GCP TASK

Google Cloud Platform

Google Cloud Platform (GCP), offered by Google, is a suite of cloud computing services that runs on the same infrastructure that Google uses internally for its end-user products, such as Google Search.

Google Cloud Platform is a provider of computing resources for deploying and operating applications on the web. Its specialty is providing a place for individuals and enterprises to build and run software, and it uses the web to connect to the users of that software.

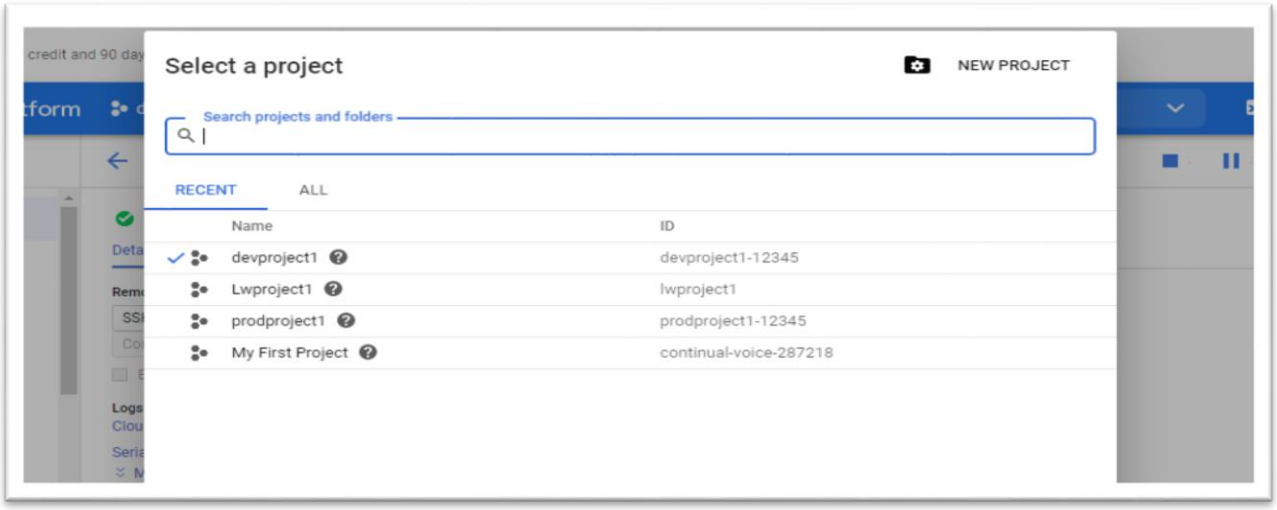
Task Description:-

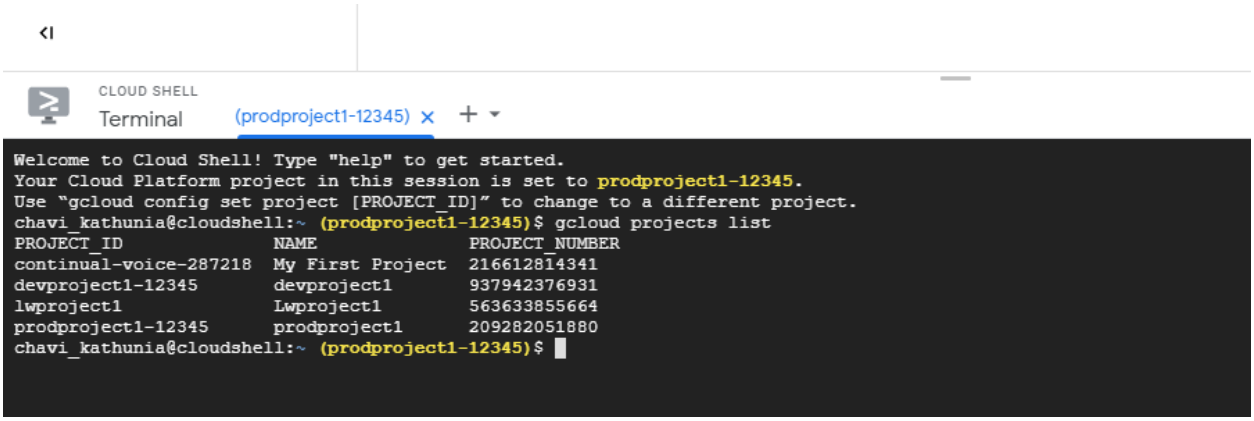
- **Create two projects**
- **Enable API's**
- **Create VPC in both the projects in different- different regions**
- **Create subnets in both the VPC**
- **Do VPC peering for the connection**
- **Create Google Kubernetes Engine (GKE) in one VPC and launch cluster.**
- **Launch Wordpress on the top of that Kubernetes cluster.**
- **Create deployment which automatically will create a LoadBalancer for any disaster recovery.**
- **Launch SQL server in other VPC with MYSQL database.**
- **Then finally install wordpress in one VPC using running database in other PC.**

Project Creation:-

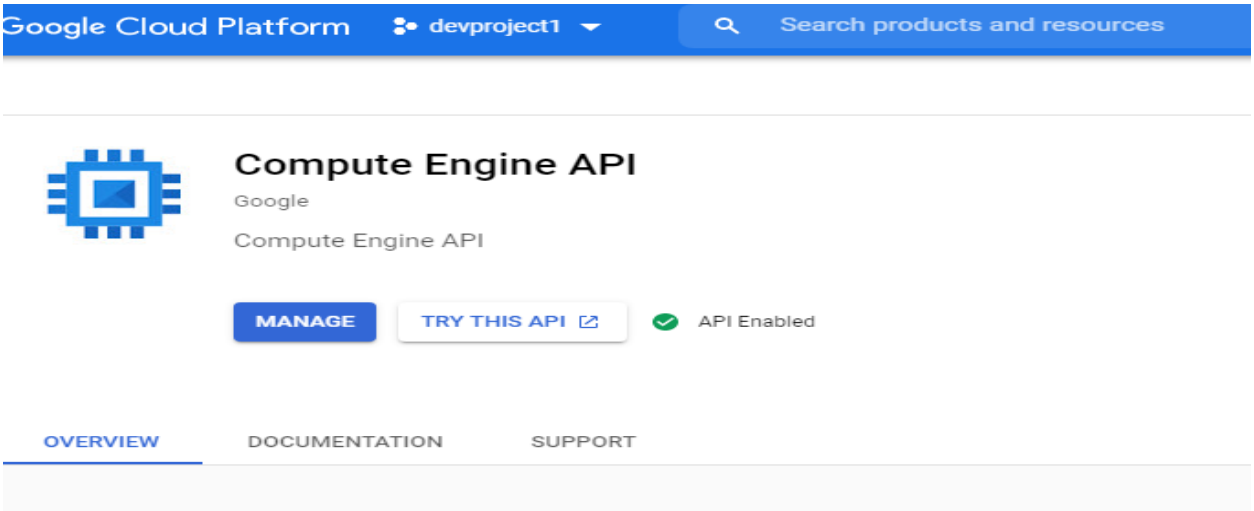
A project organizes all your Google Cloud resources. A project consists of a set of users; a set of API's; and billing authentication, and monitoring settings of those API's.

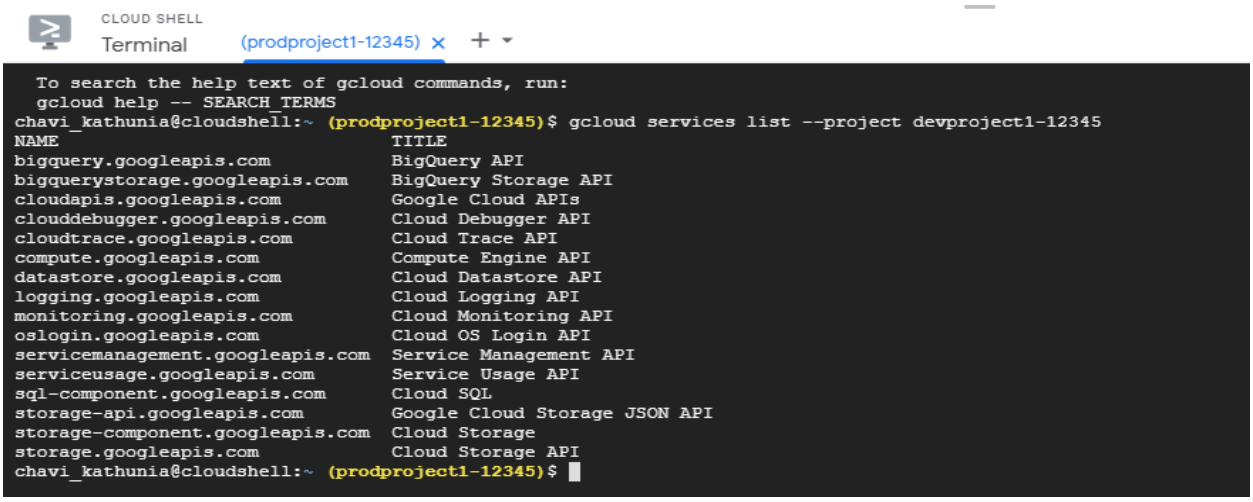
- **Created 2 projects :—**
  - **devproject1**
  - **prodproject1**



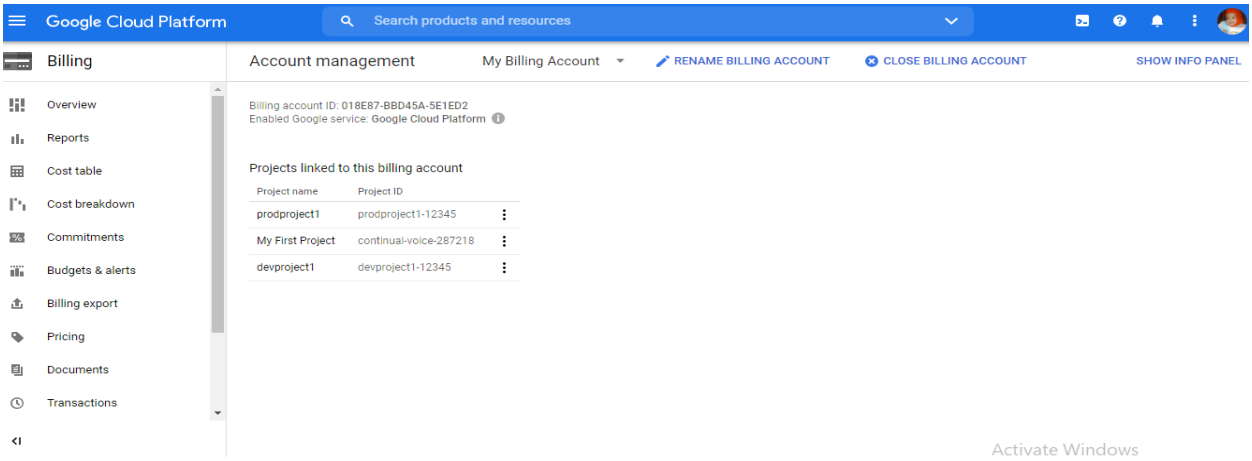


Enabled API Services

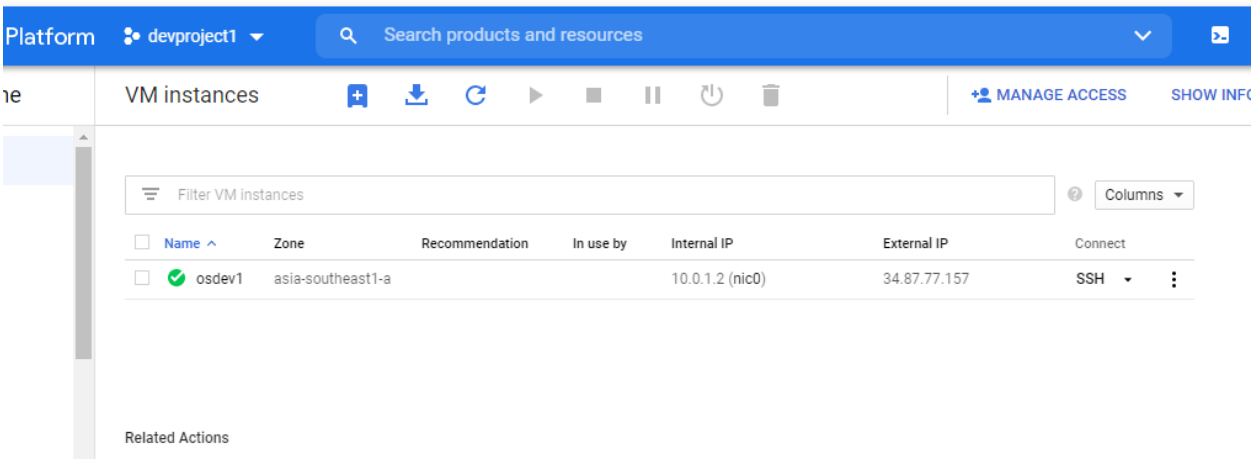


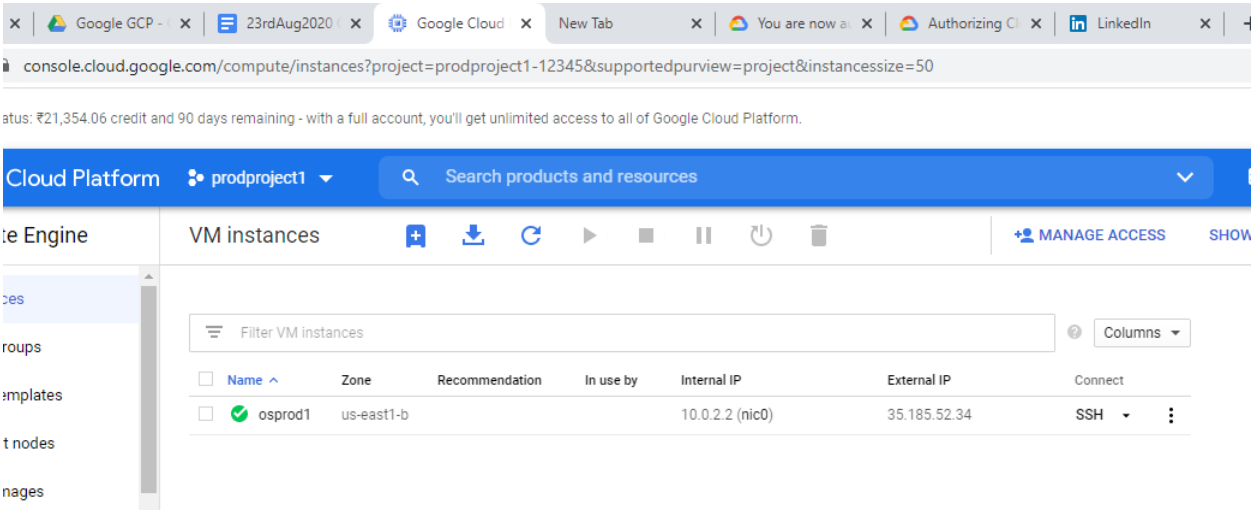


Enable Billing



Launched VM Instance for both the projects

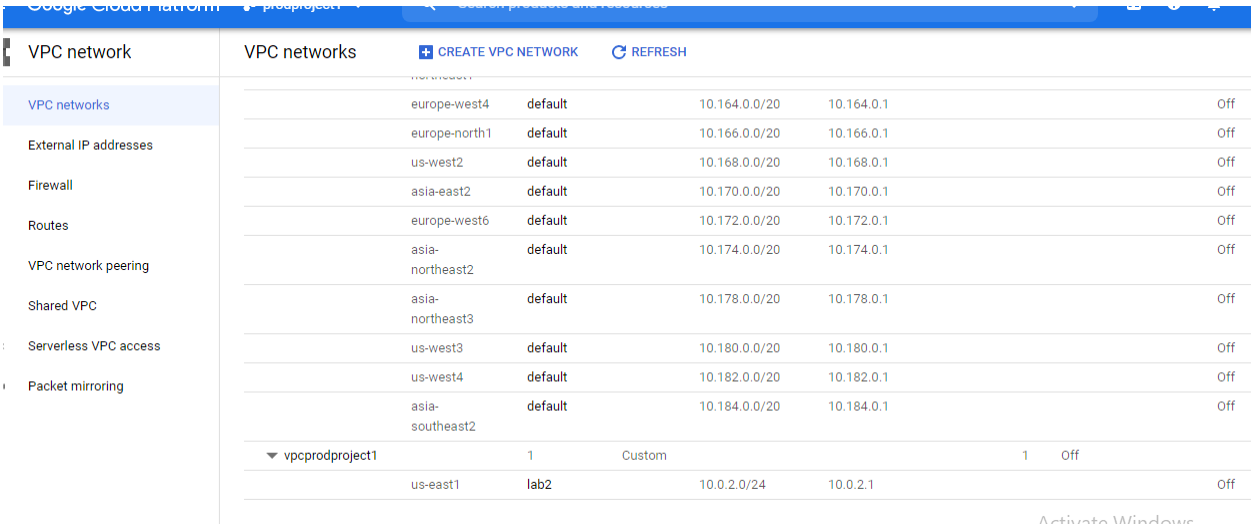




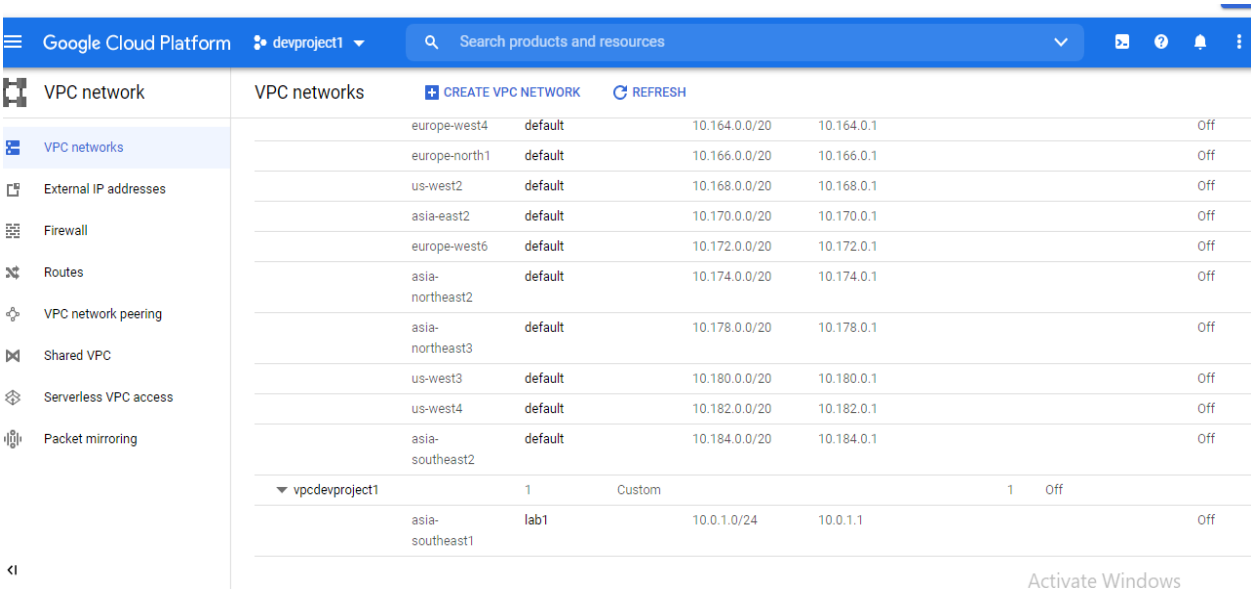
VPC Creation :-

Virtual Private Cloud (VPC) provides networking functionality to compute Engine Virtual Machine (VM) instances, Google Kubernetes Engine (GKE) clusters, and the App Engine flexible environment. VPC provides networking for your cloud based resources and services.

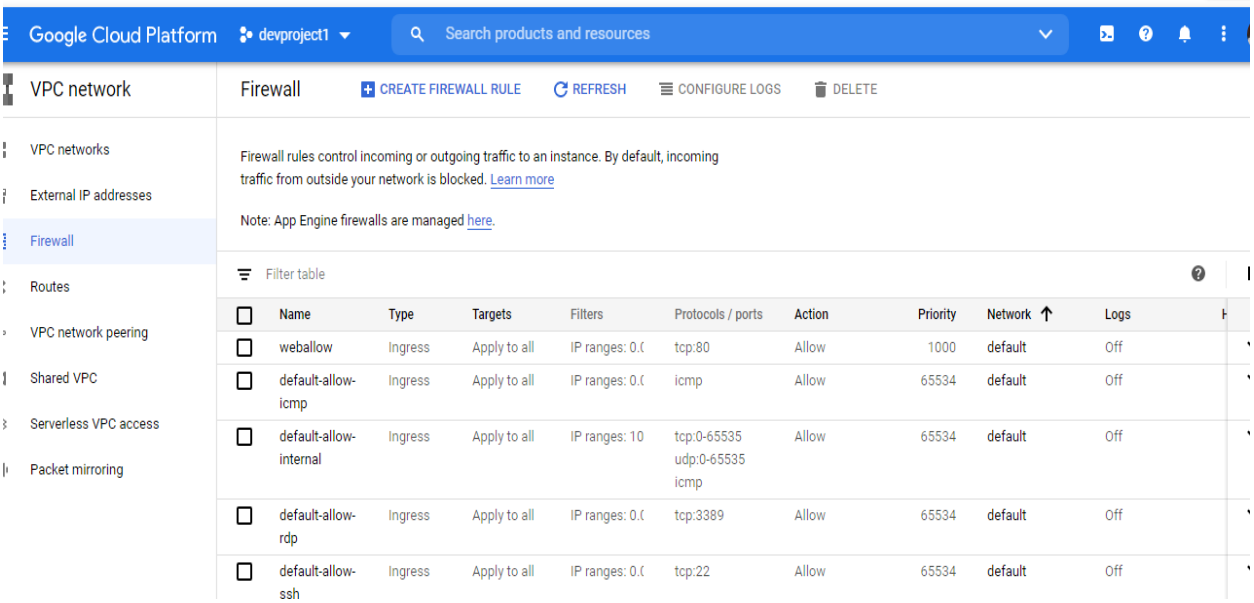
VPC Creation in one project :-



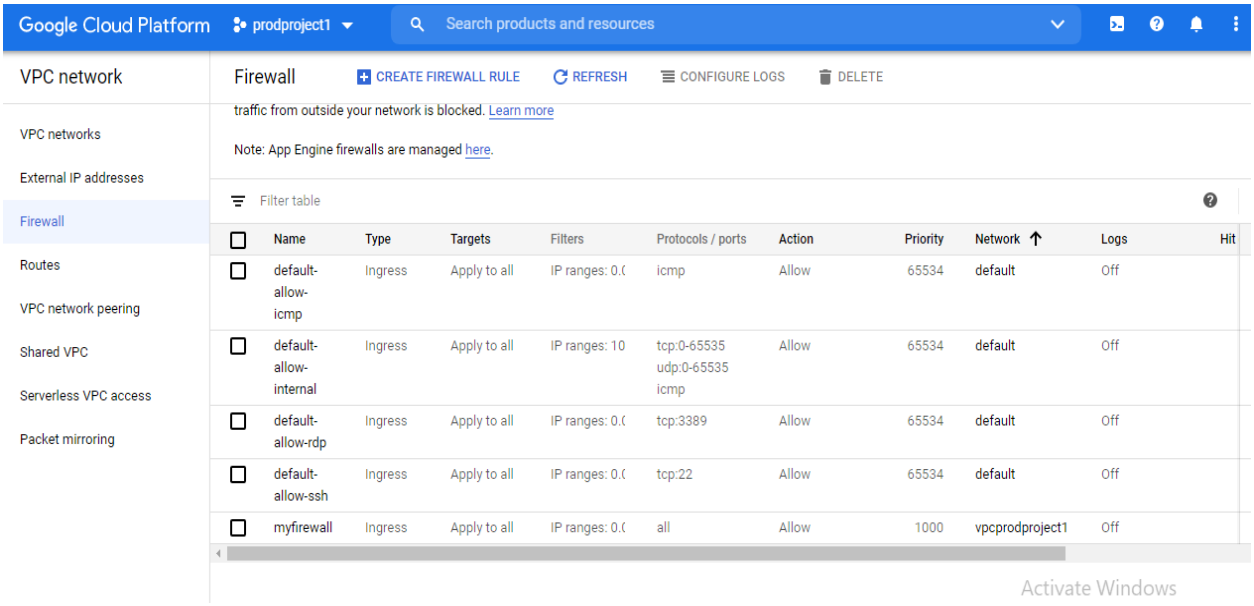
VPC Creation in other project :-



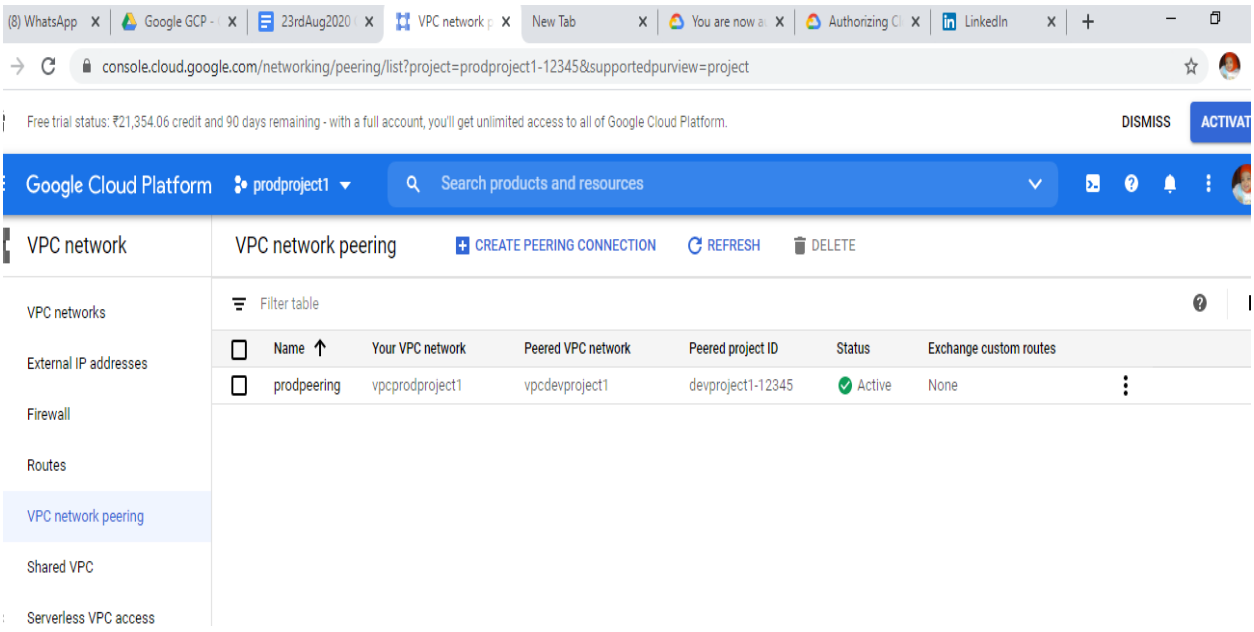
Set Firewall Rules For One Project :-



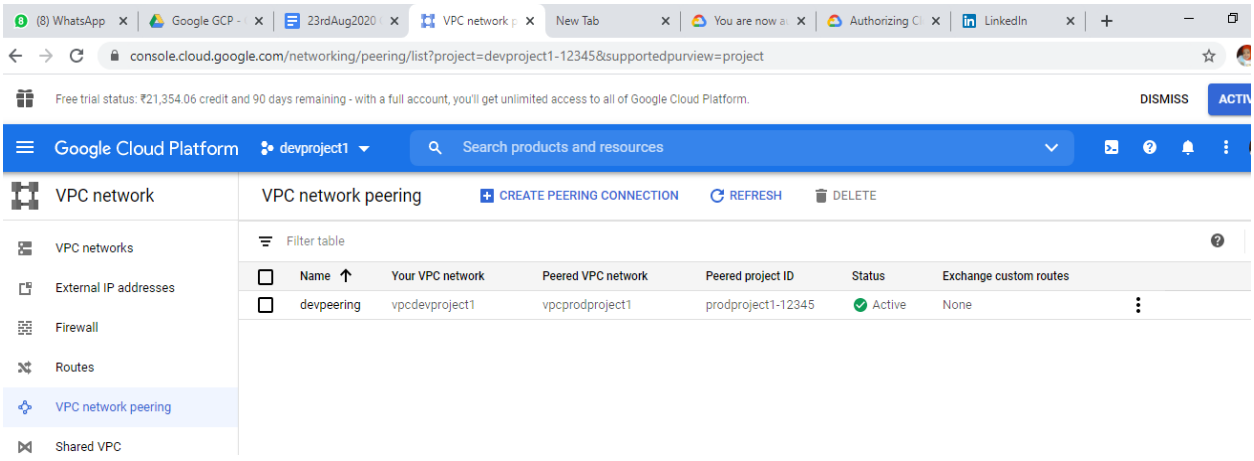
Set Firewall Rules For Other Project :-



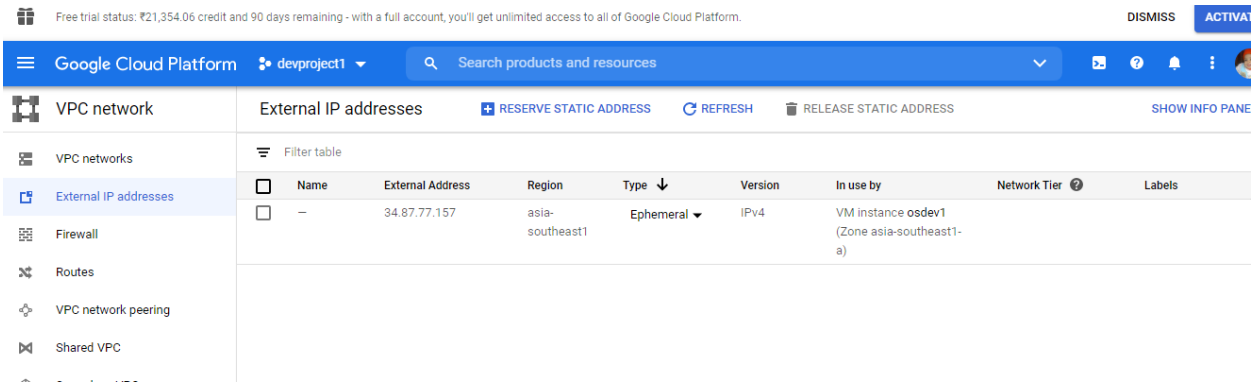
VPC peering in one project :-



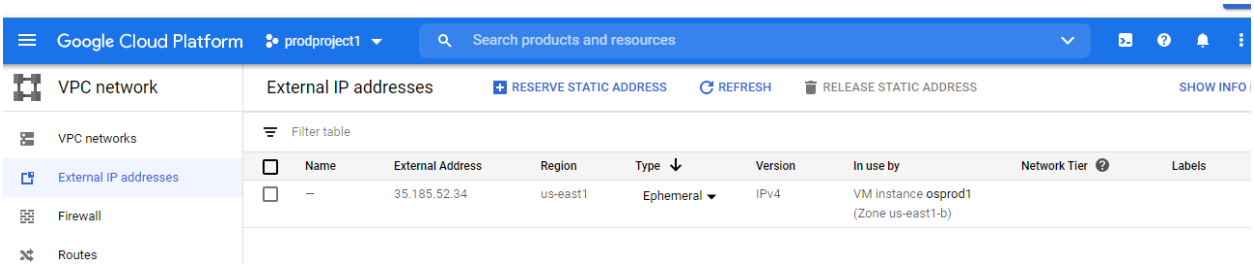
VPC peering in other project :-



External IP addresses of one project :-



External IP addresses of other project :-



```
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

chavi_kathunia@cloudshell:~ (prodproject1-12345)$ ping 35.185.52.34
PING 35.185.52.34 (35.185.52.34) 56(84) bytes of data.
64 bytes from 35.185.52.34: icmp_seq=1 ttl=53 time=228 ms
64 bytes from 35.185.52.34: icmp_seq=2 ttl=53 time=227 ms
64 bytes from 35.185.52.34: icmp_seq=3 ttl=53 time=228 ms
64 bytes from 35.185.52.34: icmp_seq=4 ttl=53 time=227 ms
64 bytes from 35.185.52.34: icmp_seq=5 ttl=53 time=227 ms
64 bytes from 35.185.52.34: icmp_seq=6 ttl=53 time=227 ms
64 bytes from 35.185.52.34: icmp_seq=7 ttl=53 time=227 ms
64 bytes from 35.185.52.34: icmp_seq=8 ttl=53 time=228 ms
64 bytes from 35.185.52.34: icmp_seq=9 ttl=53 time=227 ms
64 bytes from 35.185.52.34: icmp_seq=10 ttl=53 time=227 ms
64 bytes from 35.185.52.34: icmp_seq=11 ttl=53 time=227 ms
64 bytes from 35.185.52.34: icmp_seq=12 ttl=53 time=227 ms
64 bytes from 35.185.52.34: icmp_seq=13 ttl=53 time=228 ms
64 bytes from 35.185.52.34: icmp_seq=14 ttl=53 time=229 ms
64 bytes from 35.185.52.34: icmp_seq=15 ttl=53 time=227 ms
64 bytes from 35.185.52.34: icmp_seq=16 ttl=53 time=227 ms
```

Already setup Google SDKInstaller in baseOS to run gcloud command from baseOS.

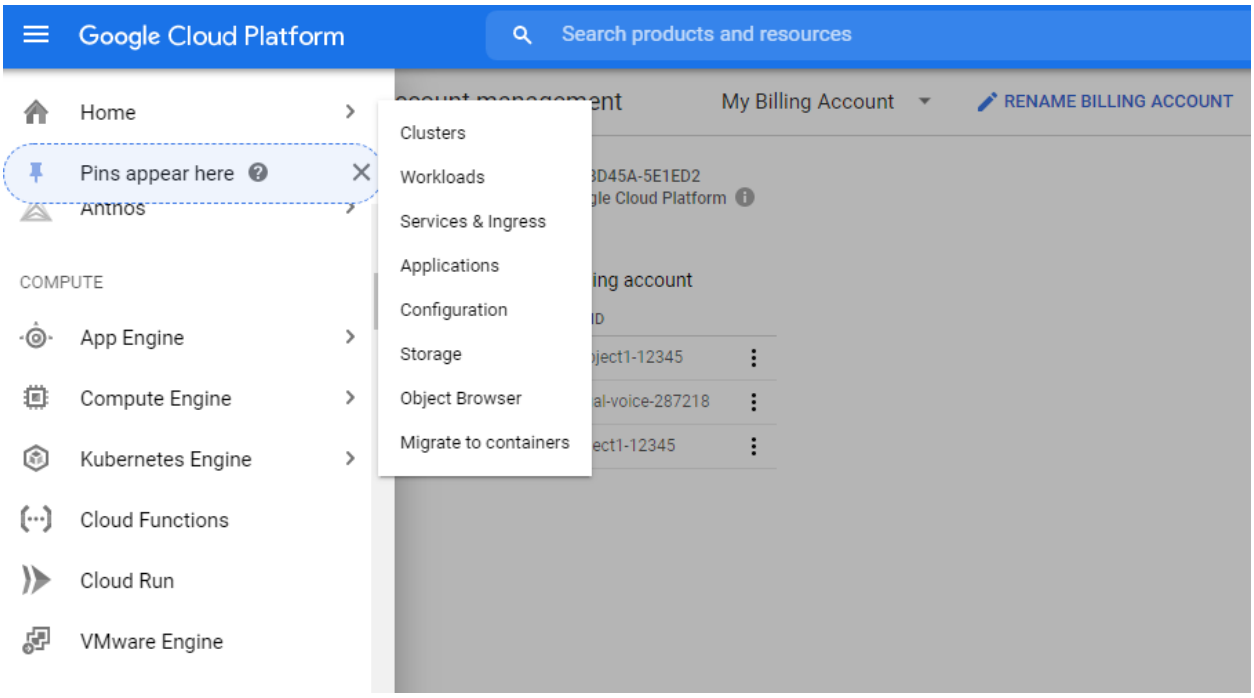
```
C:\Users\pc\AppData\Local\Google\Cloud SDK>gcloud init --skip-diagnostics
Welcome! This command will take you through the configuration of gcloud.

Settings from your current configuration [default] are:
core:
  account: chavi.kathunia
  disable_usage_reporting: 'True'

Pick configuration to use:
 [1] Re-initialize this configuration [default] with new settings
 [2] Create a new configuration
Please enter your numeric choice:  [1]
Please enter a value between 1 and 2:  1

Your current configuration has been set to: [default]

You must log in to continue. Would you like to log in (Y/n)?  Y

Your browser has been opened to visit:

    https://accounts.google.com/o/oauth2/auth?client_id=32555940559.apps.googleusercontent.com&redirect_uri=http%3A%2F%2Flocalhost%3A8085%2F&scope=openid+https%3A%2F%2F
www.googleapis.com%2Fauth%2Fuserinfo.email+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcloud-platform+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fappengine.admin+https%3A%2
F%2Fwww.googleapis.com%2Fauth%2Fcompute+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Faccounts.reauth&code_challenge=MvBa-CGYbs0DoXytM0QHXqUMf7zQqs8icffEBAMo-2Q&code_challe
nge_method=S256&access_type=offline&response_type=code&prompt=select_account




Updates are available for some Cloud SDK components.  To install them,
please run:
  $ gcloud components update

You are logged in as: [chavi.kathunia@gmail.com].

Pick cloud project to use:
 [1] continual-voice-287218
 [2] devproject1-12345
 [3] lwproject1
 [4] prodproject1-12345
 [5] Create a new project
Please enter numeric choice or text value (must exactly match list
```

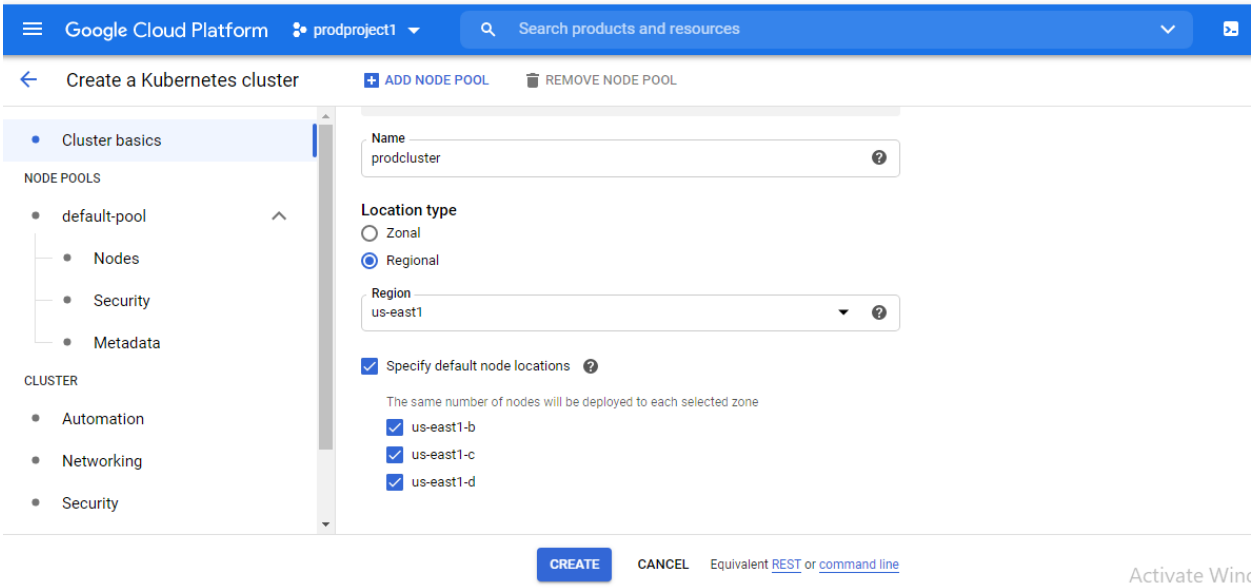
```
Command Prompt
Microsoft Windows [Version 10.0.18362.1016]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\pc>gcloud projects list
PROJECT_ID                NAME              PROJECT_NUMBER
continual-voice-287218    My First Project  216612814341
devproject1-12345         devproject1       937942376931
lwproject1                Lwproject1        563633855664
prodproject1-12345        prodproject1      209282051880

C:\Users\pc>
```

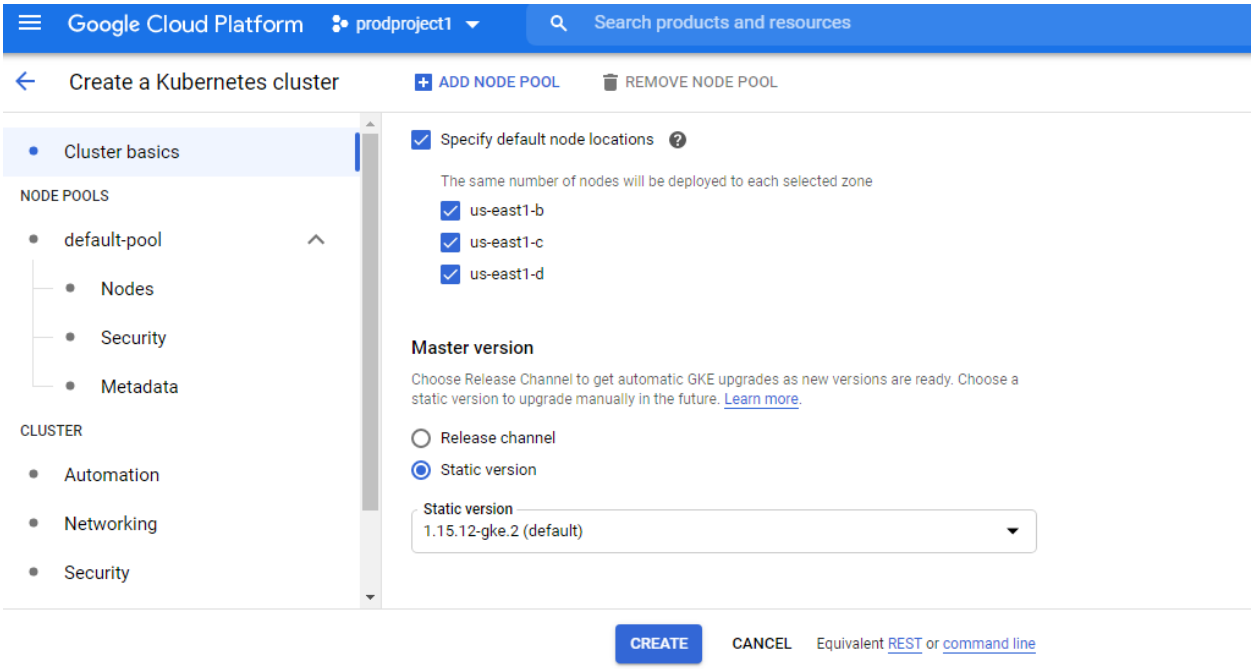
Creation of GKE (Google Kubernetes Engine)

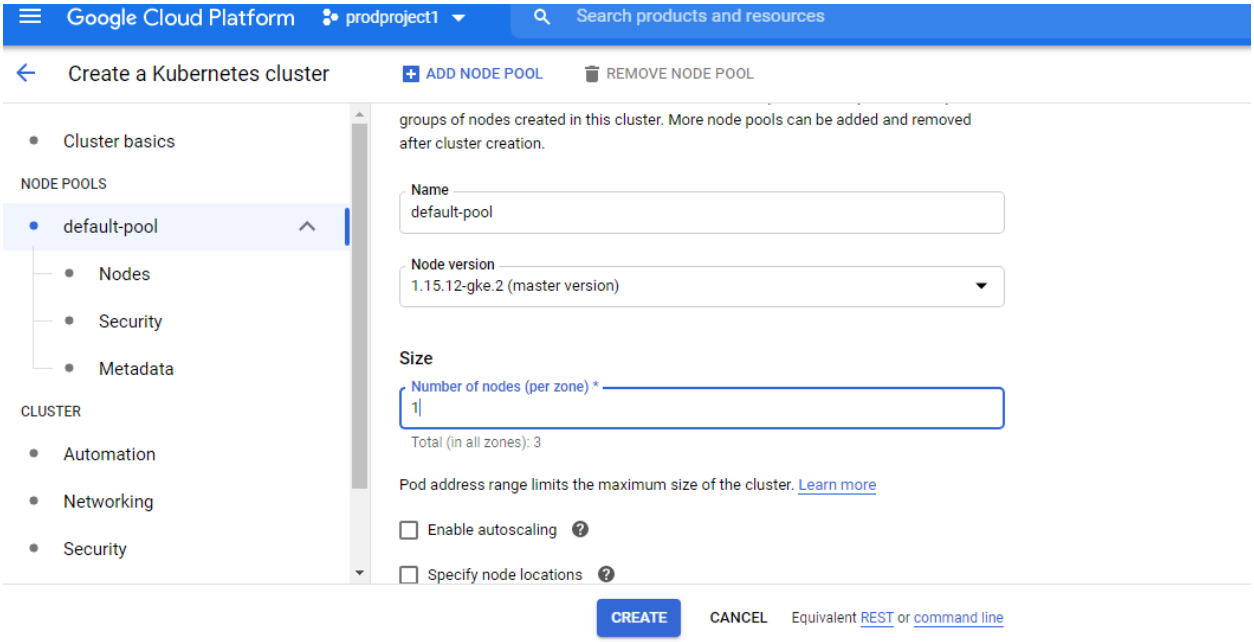
Google Kubernetes Engine (GKE) provides a managed environment for deploying, managing, and scaling your containerized applications using Google infrastructure.

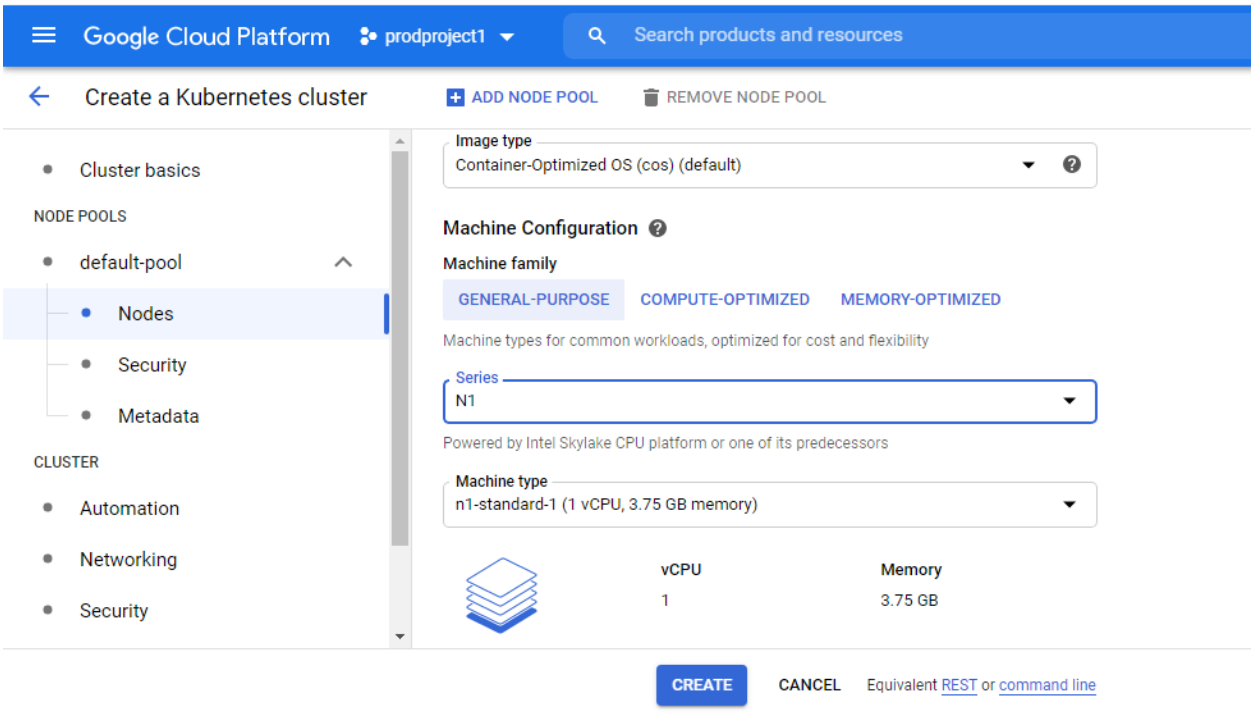
Creation of Cluster in US-east1 region

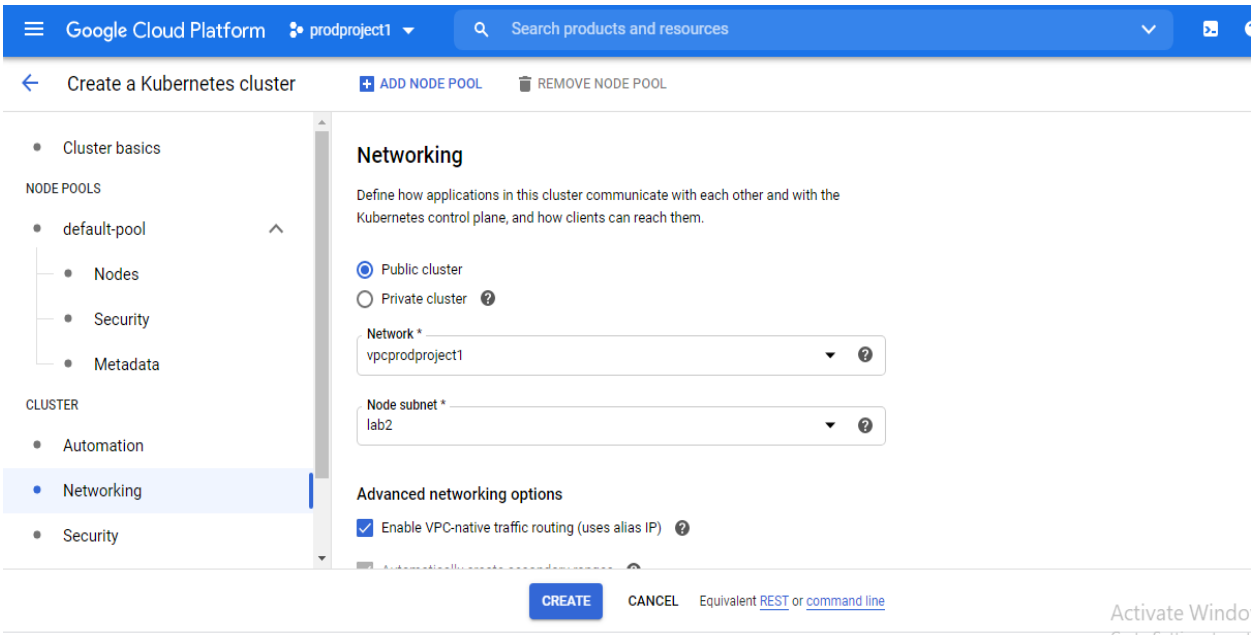


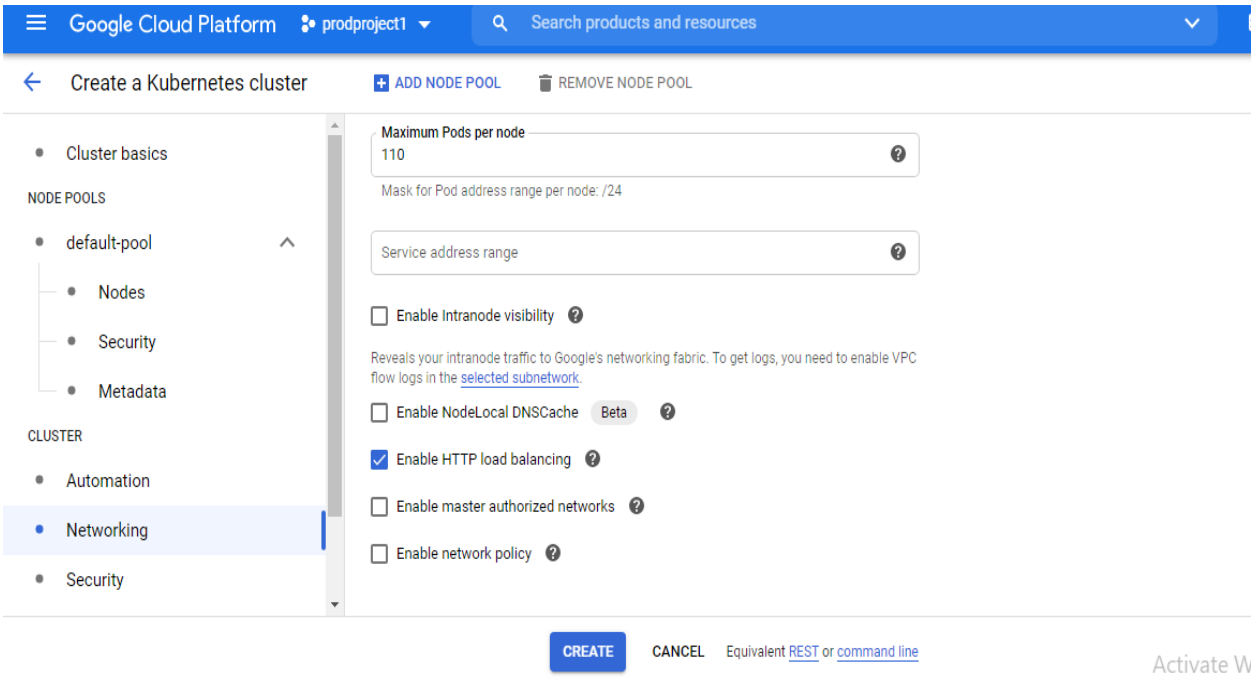

Google Cloud Platform
prodproject1
Search products and resources
Create a Kubernetes cluster
ADD NODE POOL
REMOVE NODE POOL
Cluster basics
NODE POOLS
default-pool
Nodes
Security
Metadata
CLUSTER
Automation
Networking
Security
Name
prodcluster
Location type
Zonal
Regional
Region
us-east1
Specify default node locations
The same number of nodes will be deployed to each selected zone
us-east1-b
us-east1-c
us-east1-d
CREATE
CANCEL
Equivalent REST or command line


Google Cloud Platform
prodproject1
Search products and resources
Create a Kubernetes cluster
ADD NODE POOL
REMOVE NODE POOL
Cluster basics
NODE POOLS
default-pool
Nodes
Security
Metadata
CLUSTER
Automation
Networking
Security
Specify default node locations
The same number of nodes will be deployed to each selected zone
us-east1-b
us-east1-c
us-east1-d
Master version
Choose Release Channel to get automatic GKE upgrades as new versions are ready. Choose a static version to upgrade manually in the future. Learn more.
Release channel
Static version
Static version
1.15.12-gke.2 (default)
CREATE
CANCEL
Equivalent REST or command line

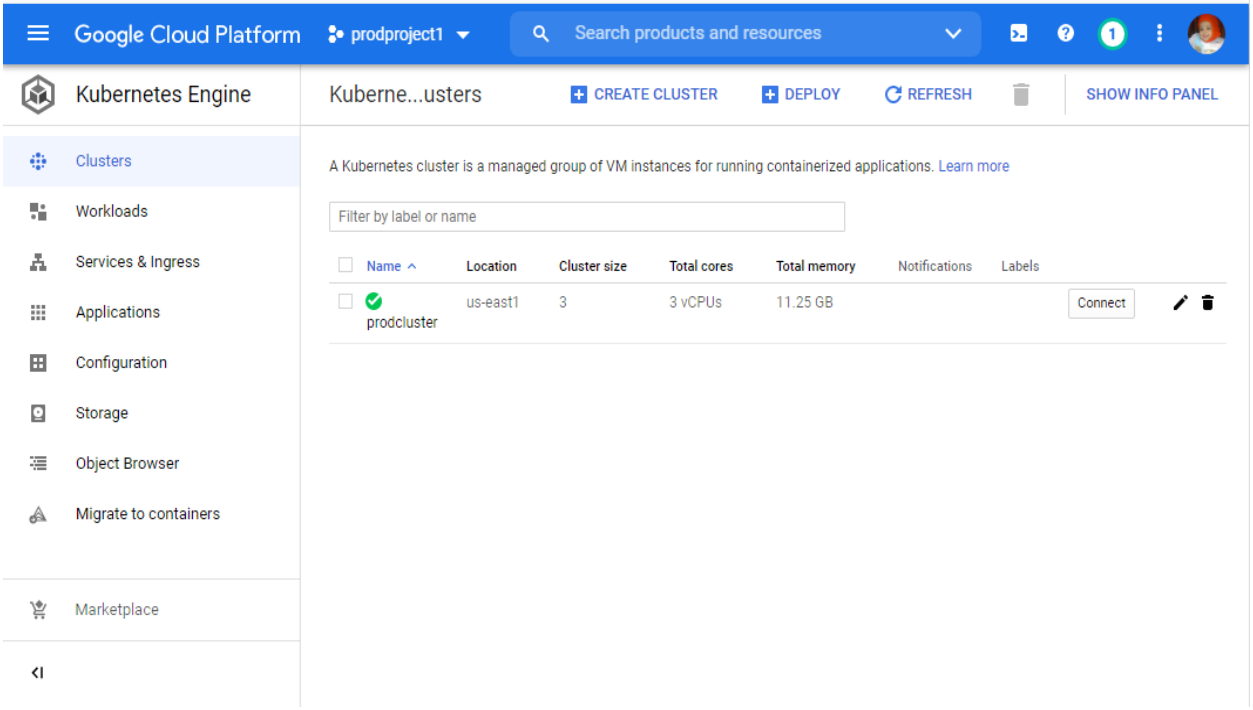

Google Cloud Platform
prodproject1
Search products and resources
Create a Kubernetes cluster
ADD NODE POOL
REMOVE NODE POOL
Cluster basics
NODE POOLS
default-pool
Nodes
Security
Metadata
CLUSTER
Automation
Networking
Security
groups of nodes created in this cluster. More node pools can be added and removed after cluster creation.
Name
default-pool
Node version
1.15.12-gke.2 (master version)
Size
Number of nodes (per zone) *
1
Total (in all zones): 3
Pod address range limits the maximum size of the cluster. Learn more
Enable autoscaling
Specify node locations
CREATE
CANCEL
Equivalent REST or command line


Google Cloud Platform
prodproject1
Search products and resources
Create a Kubernetes cluster
ADD NODE POOL
REMOVE NODE POOL
Cluster basics
NODE POOLS
default-pool
Nodes
Security
Metadata
CLUSTER
Automation
Networking
Security
Image type
Container-Optimized OS (cos) (default)
Machine Configuration
Machine family
GENERAL-PURPOSE
COMPUTE-OPTIMIZED
MEMORY-OPTIMIZED
Machine types for common workloads, optimized for cost and flexibility
Series
N1
Powered by Intel Skylake CPU platform or one of its predecessors
Machine type
n1-standard-1 (1 vCPU, 3.75 GB memory)
vCPU
1
Memory
3.75 GB
CREATE
CANCEL
Equivalent REST or command line

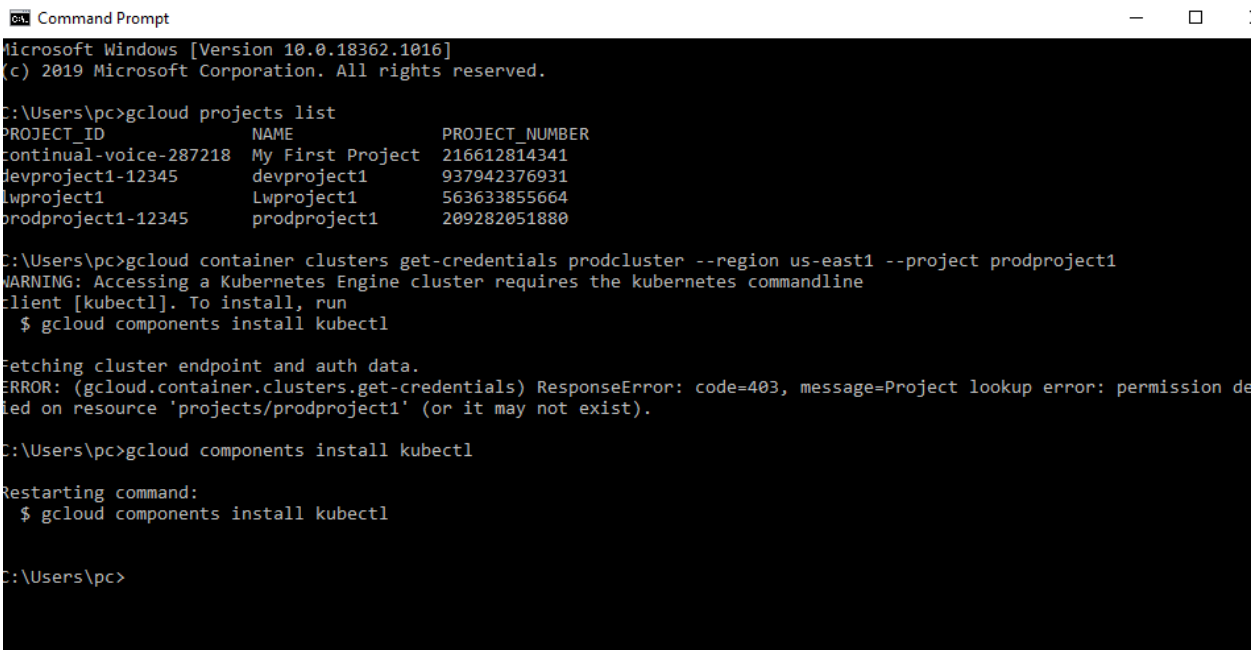

Google Cloud Platform
prodproject1
Search products and resources
Create a Kubernetes cluster
ADD NODE POOL
REMOVE NODE POOL
Cluster basics
NODE POOLS
default-pool
Nodes
Security
Metadata
CLUSTER
Automation
Networking
Security
Networking
Define how applications in this cluster communicate with each other and with the Kubernetes control plane, and how clients can reach them.
Public cluster
Private cluster
Network *
vpcprodproject1
Node subnet *
lab2
Advanced networking options
Enable VPC-native traffic routing (uses alias IP)
CREATE
CANCEL
Equivalent REST or command line
Activate Windo


Google Cloud Platform
prodproject1
Search products and resources
Create a Kubernetes cluster
ADD NODE POOL
REMOVE NODE POOL
Cluster basics
NODE POOLS
default-pool
Nodes
Security
Metadata
CLUSTER
Automation
Networking
Security
Maximum Pods per node
110
Mask for Pod address range per node: /24
Service address range
Enable Intranode visibility
Reveals your intranode traffic to Google's networking fabric. To get logs, you need to enable VPC flow logs in the selected subnetwork.
Enable NodeLocal DNSCache
Beta
Enable HTTP load balancing
Enable master authorized networks
Enable network policy
CREATE
CANCEL
Equivalent REST or command line
Activate W

Here, Kubernetes cluster is launched :-



Now, we also can check this by using CLI from baseOS. First install kubectl components in command prompt



```
cmd.exe /c ""C:\Users\pc\AppData\Local\Temp\tmpdv3xz01d\python\python.exe" "-S" "C:\Users\pc\AppData\Local\Google\Cloud SDK\google-cloud-sdk\lib\gcloud.py" "components" "install" "kubectl" & pause"

Your current Cloud SDK version is: 306.0.0
Installing components from version: 306.0.0

+-----------------------------------------------------------+
|              These components will be installed.          |
+---------------------+--------------------+----------------+
|         Name        |       Version      |         Size   |
+---------------------+--------------------+----------------+
| kubectl             |            1.15.11 |        < 1 MiB |
| kubectl             |            1.15.11 |       84.5 MiB |
+---------------------+--------------------+----------------+

For the latest full release notes, please visit:
  https://cloud.google.com/sdk/release_notes

Do you want to continue (Y/n)?  Y

#============================================================#
#= Creating update staging area                             =#
#============================
```

```
Command Prompt
Fetching cluster endpoint and auth data.
ERROR: (gcloud.container.clusters.get-credentials) ResponseError: code=403, message=Project lookup error: permission denied on resource 'projects/prodproject1' (or it m
ay not exist).

C:\Users\pc>gcloud components install kubectl

Restarting command:
  $ gcloud components install kubectl


C:\Users\pc>gcloud container clusters get-credentials prodcluster --region us-east1 --project prodproject1
WARNING: Accessing a Kubernetes Engine cluster requires the kubernetes commandline
client [kubectl]. To install, run
  $ gcloud components install kubectl

Fetching cluster endpoint and auth data.
ERROR: (gcloud.container.clusters.get-credentials) ResponseError: code=403, message=Project lookup error: permission denied on resource 'projects/prodproject1' (or it m
ay not exist).

C:\Users\pc>gcloud container clusters get-credentials prodcluster --region us-east1 --project prodproject1
Fetching cluster endpoint and auth data.
ERROR: (gcloud.container.clusters.get-credentials) ResponseError: code=403, message=Project lookup error: permission denied on resource 'projects/prodproject1' (or it m
ay not exist).

C:\Users\pc>gcloud container clusters get-credentials prodcluster --region us-east1 --project prodproject1-12345
Fetching cluster endpoint and auth data.
kubeconfig entry generated for prodcluster.

C:\Users\pc>kubectl get pods
No resources found in default namespace.

C:\Users\pc>kubectl get nodes
NAME                                        STATUS   ROLES    AGE   VERSION
gke-prodcluster-default-pool-1c4cdde8-nns4   Ready    <none>   67m   v1.15.12-gke.2
gke-prodcluster-default-pool-98063668-pw59   Ready    <none>   67m   v1.15.12-gke.2
gke-prodcluster-default-pool-fed3066f-kckn   Ready    <none>   67m   v1.15.12-gke.2

C:\Users\pc>

Activate Windows
Go to Settings to activate Windows.
```

```
C:\Users\pc>gcloud container clusters get-credentials prodcluster --region us-east1 --project prodproject1-12345
Fetching cluster endpoint and auth data.
kubeconfig entry generated for prodcluster.

C:\Users\pc>kubectl get pods
No resources found in default namespace.

C:\Users\pc>kubectl get nodes
NAME                                        STATUS   ROLES    AGE   VERSION
gke-prodcluster-default-pool-1c4cdde8-nns4   Ready    <none>   67m   v1.15.12-gke.2
gke-prodcluster-default-pool-98063668-pw59   Ready    <none>   67m   v1.15.12-gke.2
gke-prodcluster-default-pool-fed3066f-kckn   Ready    <none>   67m   v1.15.12-gke.2
```

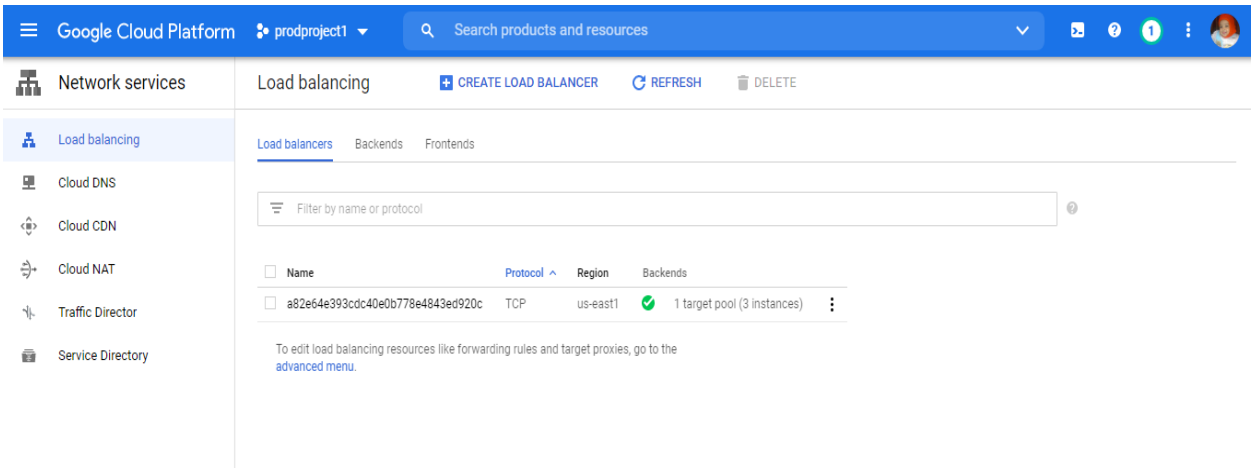
Now launching wordpress on the top of this kubernetes cluster:-

```
C:\Users\pc>kubectl get service
NAME         TYPE        CLUSTER-IP   EXTERNAL-IP   PORT(S)   AGE
kubernetes   ClusterIP   10.132.0.1   <none>        443/TCP   69m

C:\Users\pc>kubectl create deployment wp --image=wordpress
deployment.apps/wp created

C:\Users\pc>kubectl get pods
NAME                  READY   STATUS    RESTARTS   AGE
wp-f96954c76-869vj    1/1     Running   0          21s
```

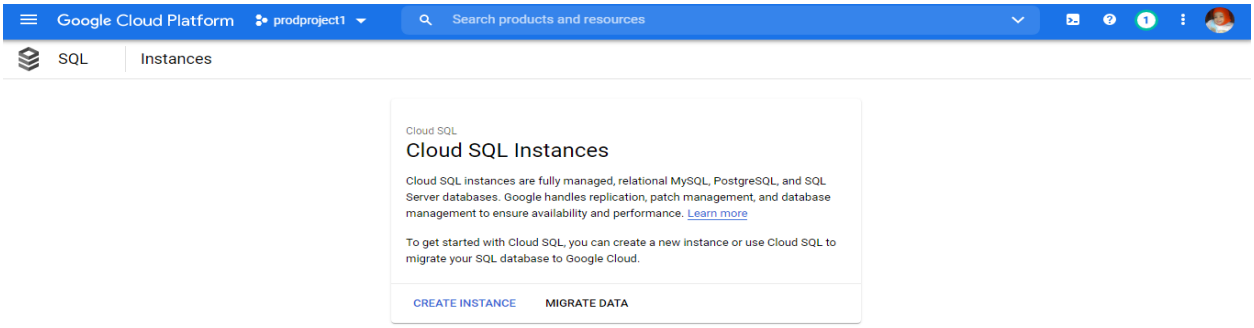
At that moment there is no LoadBalancer, but as soon as you expose the pod running on the top of kubernetes cluster, a LoadBalancer will create automatically

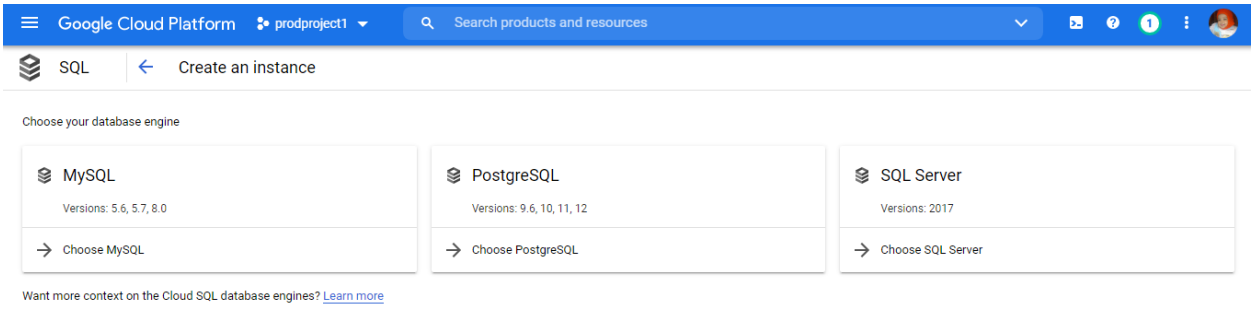
```
C:\Users\pc>kubectl expose deployment wp --type=LoadBalancer --port=80
service/wp exposed

C:\Users\pc>kubectl get service
NAME         TYPE           CLUSTER-IP     EXTERNAL-IP   PORT(S)        AGE
kubernetes   ClusterIP      10.132.0.1     <none>        443/TCP        74m
wp           LoadBalancer   10.132.3.162   <pending>     80:31310/TCP   13s

C:\Users\pc>kubectl get service
NAME         TYPE           CLUSTER-IP     EXTERNAL-IP   PORT(S)        AGE
kubernetes   ClusterIP      10.132.0.1     <none>        443/TCP        74m
wp           LoadBalancer   10.132.3.162   <pending>     80:31310/TCP   33s

C:\Users\pc>kubectl get pods -o wide
NAME                  READY   STATUS    RESTARTS   AGE     IP           NODE                                          NOMINATED NODE   READINESS GATES
wp-f96954c76-869vj    1/1     Running   0          4m28s   10.128.2.5   gke-prodcluster-default-pool-98063668-pw59    <none>           <none>

C:\Users\pc>
```

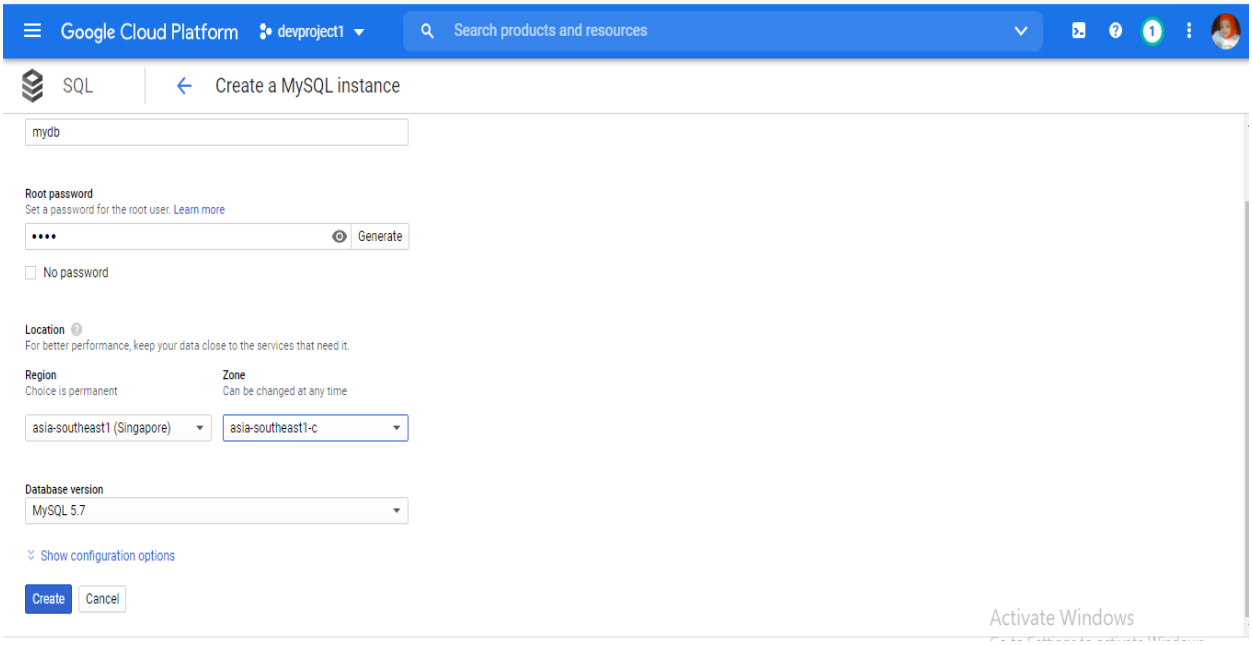

LoadBalancer is created



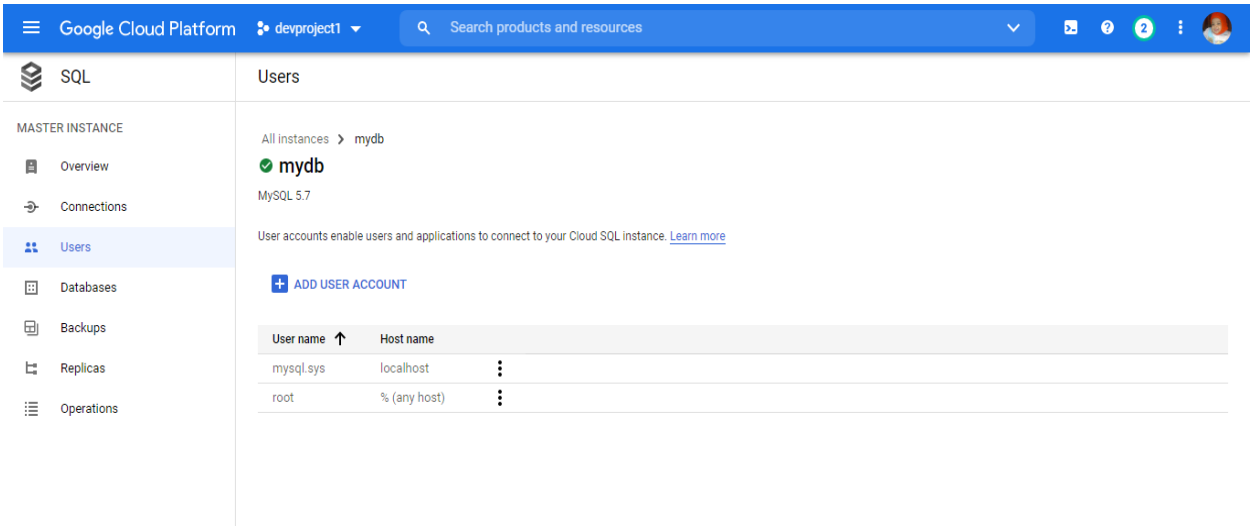
Creation of SQL server in asia-southeast1 region in other project



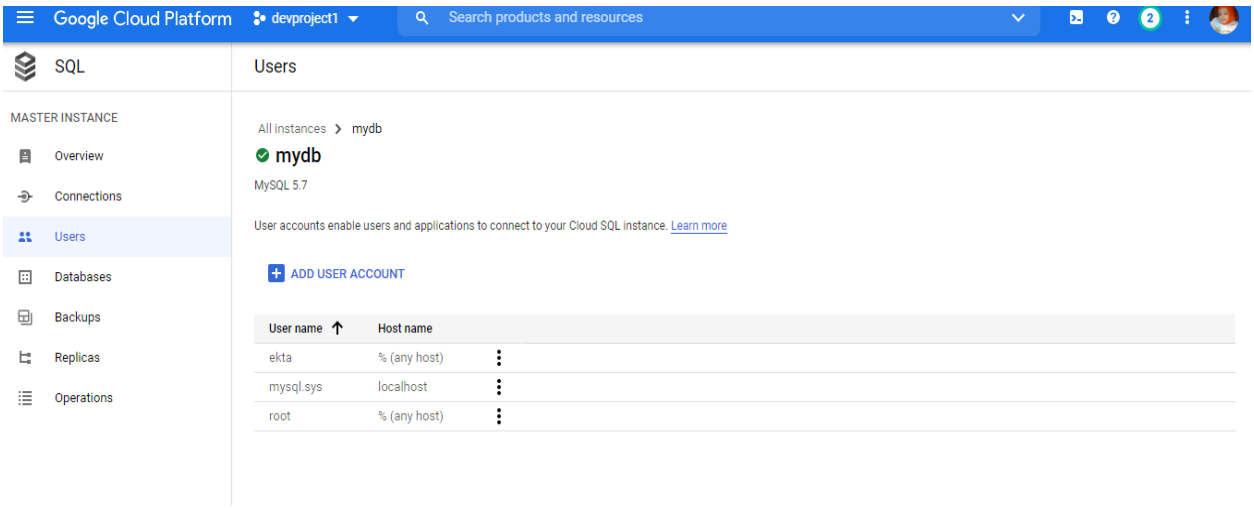




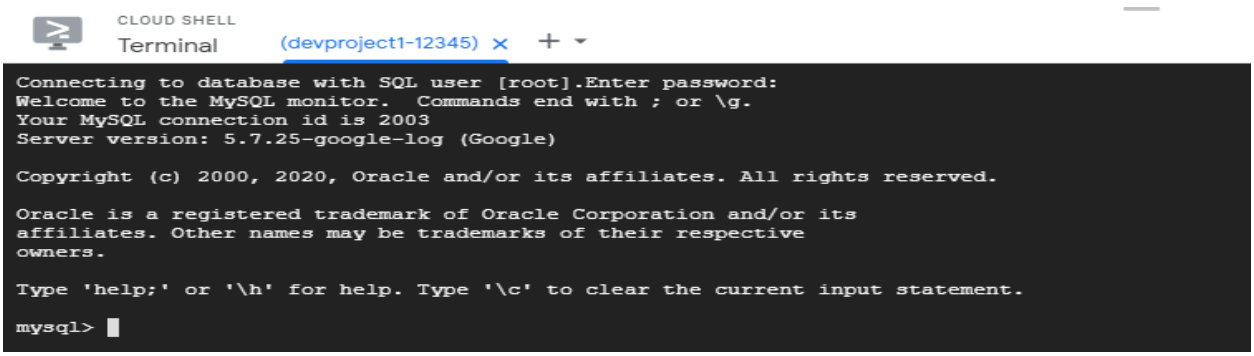
Here, MySQL Database is created :-



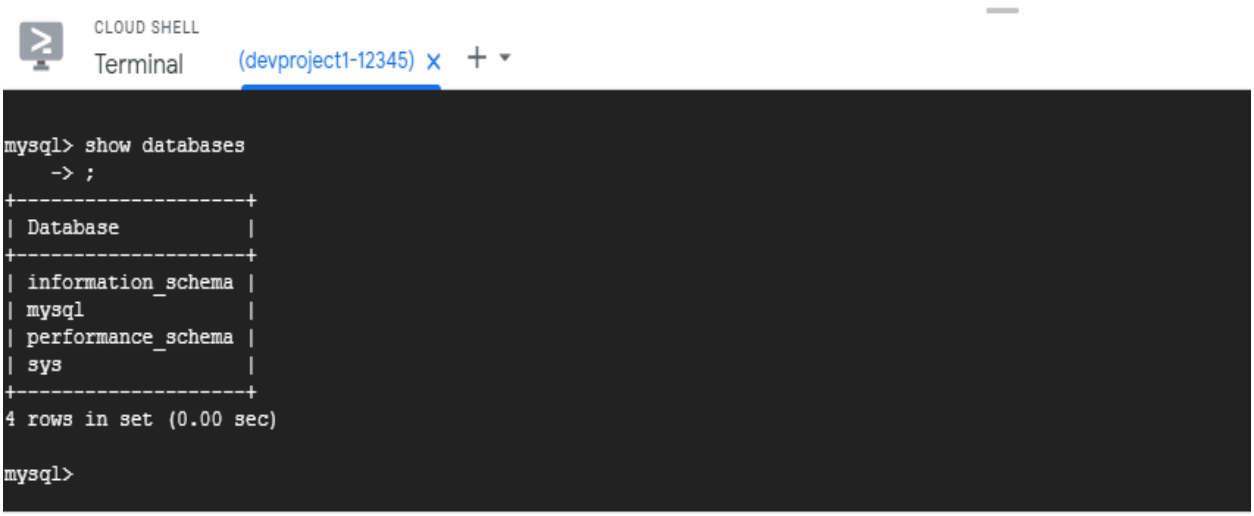
Added a user to that database :-

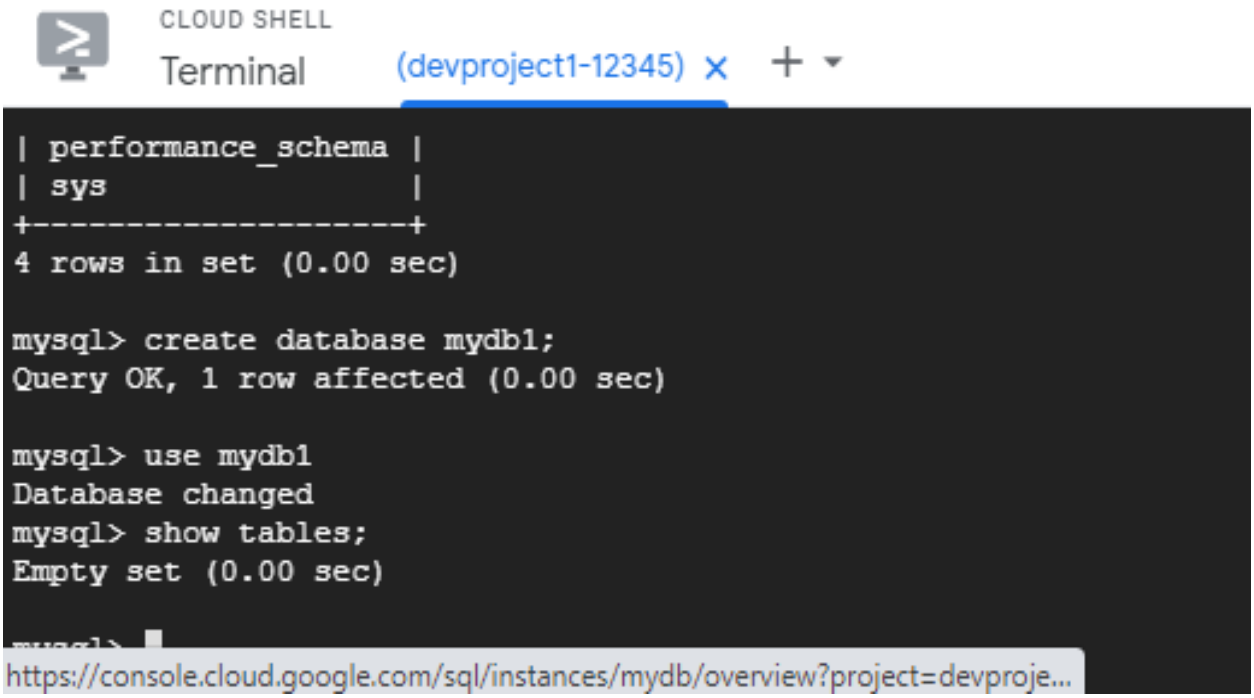


Here, we can access the database :-

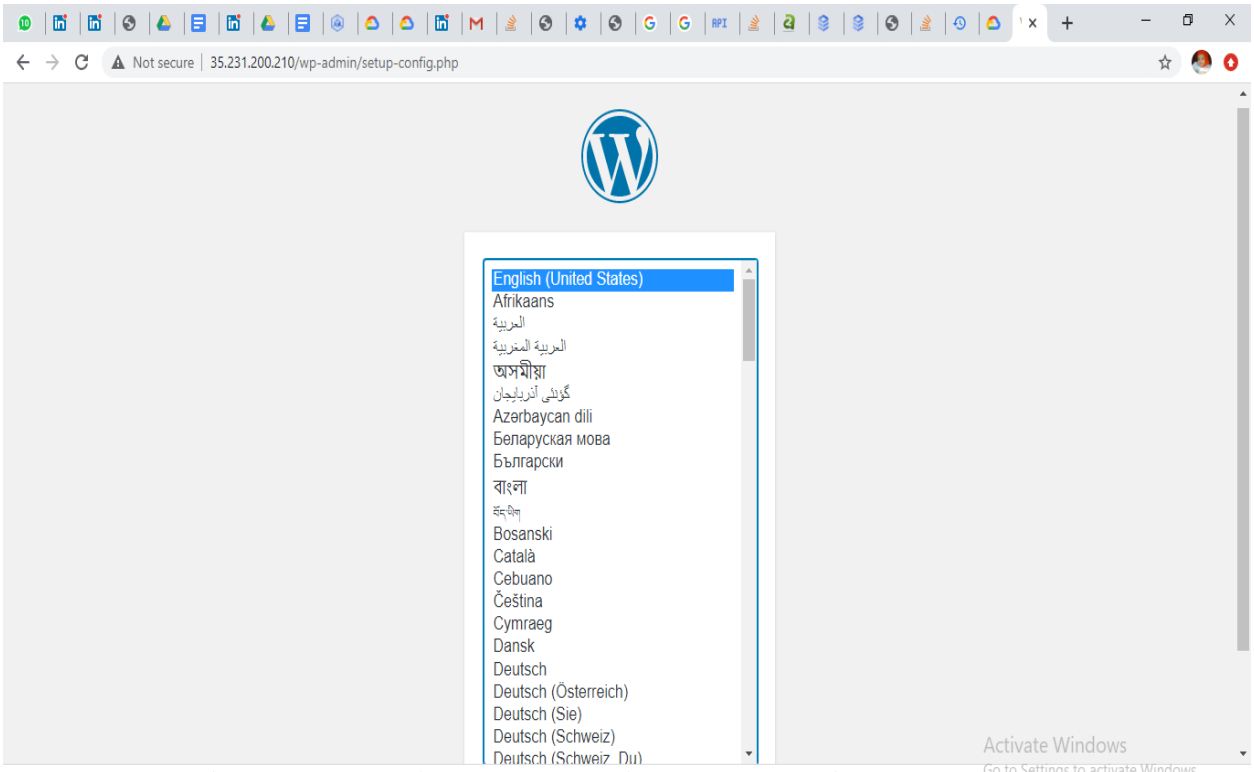


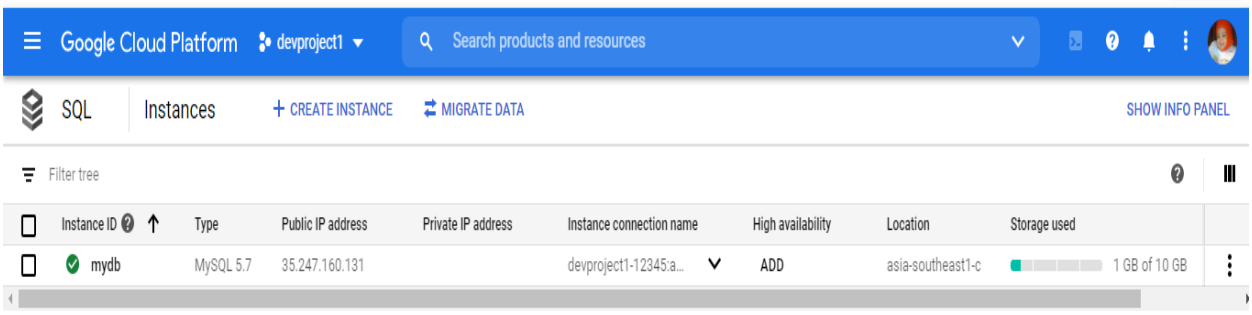
MYSQL commands :-

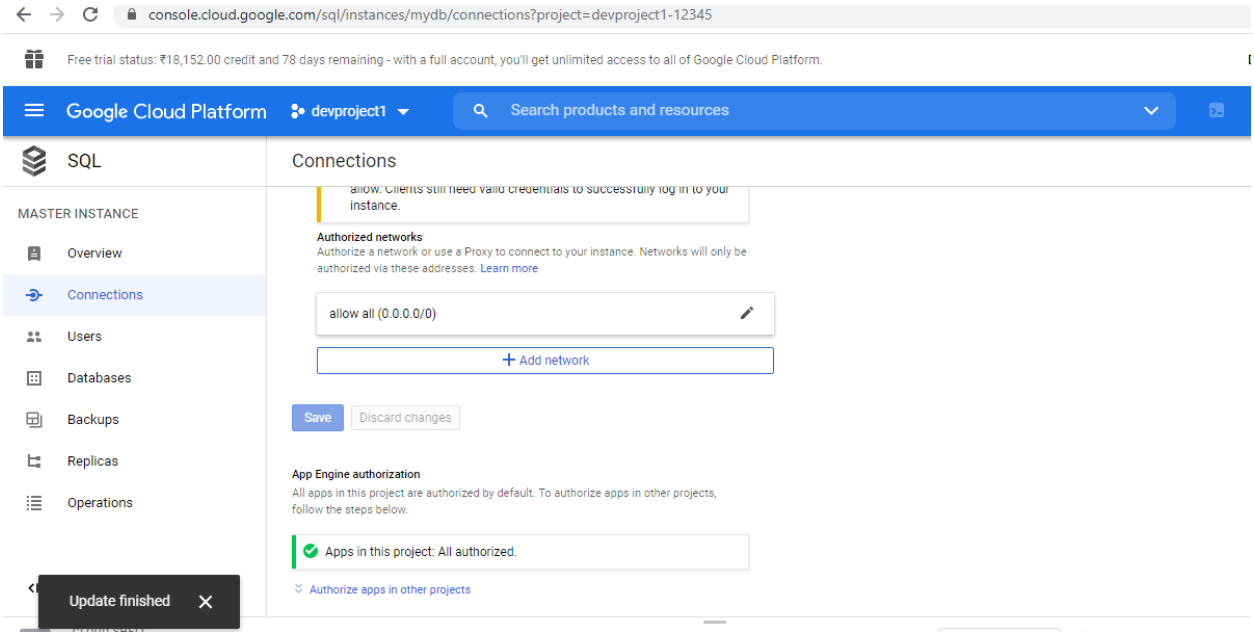


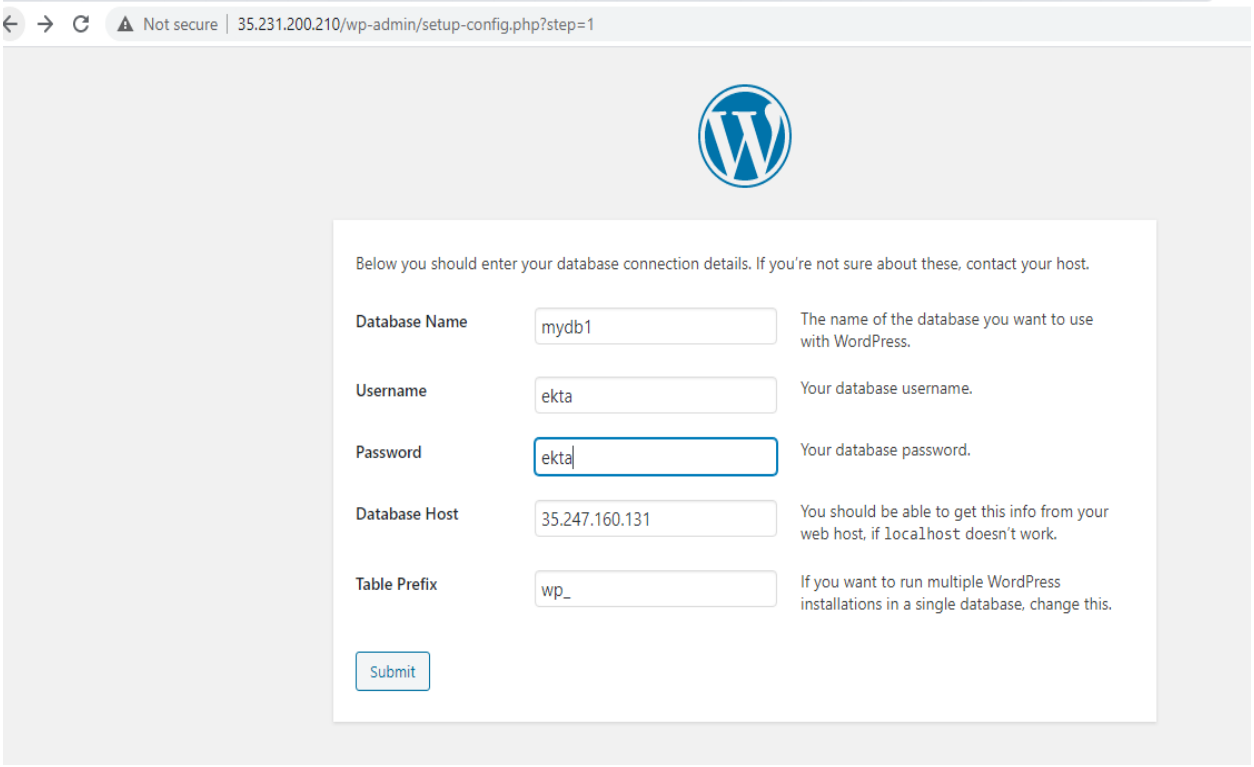


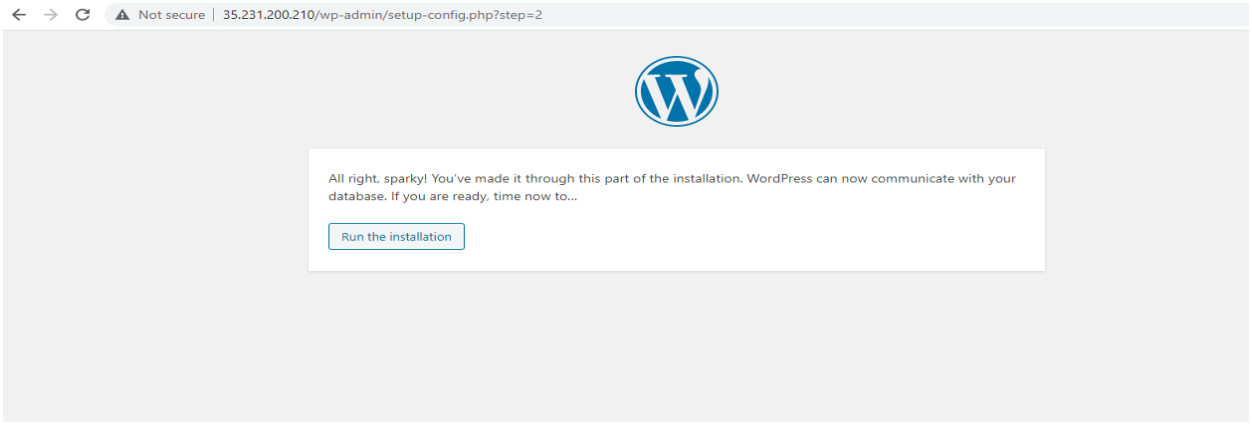
Wordpress installation and database attachment part:-

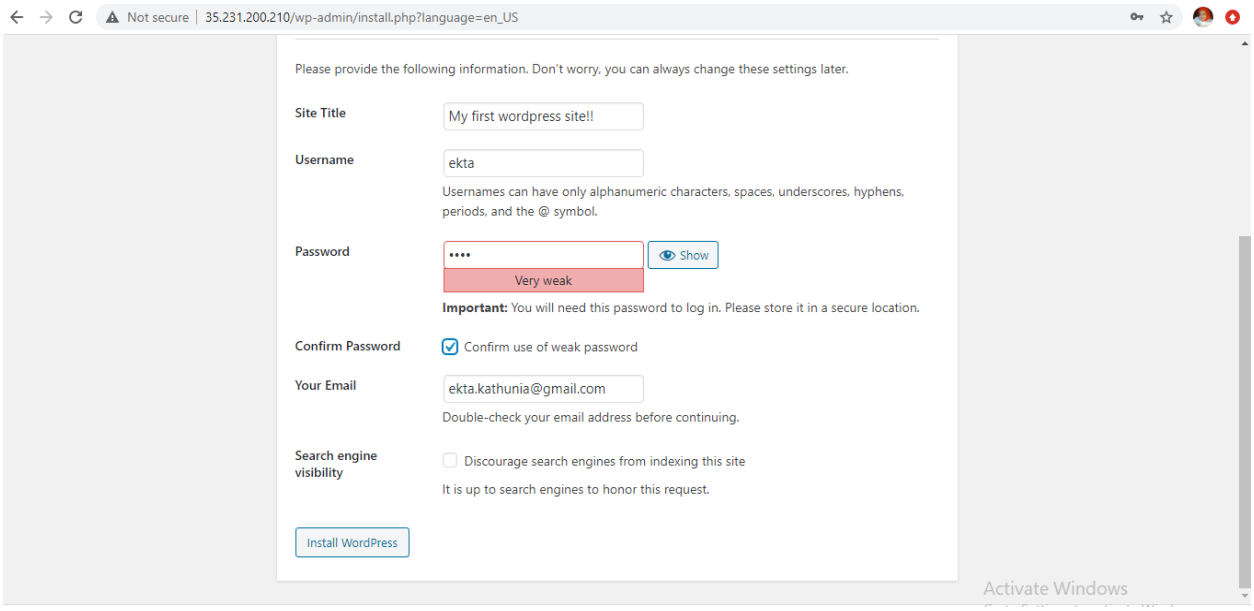


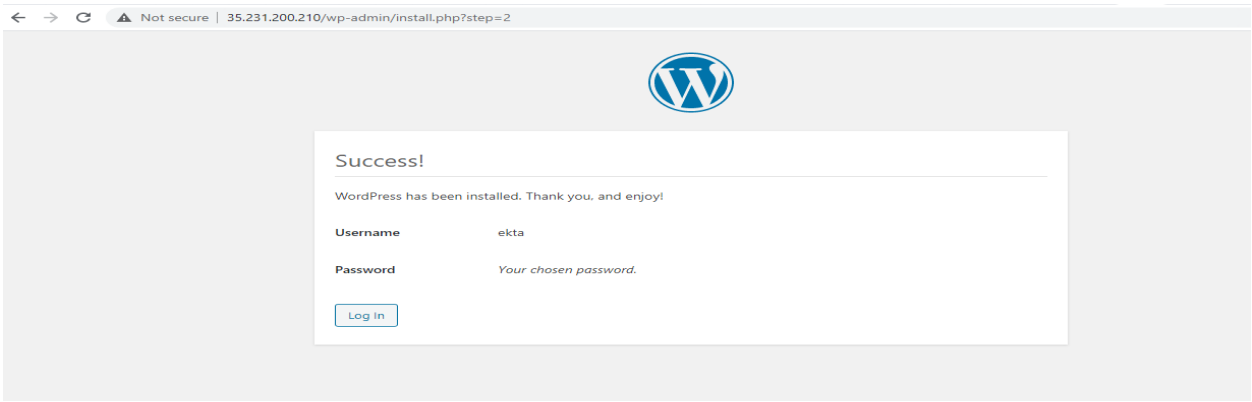


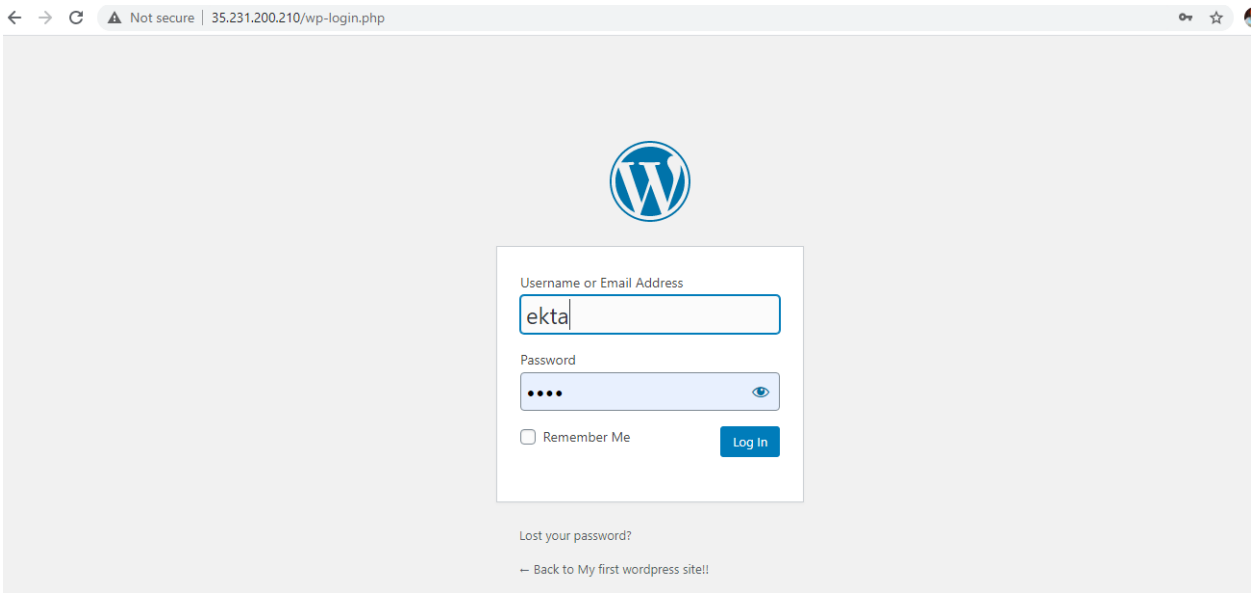

console.cloud.google.com/sql/instances/mydb/connections?project=devproject1-12345
Free trial status: ₹18,152.00 credit and 78 days remaining - with a full account, you'll get unlimited access to all of Google Cloud Platform.
Google Cloud Platform
devproject1
Search products and resources
SQL
Connections
MASTER INSTANCE
Overview
Connections
Users
Databases
Backups
Replicas
Operations
instance.
Authorized networks
Authorize a network or use a Proxy to connect to your instance. Networks will only be authorized via these addresses. Learn more
allow all (0.0.0.0/0)
Add network
Save
Discard changes
App Engine authorization
All apps in this project are authorized by default. To authorize apps in other projects, follow the steps below.
Apps in this project: All authorized.
Authorize apps in other projects
Update finished

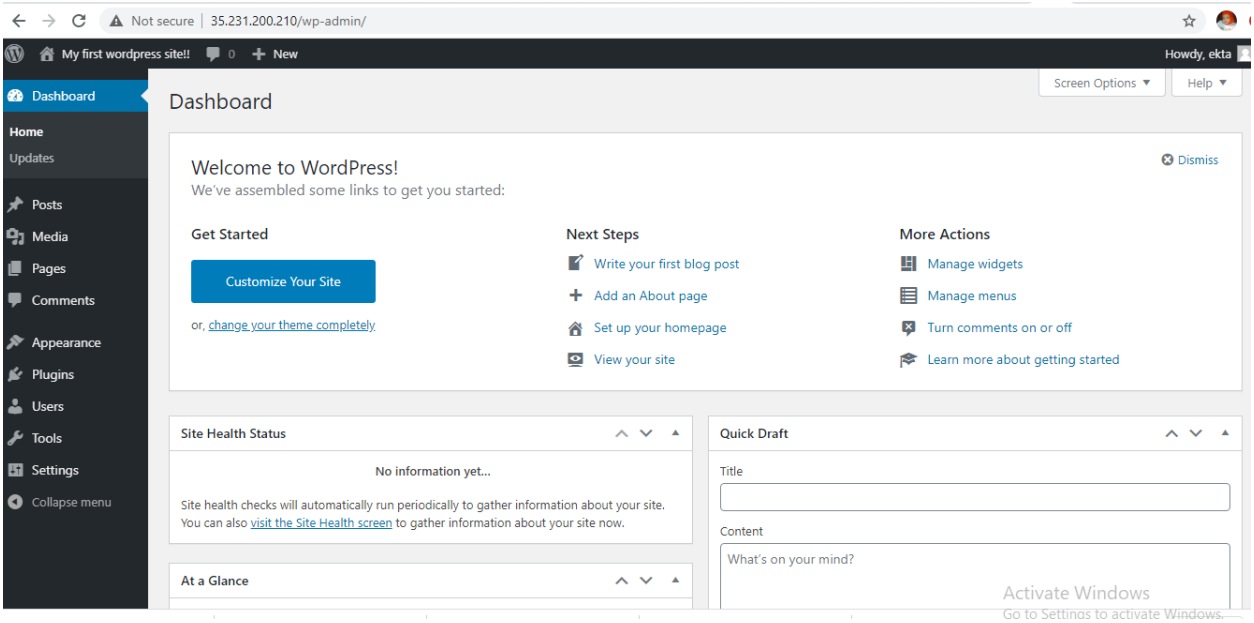

Not secure | 35.231.200.210/wp-admin/setup-config.php?step=1
Below you should enter your database connection details. If you're not sure about these, contact your host.
Database Name
mydb1
The name of the database you want to use with WordPress.
Username
ekta
Your database username.
Password
ekta
Your database password.
Database Host
35.247.160.131
You should be able to get this info from your web host, if localhost doesn't work.
Table Prefix
wp_
If you want to run multiple WordPress installations in a single database, change this.
Submit

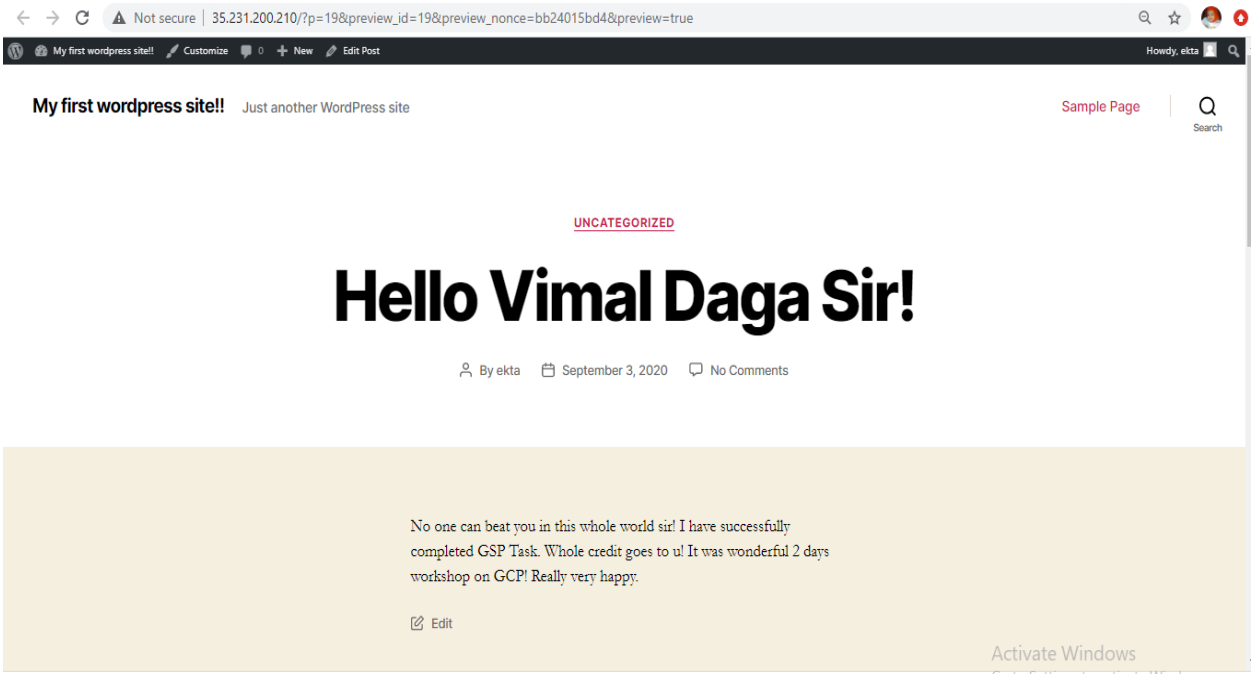

Not secure | 35.231.200.210/wp-admin/setup-config.php?step=2
All right, sparky! You've made it through this part of the installation. WordPress can now communicate with your database. If you are ready, time now to...
Run the installation

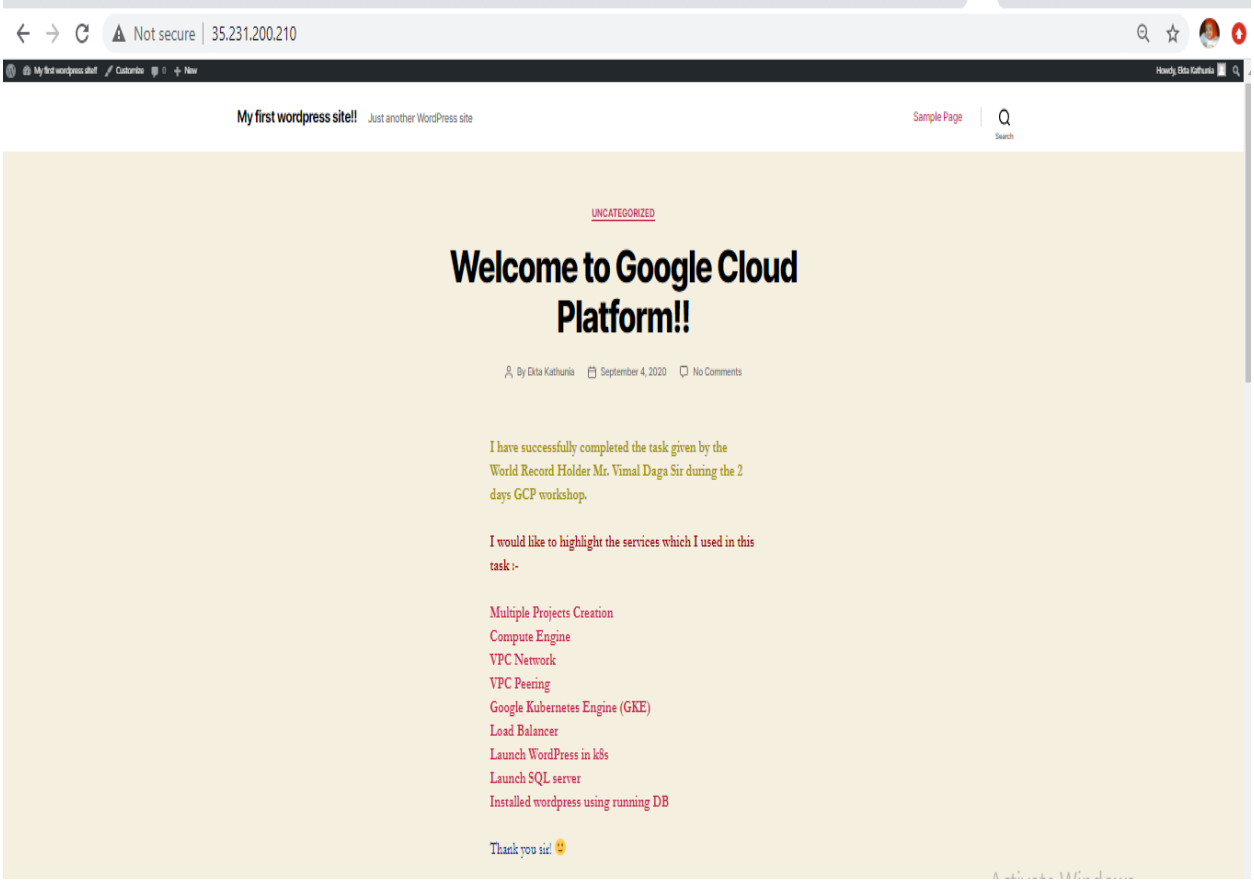

Not secure | 35.231.200.210/wp-admin/install.php?language=en_US
Please provide the following information. Don't worry, you can always change these settings later.
Site Title
My first wordpress site!!
Username
ekta
Usernames can have only alphanumeric characters, spaces, underscores, hyphens, periods, and the @ symbol.
Password
Show
Very weak
Important: You will need this password to log in. Please store it in a secure location.
Confirm Password
Confirm use of weak password
Your Email
ekta.kathunia@gmail.com
Double-check your email address before continuing.
Search engine visibility
Discourage search engines from indexing this site
It is up to search engines to honor this request.
Install WordPress
Activate Windows

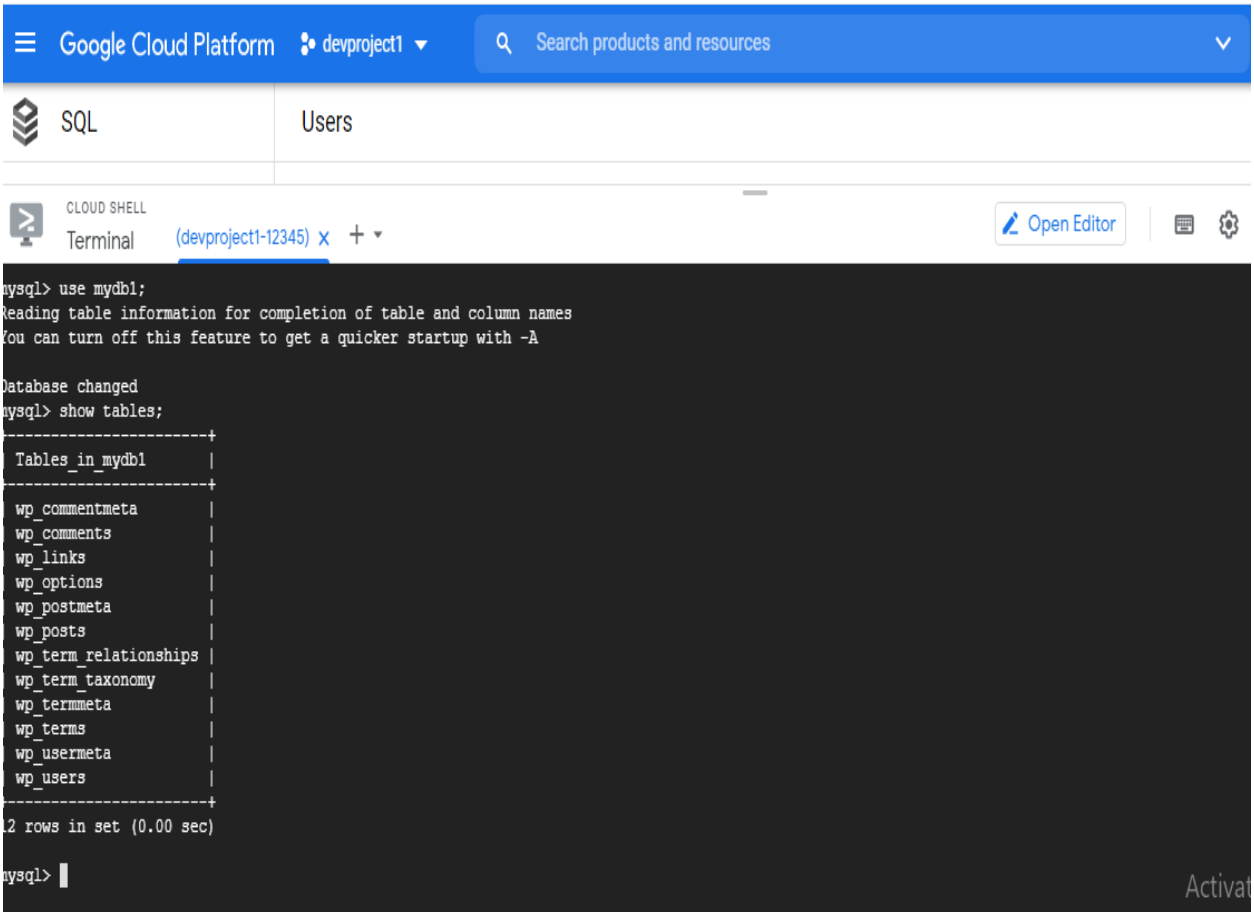

Not secure | 35.231.200.210/wp-admin/install.php?step=2
Success!
WordPress has been installed. Thank you, and enjoy!
Username
ekta
Password
Your chosen password.
Log In


Not secure | 35.231.200.210/wp-login.php
Username or Email Address
ekta
Password
Remember Me
Log In
Lost your password?
← Back to My first wordpress site!!


Not secure | 35.231.200.210/wp-admin/
My first wordpress site!!
New
Howdy, ekta
Screen Options
Help
Dashboard
Home
Updates
Posts
Media
Pages
Comments
Appearance
Plugins
Users
Tools
Settings
Collapse menu
Dashboard
Welcome to WordPress!
We've assembled some links to get you started:
Dismiss
Get Started
Customize Your Site
or, change your theme completely
Next Steps
Write your first blog post
Add an About page
Set up your homepage
View your site
More Actions
Manage widgets
Manage menus
Turn comments on or off
Learn more about getting started
Site Health Status
No information yet...
Site health checks will automatically run periodically to gather information about your site.
You can also visit the Site Health screen to gather information about your site now.
At a Glance
Quick Draft
Title
Content
What's on your mind?
Activate Windows
Go to Settings to activate Windows.


Not secure | 35.231.200.210/?p=19&preview_id=19&preview_nonce=bb24015bd4&preview=true
My first wordpress site!! Customize 0 New Edit Post
Howdy, ekta
My first wordpress site!! Just another WordPress site
Sample Page
Search
UNCATEGORIZED
Hello Vimal Daga Sir!
By ekta September 3, 2020 No Comments
No one can beat you in this whole world sir! I have successfully completed GSP Task. Whole credit goes to u! It was wonderful 2 days workshop on GCP! Really very happy.
Edit
Activate Windows


Not secure | 35.231.200.210
My first wordpress site!! Just another WordPress site
Sample Page
Search
UNCATEGORIZED
Welcome to Google Cloud Platform!!
By Ekta Kathuria September 4, 2020 No Comments
I have successfully completed the task given by the World Record Holder Mr. Vimal Daga Sir during the 2 days GCP workshop.
I would like to highlight the services which I used in this task :-
Multiple Projects Creation
Compute Engine
VPC Network
VPC Peering
Google Kubernetes Engine (GKE)
Load Balancer
Launch WordPress in k8s
Launch SQL server
Installed wordpress using running DB
Thank you sir!


Google Cloud Platform
devproject1
Search products and resources
SQL
Users
CLOUD SHELL
Terminal
(devproject1-12345)
Open Editor
ysql> use mydb1;
eading table information for completion of table and column names
ou can turn off this feature to get a quicker startup with -A
atabase changed
ysql> show tables;
Tables_in_mydb1
wp_commentmeta
wp_comments
wp_links
wp_options
wp_postmeta
wp_posts
wp_term_relationships
wp_term_taxonomy
wp_termmeta
wp_terms
wp_usermeta
wp_users
2 rows in set (0.00 sec)
ysql>

Thank You!