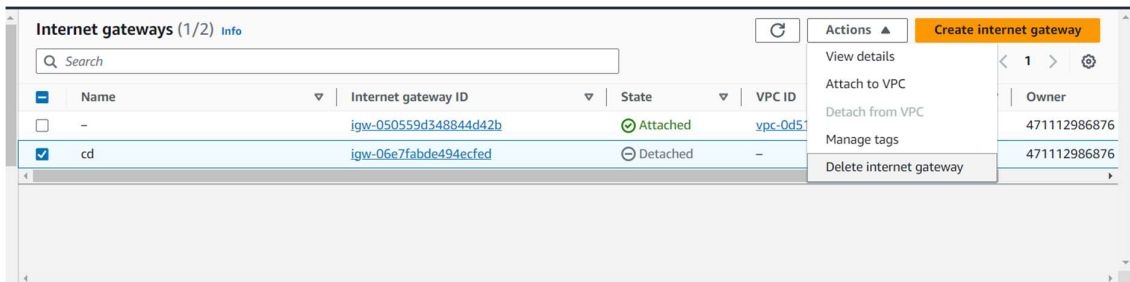


Here we gave VPC name as cdac and we create vpc



After that we click on internet gateway to create internet gateway





VPC > Internet gateways > Attach to VPC (igw-06e7fabde494ecfed)

## Attach to VPC (igw-06e7fabde494ecfed) [Info](#)

### VPC

Attach an internet gateway to a VPC to enable the VPC to communicate with the internet. Specify the VPC to attach below.

#### Available VPCs

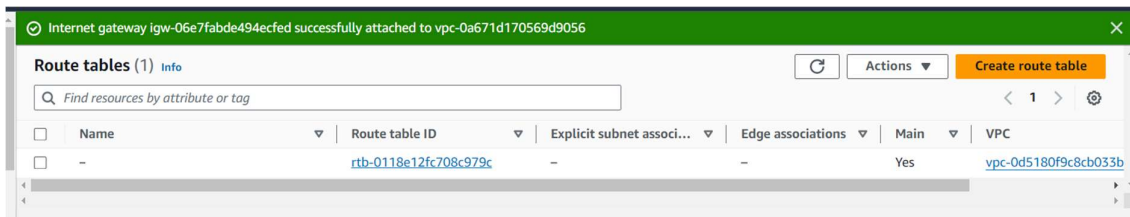
Attach the internet gateway to this VPC.

[AWS Command Line Interface command](#)

Cancel

Attach internet gateway

Here we create our internet gateway cd and we attach it to VPC



### Route table settings

**Name - optional**  
Create a tag with a key of 'Name' and a value that you specify.

md

**VPC**  
The VPC to use for this route table.

vpc-0a671d170569d9056 (cdac)

### Tags

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key

Value - optional

Q Name

X

Q md

X

Remove

Add new tag

You can add 49 more tags.

Cancel

Create route table

After that we create route table name as md

Route table rtb-0e22a08477858f39e | md was created successfully.

Subnets (6) info

Find resources by attribute or tag

< 1 >

⚙

<input type="checkbox"/>	Name	Subnet ID	State	VPC	IPv4 CIDR
<input type="checkbox"/>	-	<a href="#">subnet-0101ec03af3e743dd</a>	Available	<a href="#">vpc-0d5180f9c8cb033b4</a>	172.31.80.0/20
<input type="checkbox"/>	-	<a href="#">subnet-076f14277a9535317</a>	Available	<a href="#">vpc-0d5180f9c8cb033b4</a>	172.31.32.0/20
<input type="checkbox"/>	-	<a href="#">subnet-03a903c6c7c1d819a</a>	Available	<a href="#">vpc-0d5180f9c8cb033b4</a>	172.31.48.0/20
<input type="checkbox"/>	-	<a href="#">subnet-0e9da11fb4fbfa2e8</a>	Available	<a href="#">vpc-0d5180f9c8cb033b4</a>	172.31.0.0/20
<input type="checkbox"/>	-	<a href="#">subnet-02e5610962ecf7791</a>	Available	<a href="#">vpc-0d5180f9c8cb033b4</a>	172.31.64.0/20
<input type="checkbox"/>	-	<a href="#">subnet-0ed73009178e17c9e</a>	Available	<a href="#">vpc-0d5180f9c8cb033b4</a>	172.31.16.0/20

#### VPC ID

Create subnets in this VPC.

vpc-0a671d170569d9056 (cdac)

#### Associated VPC CIDRs

IPv4 CIDRs

10.0.0.0/24

### Subnet settings

Specify the CIDR blocks and Availability Zone for the subnet.

#### Subnet 1 of 1

##### Subnet name

Create a tag with a key of 'Name' and a value that you specify.

mayur

The name can be up to 256 characters long.

##### Availability Zone [Info](#)

Choose the zone in which your subnet will reside, or let Amazon choose one for you.

No preference

IPv4 VPC CIDR block [Info](#)



### Availability Zone [Info](#)

Choose the zone in which your subnet will reside, or let Amazon choose one for you.

No preference ▼

### IPv4 VPC CIDR block [Info](#)

Choose the VPC's IPv4 CIDR block for the subnet. The subnet's IPv4 CIDR must lie within this block.

10.0.0.0/24 ▼

### IPv4 subnet CIDR block

10.0.0.0/28 16 IPs

< > ^ v

### ▼ Tags - optional

Key

Value - optional

Q Name X Q mayur X Remove

Add new tag

You can add 49 more tags.

Remove

Add new subnet

Cancel

Create subnet

After creating route table we create subnet name as mayur

Route tables (1/3) <a href="#">Info</a>							Actions	Create route table
Find resources by attribute or tag							< 1 > ⚙	
<input checked="" type="checkbox"/>	Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC		
<input type="checkbox"/>	-	<a href="#">rtb-0118e12fc708c979c</a>	-	-	Yes	<a href="#">vpc-0d5180f9c8cb033b</a>		
<input type="checkbox"/>	-	<a href="#">rtb-02a993af024d6b128</a>	-	-	Yes	<a href="#">vpc-0a671d170569d90!</a>		
<input checked="" type="checkbox"/>	md	<a href="#">rtb-0e22a08477858f39e</a>	-	-	No	<a href="#">vpc-0a671d170569d90!</a>		

rtb-0e22a08477858f39e / md

Details				Routes	Subnet associations	Edge associations	Route propagation	Tags
Routes (1)								
Filter routes								
< 1 > ⚙								
Destination	Target	Status	Propagated					
10.0.0.0/24	local	Active	No					

VPC > Route tables > rtb-0e22a08477858f39e > Edit routes

### Edit routes

Destination	Target	Status	Propagated
10.0.0.0/24	local	Active	No
0.0.0.0/0	Internet Gateway	-	No

Buttons: Add route, Cancel, Preview, Save changes, Remove

After that we again go in route table > routes from there we add Route

VPC > Route tables > rtb-0e22a08477858f39e

### rtb-0e22a08477858f39e / md

Actions

**Details** Info

Route table ID rtb-0e22a08477858f39e	Main No	Explicit subnet associations -	Edge associations -
VPC vpc-0a671d170569d9056   cdac	Owner ID 471112986876		

Routes
 Subnet associations
 Edge associations
 Route propagation
 Tags

#### Explicit subnet associations (0)

Find subnet association

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR
No subnet associations You do not have any subnet associations.			

Edit subnet associations

VPC > Route tables > rtb-0e22a08477858f39e > Edit subnet associations

### Edit subnet associations

Change which subnets are associated with this route table.

**Available subnets (1/1)**

Filter subnet associations

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
mayur	subnet-0f544f9364c94288c	10.0.0.0/28	-	Main (rtb-02a993af024d6b128)

**Selected subnets**

subnet-0f544f9364c94288c / mayur

Buttons: Cancel, Save associations

After that we did subnet connection

Route tables> Subnet associations >Edit subnet association>click on Mayur

Your VPCs (1/2) Info

Search

Actions

Create VPC

	Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR	D
<input type="checkbox"/>	-	<a href="#">vpc-0d5180f9c8cb033b4</a>	Available	172.31.0.0/16	-	<a href="#">d</a>

Resource map Info

Details

tual network

Subnets (1)

Subnets within this VPC

us-east-1b

mayur

Route tables (2)

Route network traffic to resources

rtb-02a993af024d6b128

md

Network connections

Connections to other networks

cd

Now our connection is done mayur > md > cd