

GCP:

GCP is a public cloud vendor that offers a suite of computing services to do everything from data management to delivering web and video over the web to AI and machine learning tools. Customers are able to access computer resources housed in Google's data centres around the world for free or on a pay-per-use basis.

GCP meant by:

Google Cloud Platform is a suite of public cloud computing services offered by Google. The platform includes a range of hosted services for compute, storage and application development that run on Google hardware.

Why Google Cloud Platform?

Google Cloud Platform, is a suite of cloud computing services that run on the **same infrastructure that Google uses internally for its end-user products**, such as Google Search , Gmail, Google Photos and YouTube. We all Know how big is the database of Gmail, YouTube and Google Search.

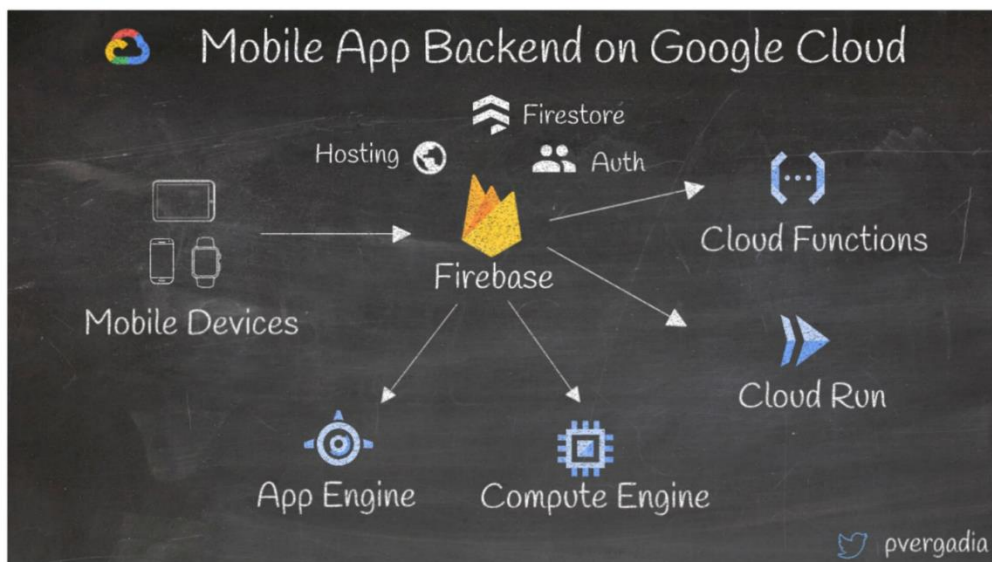
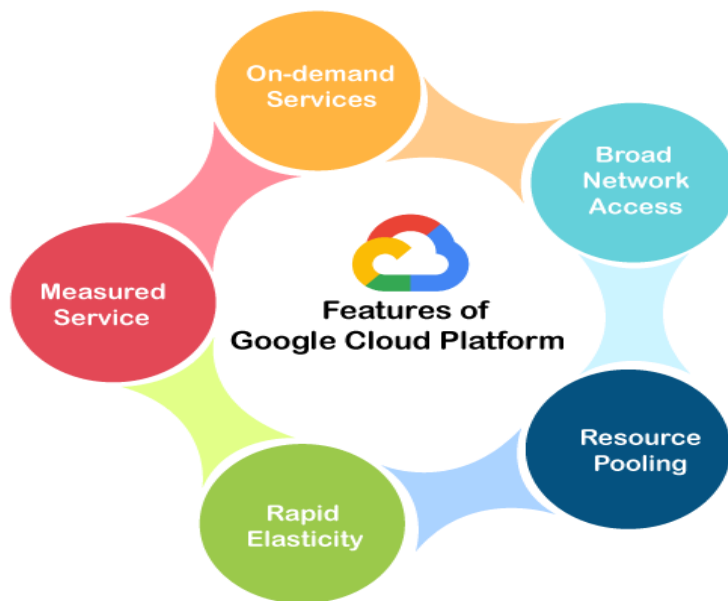
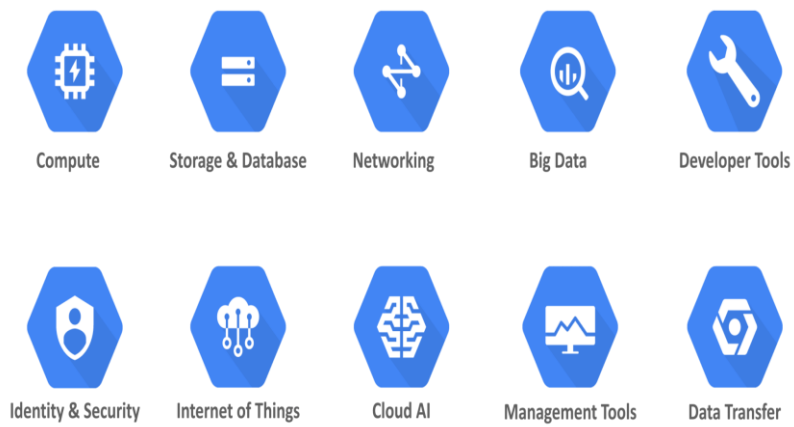


Google Cloud Platform Regions and Zones

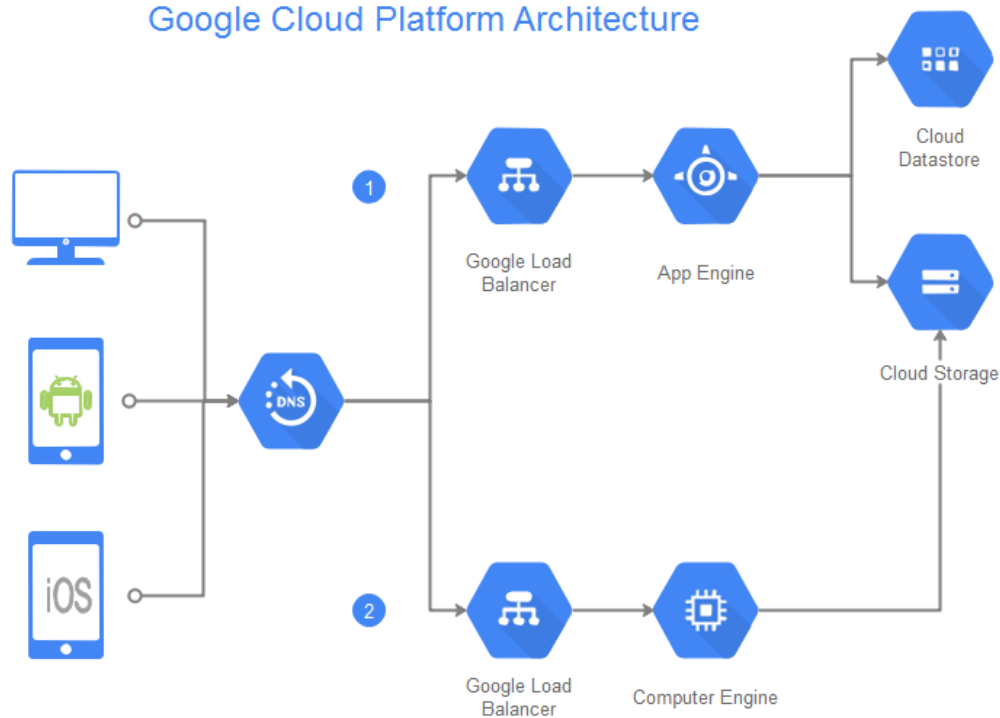
Google Cloud Platform services are available in various locations across North America, South America, Europe, Asia, and Australia. These locations are divided into regions and zones. You can choose where to locate your applications to meet your latency, availability and durability requirements.

What are Google Cloud Platform (GCP) Services?

Google offers a wide range of Services. Following are the major Google Cloud Services:



Google Cloud Platform Architecture



Compute:

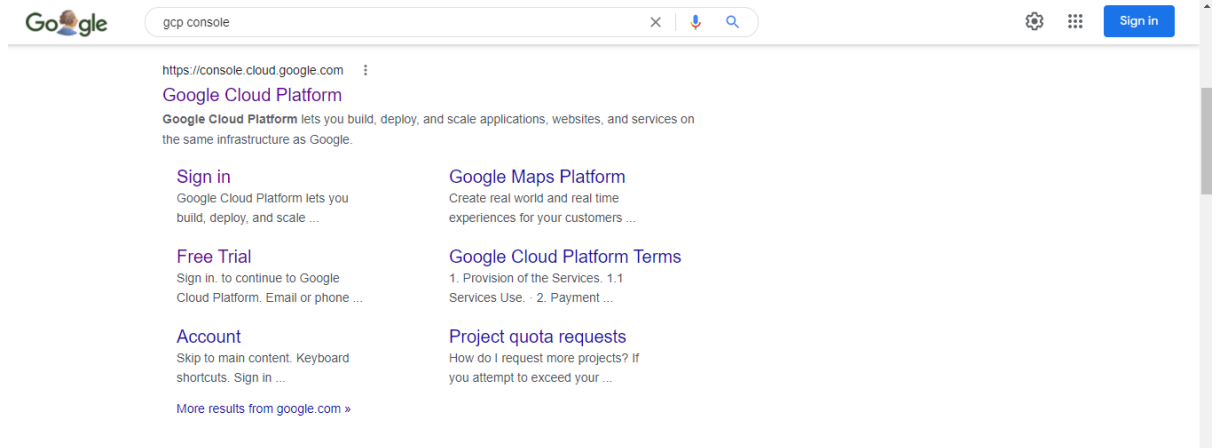
- App Engine - Platform as a Service to deploy Java, PHP, Node.js, Python, C#, .Net, Ruby and Go applications.
- Compute Engine - Infrastructure as a Service to run Microsoft Windows and Linux virtual machines.
- Google Kubernetes Engine (GKE) or GKE on-prem offered as part of Anthos platform - Containers as a Service based on Kubernetes.
- Cloud Functions - Functions as a Service to run event-driven code written in Node.js, Java, Python, or Go.
- Cloud Run - Compute execution environment based on Knative. Offered as Cloud Run (fully managed) or as Cloud Run for Anthos. Currently supports GCP, AWS and VMware management.

Steps to follow for deploy our source in GCP:

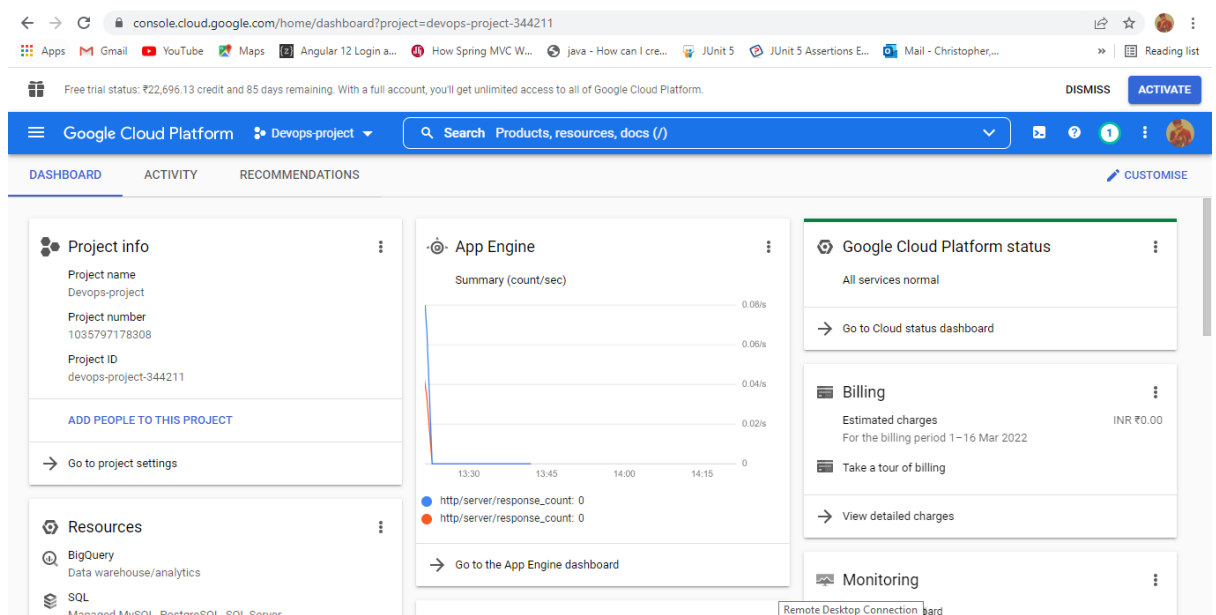
Steps to create Billing account.

Step 1:- Login to the below link

<https://console.cloud.google.com/>

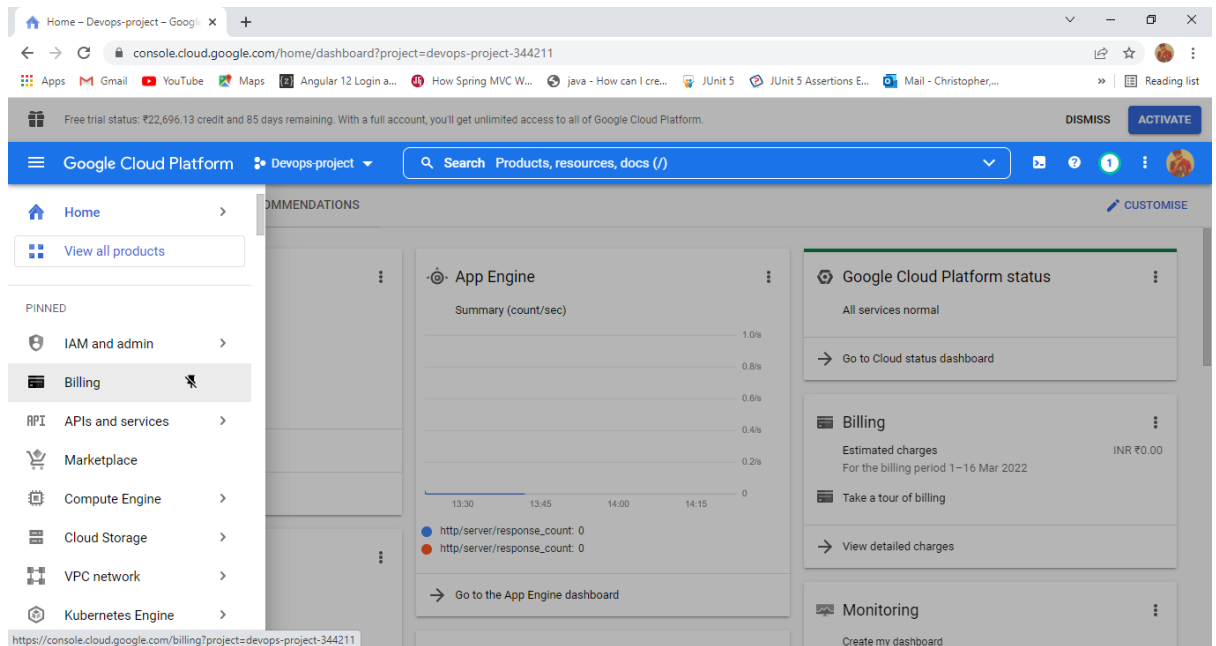


Step 2:- After login, go to GCP Dashboard.

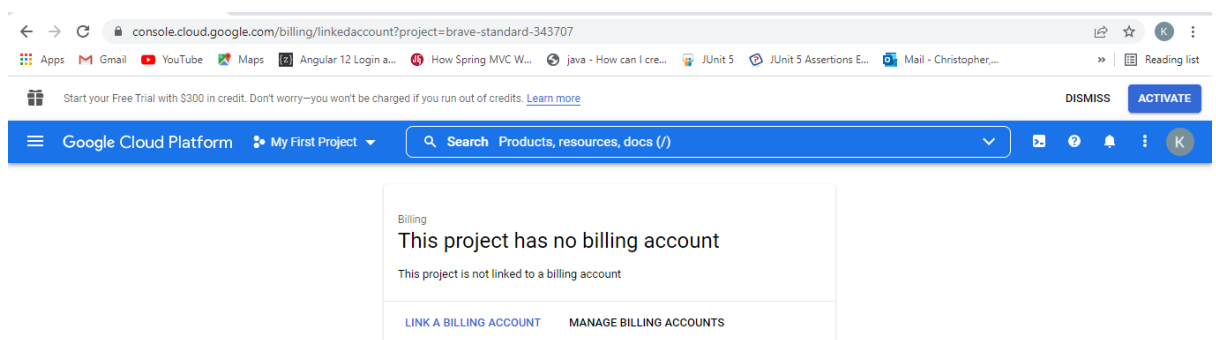


Step 3:- In Dashboard We will find a **Home -> Billing**

Click **Billing** to create the account.



Step 4:- Here we need to Link the billing account.



Step 5:- After Clicking the **Link a Billing account**, It will navigate to billing window for creating billing account. Once Window open

Select country→India and **click Continue**.

console.cloud.google.com/freetrial/signup/tos?redirectPath=%2Fbilling%2Flinkedaccount%3Fproject%3Dbrave-standard-343707&project=992099607595

Profile photo SWITCH ACCOUNT

Country

India

What best describes your organization or needs?

Please select

Other

Terms of Service

☒ I have read and agree to the [Google Cloud Platform Free Trial Terms of Service](#).

Required to continue

CONTINUE

Get everything you need to build and run your apps, websites and services, including Firebase and the Google Maps API.

\$300 credit for free

Put Google Cloud to work with \$300 in credit to spend over the next 90 days.

No autocharge after free trial ends

We ask you for your credit card to make sure you are not a robot. You won't be charged unless you manually upgrade to a paid account.

Step 6:- Once billing account created, your billing account dashboard looks like this.

Free trial status: ₹22,696.13 credit and 85 days remaining. With a full account, you'll get unlimited access to all of Google Cloud Platform. DISMISS ACTIVATE

Google Cloud Platform Search Products, resources, docs (/)

Billing Overview

Billing account My Billing Account

Overview

Reports

Cost table

Cost breakdown

Commitments

Commitment analysis

Budgets & alerts

Billing export

Release notes

Overview

BILLING ACCOUNT OVERVIEW PAYMENT OVERVIEW

The search bar now supports searching for specific billing pages. For example, type 'Invoices' into the search bar to bring up the 'Documents' page option. DISMISS

Current month
1-16 March 2022

Month-to-date total cost ⓘ
₹0.00

End-of-month total cost (forecasted) ⓘ
Not enough historical data to project cost

View report

Cost trend
1 March 2021 - 31 March 2022

Billing account [Manage](#)
My Billing Account, 01B872-1B67AF-B5308B

Organisation
No organisation

Enabled Google service ⓘ
Google Cloud Platform

Billing health checks ^
Take a look at your account health results

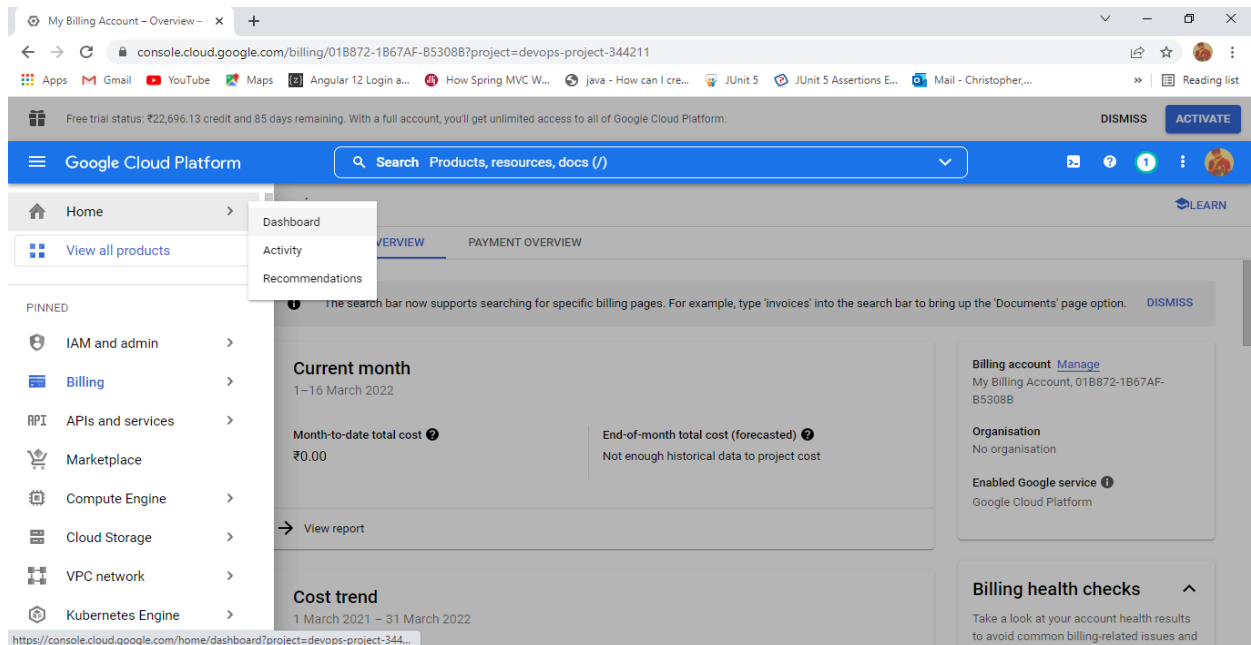
2. Setup and requirements:

Self-paced environment Setup:

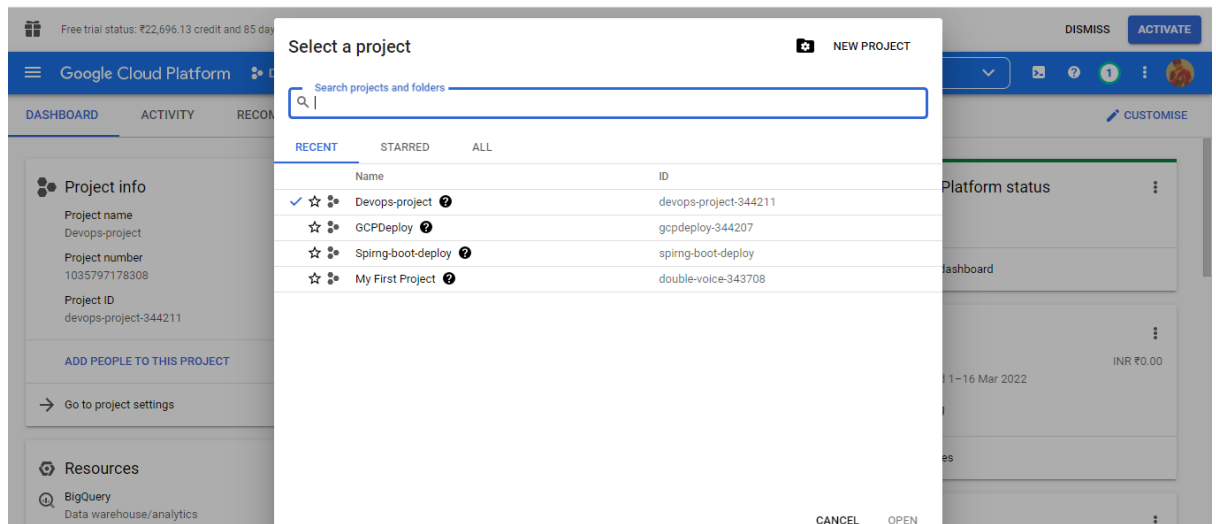
Sign in to **Cloud Console** and create a new project or reuse an existing one. If you don't already have a Gmail or Google Workspace account, you must **create one**.

Steps to create New Project in GCP:

Step 7:- In order to create a project go to **Home -> Dashboard** and top Right corner Click **→New Project** as show in the below image.



Click **→New Project**



Step 8:- Enter the project name shown in the image:

The screenshot shows the 'Create Project' form in the Google Cloud Platform. At the top, there's a navigation bar with the Google Cloud Platform logo and a search bar. Below the navigation bar, there's a warning message: 'You have 19 projects remaining in your quota. Request an increase or delete projects. [Learn more](#)'. Below this, there's a 'Project name' field with the value 'test' and a 'Project ID' field with the value 'test-344309'. There's also a 'Location' field with the value 'No organisation'. At the bottom, there are 'CREATE' and 'CANCEL' buttons.

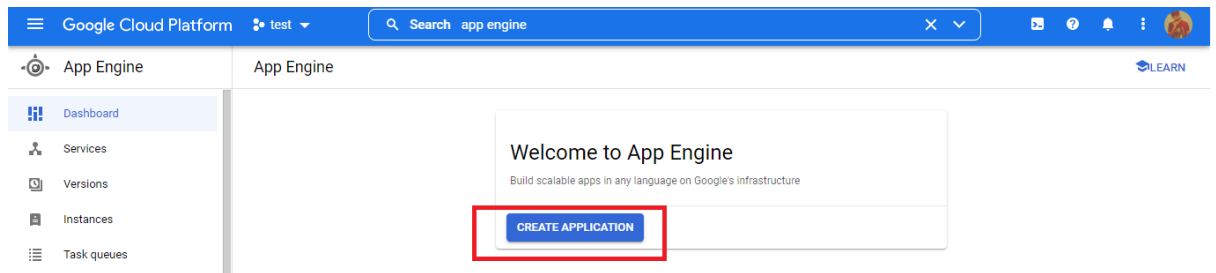
Once Project is created, our created project will look like this.

The screenshot shows the Google Cloud Platform dashboard for a newly created project named 'test'. The dashboard is divided into several sections: 'Project info', 'APIs', 'Resources', and 'Notifications'. The 'Project info' section shows the project name 'test', project number '378778016255', and project ID 'test-344309'. The 'APIs' section shows a graph of requests per second over time. The 'Resources' section lists various services like BigQuery, SQL, and Compute Engine. The 'Notifications' section shows a list of recent events, including 'Create Project: test', 'Protect your account from attackers', 'Create App Engine App devops-project-344211 in asia-south1', 'Create Project: Devops-project', 'Enable service: cloudfunctions.googleapis.com', and 'Create App Engine App gcpdeploy-344207 in asia-south1'. A red box highlights the 'test' project name in the top navigation bar and the 'Create Project: test' notification.

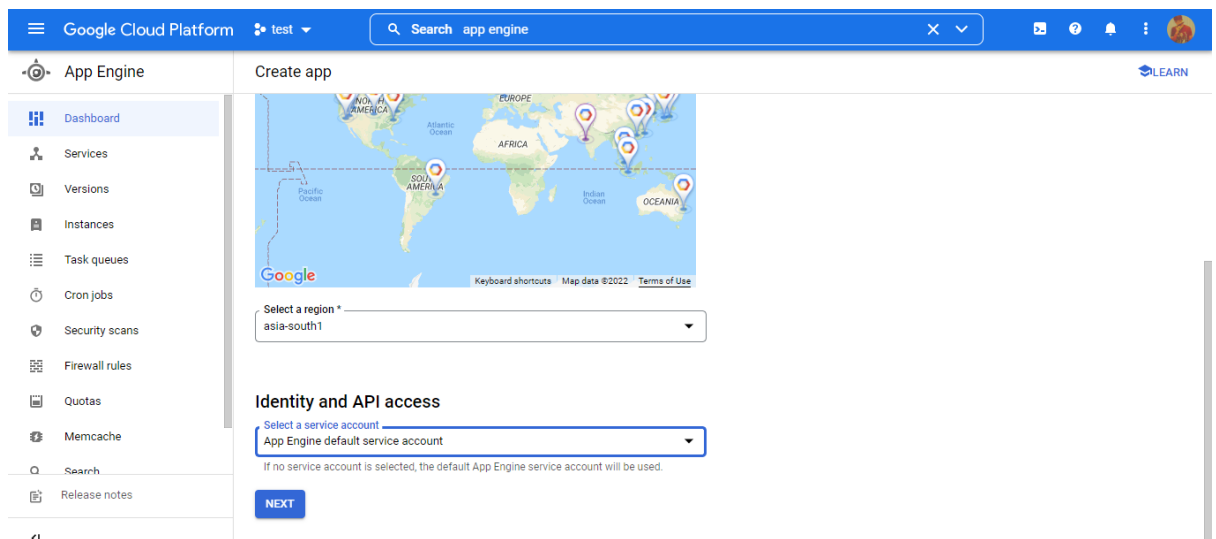
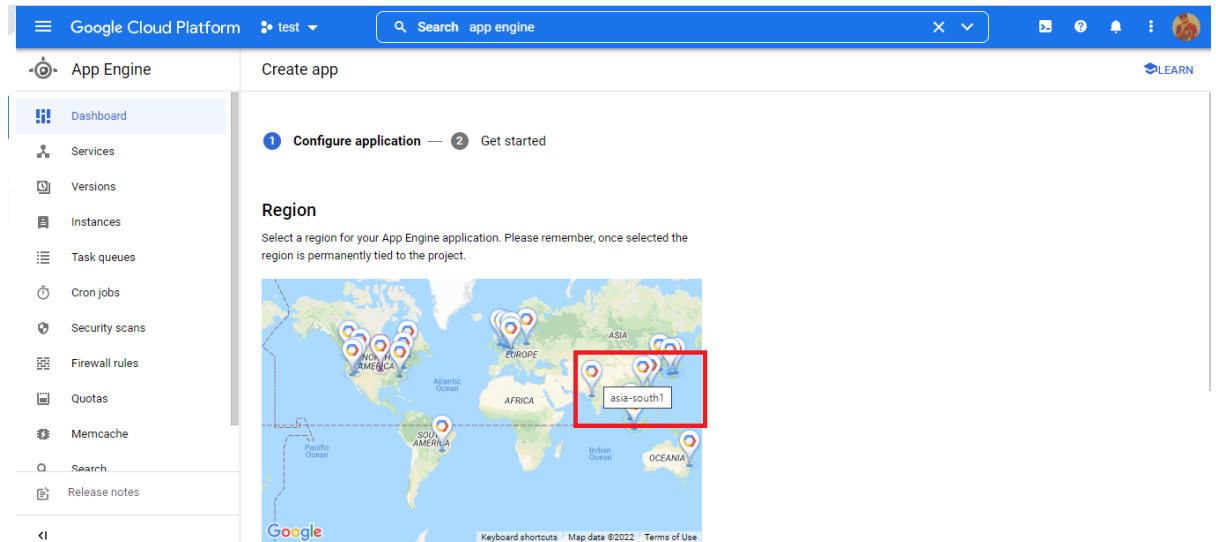
Step 9:- In search bar type **App engine** and select the engine:

The screenshot shows the Google Cloud Platform search results for 'App engine'. The search bar at the top contains the text 'app engine'. Below the search bar, there's a list of search results under the heading 'PRODUCTS & PAGES'. The results include 'App Engine', 'Compute Engine', 'Migrate for Compute Engine', and 'Application settings'. A red box highlights the search bar and the 'App Engine' result.

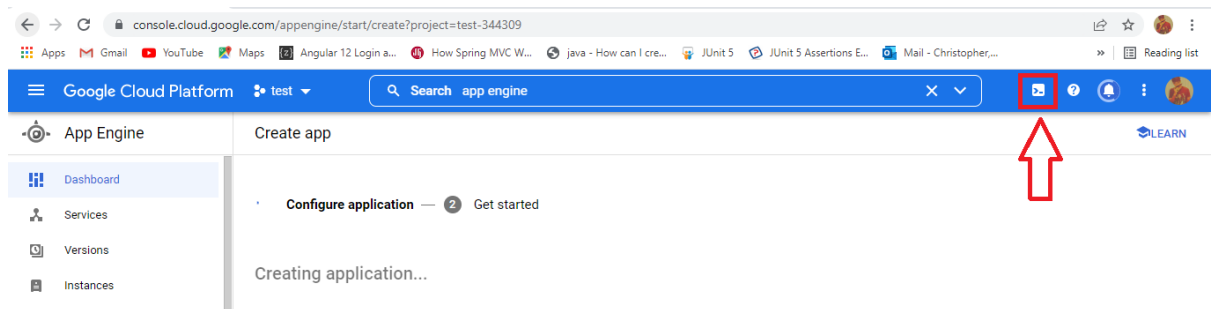
Once App Engine is selected **click**→ **Create Application**



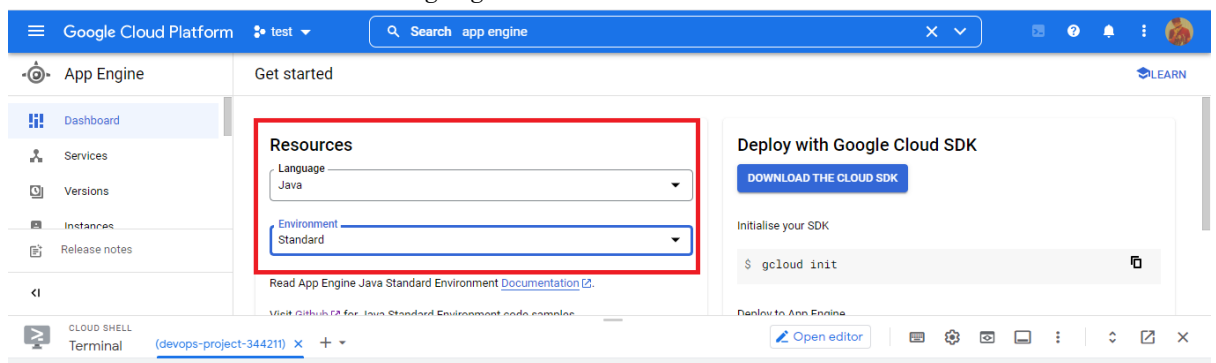
Then create app window will open in that **select region as Asia-south1** which let as We are in India South.



Step 10:- After creating all these steps we need to click the Cloud Shell to run our commands (like Command Promote).



To Get Start we need to select languages as Java and environment as Standard.

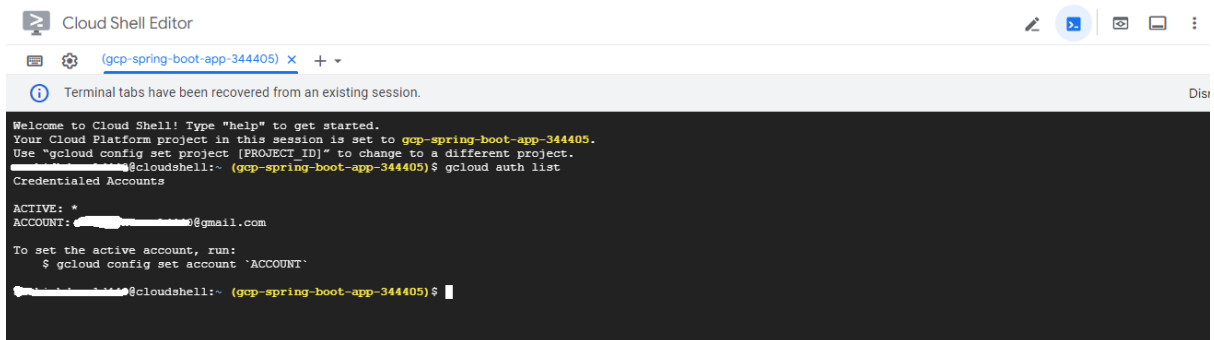
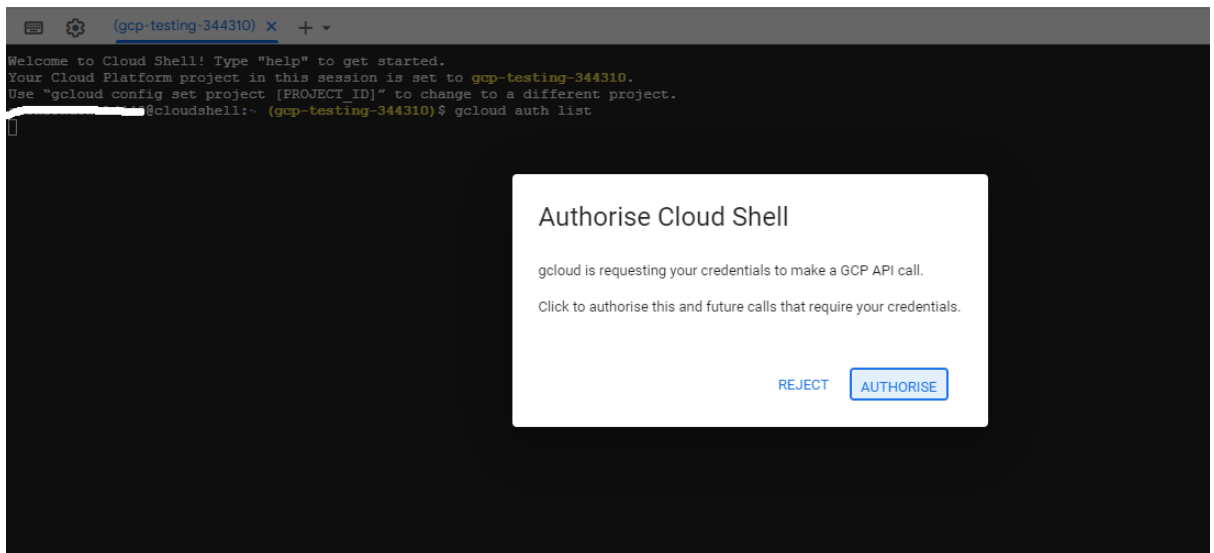


Step 11:- Once the shell is open it looks like this.



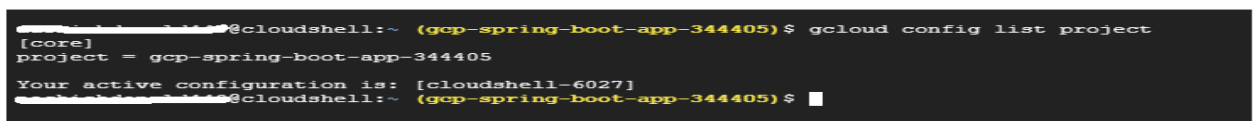
Run the following command in Cloud Shell to confirm that you are authenticated:

Step 12:- Run the following command in cloud shell to confirm you're you are authenticated.→**gcloud auth list** to authenticated. It will give the authorised username and essential details.



Step 13:- Run the following command in Cloud Shell to confirm that the gcloud command knows about your project:

gcloud config list project



Steps to create spring boot Application:

Here we have given the simple hello world program to deploy in GCP.

Create a new Spring Boot App

Create basic program and do the following steps.

Update Maven pom.xml

There are two ways to deploy a Java server app – either by using Maven App Engine Plugin or Gradle App Engine Plugin, or by deploying the **War** package directory. You'll use Maven App Engine Plugin to deploy the app.

Add Maven App Engine Plugin

Update **pom.xml** to include a Google Cloud Plugin that simplifies the deployment process.


























pom.xml

























```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0" ...>
  ...
  <build>
    <plugins>
      ...
      <plugin>
        <groupId>com.google.cloud.tools</groupId>
        <artifactId>appengine-maven-plugin</artifactId>
        <version>2.2.0</version>
        <configuration>
          <version>1</version>
          <projectId>GLOUD_CONFIG</projectId>
        </configuration>
      </plugin>
      ...
    </plugins>
  </build>
</project>
```

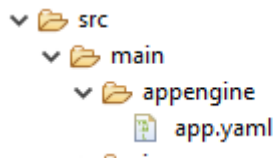
Add App Engine descriptor

To deploy the app to App Engine standard environment, you must create a new **src/main/appengine/app.yaml** descriptor file.

Project Structure Looks as shown in below image:

- ▼  hello-world
 - >  Deployment Descriptor: hello-world
 - >  JAX-WS Web Services
 - ▼  src/main/java
 - ▼  com.stg
 - >  HelloWorldApplication.java
 - ▼  com.stg.controller
 - >  HelloWorldController.java
 - ▼  src/main/resources
 -  application.properties
 - >  src/test/java
 - >  src/test/resources
 - >  JRE System Library [JavaSE-1.8]
 - >  Maven Dependencies
 - >  Deployed Resources
 - ▼  src
 - ▼  main
 - ▼  appengine
 -  app.yaml
 - >  java
 - >  resources
 - >  webapp
 - >  test
 - >  target
 -  pom.xml

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 - >  JRE System Library [JavaSE-1.8]
 - >  Maven Dependencies
 - >  Deployed Resources
 - ▼  src
 - ▼  main
 - ▼  appengine
 -  app.yaml
 - >  java
 - >  resources
 - >  webapp
 - >  test
 - >  target



Edit the `src/main/appengine/app.yaml` file and add the following content:

`src/main/appengine/app.yaml`

```
runtime: java11
instance_class: F1
```

Add a controller

Add a new controller that returns **"GCP App Engine Service - Build & Deployed Successfully using GCP Pipeline"** in `GcpApplication.java`.

Once all done Start your application run and see the Output locally.

GCP App Engine Service - Build & Deployed Successfully using GCP Pipeline

After doing all the steps push your code in Git.

To check and ref use the below Repository:

<https://github.com/Kiruba0397/testgcp.git>

Deploy the app to App Engine

First, initialize the project to be able to run App Engine apps. Also, initialize the project to run in the central region of the US.

```
cloudshell:~ (gcp-spring-boot-app-344405)$ cd GCP-Hello-World
cloudshell:~/GCP-Hello-World (gcp-spring-boot-app-344405)$

Your active configuration is: [cloudshell-6027]
cloudshell:~ (gcp-spring-boot-app-344405)$ git clone https://github.com/Jujupretha/GCP-Hello-World.git
Cloning into 'GCP-Hello-World'...
fatal: unable to access 'https://github.com/Jujupretha/GCP-Hello-World.git/': gnutls handshake() failed: The TLS connection was non-properly terminated.
cloudshell:~ (gcp-spring-boot-app-344405)$ git clone https://github.com/Kiruba0397/GCP-Hello-World.git
Cloning into 'GCP-Hello-World'...
remote: Enumerating objects: 40, done.
remote: Counting objects: 100% (40/40), done.
remote: Compressing objects: 100% (28/28), done.
remote: Total 40 (delta 0), reused 40 (delta 0), pack-reused 0
Receiving objects: 100% (40/40), 6.56 KiB | 3.28 MiB/s, done.
cloudshell:~ (gcp-spring-boot-app-344405)$ gcloud app create --region asia-south1
You are creating an app for project [gcp-spring-boot-app-344405].
WARNING: Creating an App Engine application for a project is irreversible and the region
cannot be changed. More information about regions is at
<https://cloud.google.com/appengine/docs/locations>.
Creating App Engine application in project [gcp-spring-boot-app-344405] and region [asia-south1]....working..
```

Then, deploy your app to App Engine standard environment by running `mvn appengine:deploy`

```

cloudshell:~/GCP-Hello-World (gcp-spring-boot-app-344405) $ mvn package appengine:deploy
[INFO] Scanning for projects...
[INFO]
[INFO] -----< com.javatpoint:hello-world >-----
[INFO] Building hello-world 0.0.1-SNAPSHOT
[INFO] [ jar ]
Downloading from spring-milestones: https://repo.spring.io/milestone/org/springframework/boot/spring-boot-starter/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot-starter/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-milestones: https://repo.spring.io/milestone/org/springframework/boot/spring-boot-starter/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml (1.0 kB at 667 B/s)
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot-starter/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-milestones: https://repo.spring.io/milestone/org/springframework/boot/spring-boot-starter/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot-starter/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml (861 B at 693 B/s)
Downloading from spring-milestones: https://repo.spring.io/milestone/org/springframework/boot/spring-boot/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-milestones: https://repo.spring.io/milestone/org/springframework/boot/spring-boot/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml (1.2 kB at 774 B/s)
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-milestones: https://repo.spring.io/milestone/org/springframework/boot/spring-boot-autoconfigure/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot-autoconfigure/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml (1.3 kB at 2.0
kB/s)
Downloading from spring-milestones: https://repo.spring.io/milestone/org/springframework/boot/spring-boot-starter-logging/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot-starter-logging/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot-starter-logging/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml (1.0 kB at 1
.6 kB/s)
Downloading from spring-milestones: https://repo.spring.io/milestone/org/springframework/boot/spring-boot-starter-web/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot-starter-web/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot-starter-web/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml (1.0 kB at 612 B
/s)
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot-starter-json/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-milestones: https://repo.spring.io/milestone/org/springframework/boot/spring-boot-starter-json/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml
Downloading from spring-snapshots: https://repo.spring.io/snapshot/org/springframework/boot/spring-boot-starter-json/2.2.2.BUILD-SNAPSHOT/maven-metadata.xml (1.0 kB at 1.0
kB/s)

[INFO] --- appengine-maven-plugin:2.2.0:deploy (default-cli) @ hello-world ---
[INFO] Staging the application to: /home/.../GCP-Hello-World/target/appengine-staging
[INFO] Detected App Engine app.yaml based application.
Mar 17, 2022 6:28:02 AM com.google.cloud.tools.appengine.operations.GcloudRunner run
INFO: submitting command: /home/.../.cache/google-cloud-tools-java/managed-cloud-sdk/LATEST/google-cloud-sdk/bin/gcloud app deploy --version 1 --project gcp-s
pring-boot-app-344405
[INFO] GCLLOUD: Services to deploy:
[INFO] GCLLOUD:
[INFO] GCLLOUD: descriptor: [/home/.../GCP-Hello-World/target/appengine-staging/app.yaml]
[INFO] GCLLOUD: source: [/home/.../GCP-Hello-World/target/appengine-staging]
[INFO] GCLLOUD: target project: [gcp-spring-boot-app-344405]
[INFO] GCLLOUD: target service: [default]
[INFO] GCLLOUD: target version: [1]
[INFO] GCLLOUD: target url: [https://gcp-spring-boot-app-344405.el.r.appspot.com]
[INFO] GCLLOUD: target service account: [App Engine default service account]
[INFO] GCLLOUD:
[INFO] GCLLOUD: Beginning deployment of service [default]...
[INFO] GCLLOUD: Created .gcloudignore file. See 'gcloud topic gcloudignore' for details.
[INFO] GCLLOUD:
[INFO] GCLLOUD: Uploading 3 files to Google Cloud Storage
[INFO] GCLLOUD:
[INFO] GCLLOUD: File upload done.
[INFO] GCLLOUD: Updating service [default]...
[INFO] GCLLOUD: .....done.
[INFO] GCLLOUD: Setting traffic split for service [default]...
[INFO] GCLLOUD: .....done.
[INFO] GCLLOUD: Deployed service [default] to [https://gcp-spring-boot-app-344405.el.r.appspot.com]

```

It will load for some time and at last it will show Build success.

```

Cloud Shell Editor
(gcp-migration-344414) x (gcp-migration-344414) x + v
[INFO] GCLLOUD: target version: [1]
[INFO] GCLLOUD: target url: [https://gcp-migration-344414.el.r.appspot.com]
[INFO] GCLLOUD: target service account: [App Engine default service account]
[INFO] GCLLOUD:
[INFO] GCLLOUD: Beginning deployment of service [default]...
[INFO] GCLLOUD: Created .gcloudignore file. See 'gcloud topic gcloudignore' for details.
[INFO] GCLLOUD:
[INFO] GCLLOUD: Uploading 2 files to Google Cloud Storage
[INFO] GCLLOUD:
[INFO] GCLLOUD: File upload done.
[INFO] GCLLOUD: Updating service [default]...
[INFO] GCLLOUD: .....done.
[INFO] GCLLOUD: Setting traffic split for service [default]...
[INFO] GCLLOUD: .....done.
[INFO] GCLLOUD: Deployed service [default] to [https://gcp-migration-344414.el.r.appspot.com]
[INFO] GCLLOUD: You can stream logs from the command line by running:
[INFO] GCLLOUD: $ gcloud app logs tail -s default
[INFO] GCLLOUD:
[INFO] GCLLOUD: To view your application in the web browser run:
[INFO] GCLLOUD: $ gcloud app browse
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 01:15 min
[INFO] Finished at: 2022-03-21T10:47:48Z
[INFO]

```

After the app is deployed, you can visit it by opening <http://<project-id>.appspot.com> in your web browser or use the following command in Cloud Shell:

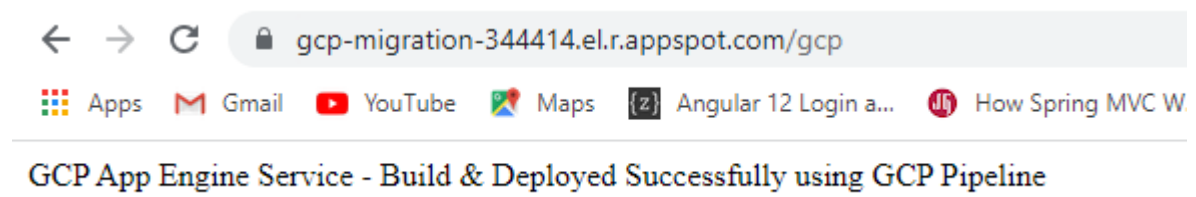
Here we get the URL that is deployed in the GCP.

```

cloudshell:~/testgcp (gcp-migration-344414) $ gcloud app browse
Did not detect your browser. Go to this link to view your app:
https://gcp-migration-344414.el.r.appspot.com
cloudshell:~/testgcp (gcp-migration-344414) $

```

OutPut in GCP:



The URL is: ["https://gcp-migration-344414.el.r.appspot.com/gcp"](https://gcp-migration-344414.el.r.appspot.com/gcp)