Academic Year: 2021-2022 **Semester: VIII**
Subject: Cloud Computing Lab **Class / Branch / Division: BE/CMPN A**
Name: Nithin Menezes **Roll Number: 56**

Experiment No:4

Aim: Prepare a detailed study of Platform as a Service

Theory:

1) What is PaaS

- Platform-as-a-service (PaaS) is a type of cloud computing offering in which a service provider delivers a platform to clients, enabling them to develop, run, and manage business applications without the need to build and maintain the infrastructure such software development processes typically require.
- As with other cloud services such as infrastructure-as-a-service (IaaS) and software-as-a-service (SaaS), PaaS is offered via a cloud service provider's hosted infrastructure. Users typically access PaaS offerings via a web browser.
- PaaS can be delivered through public, private, or hybrid clouds. With a public cloud PaaS, the customer controls software deployment while the cloud provider delivers all the major IT components needed to host the applications, including servers, storage systems, networks, operating systems, and databases.

2) How to use PaaS (Customer)

As PaaS is offered through a web browser, customers pay for PaaS on a per-use basis, with some providers charging a flat monthly fee for access to the platform and hosted on the platform.

3) How to provide PaaS (Cloud Service Provider)

The delivery model of PaaS is similar to SaaS, except instead of delivering the software over the internet, PaaS provides a platform for software creation. This platform is delivered via the web, giving developers the freedom to concentrate on building the software without having to worry about operating systems, software updates, storage, or infrastructure.

4) Advantages and Limitations of PaaS

- Cost saving: No need to purchase hardware or pay expenses during downtime
- Time Savings: No need to spend time setting up/maintaining the core stack Speed to Market: Speed up the creation of apps
- Future-Proof: Access to state-of-the-art data center, hardware, and operating systems
- Increase Security: PaaS providers invest heavily in security technology and expertise
- Dynamically Scale: Rapidly add capacity in peak times and scale down as needed
- Custom Solutions: Operational tools in place so developers can create custom software
- Flexibility: Allows employees to log in and work on applications from anywhere

5) Limitation of PaaS

Vendor Dependency: Very dependent upon the vendor's capabilities
Risk of Lock-In: Customers may get locked into a language, interface or program they no longer need.
Compatibility: Difficulties may arise if PaaS is used in conjunction with existing development platforms
Security Risks: While PaaS providers secure the infrastructure and platform, businesses are responsible for the security of the applications they build

Google App Engine

- App Engine is a fully managed, serverless platform for developing and hosting web applications at scale. You can choose from several popular languages, libraries, and frameworks to develop your apps, and then let App Engine take care of provisioning servers and scaling your app instances based on demand.
- Google App Engine primarily supports Go, PHP, Java, Python, Node.js, .NET, and Ruby applications.
- The service is free up to a certain level of consumed resources and only in a standard environment but not an inflexible environment. Fees are charged for additional storage, bandwidth, or instance hours required by the application.

Implementation

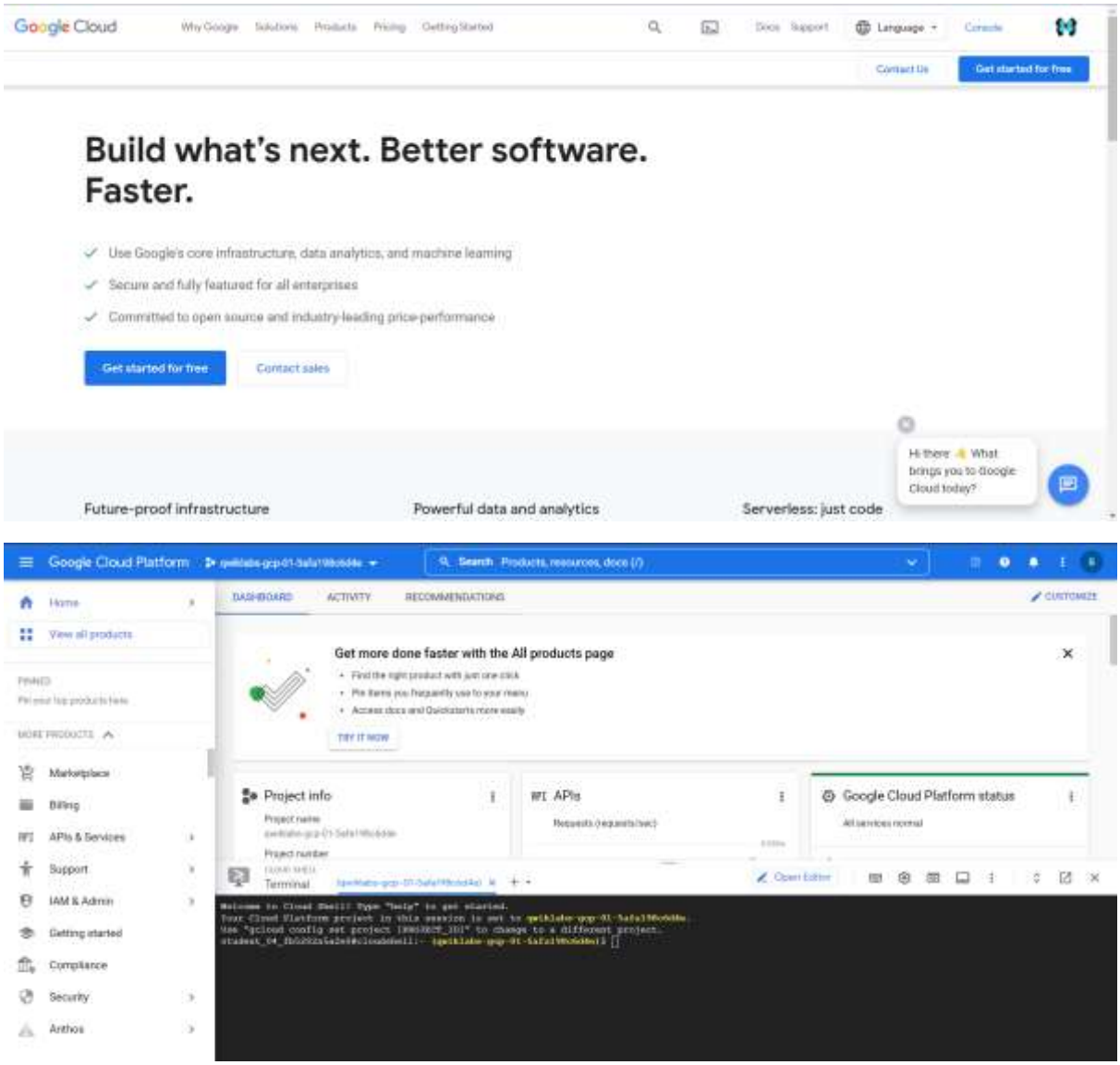

Fig 1.1 Google cloud platform

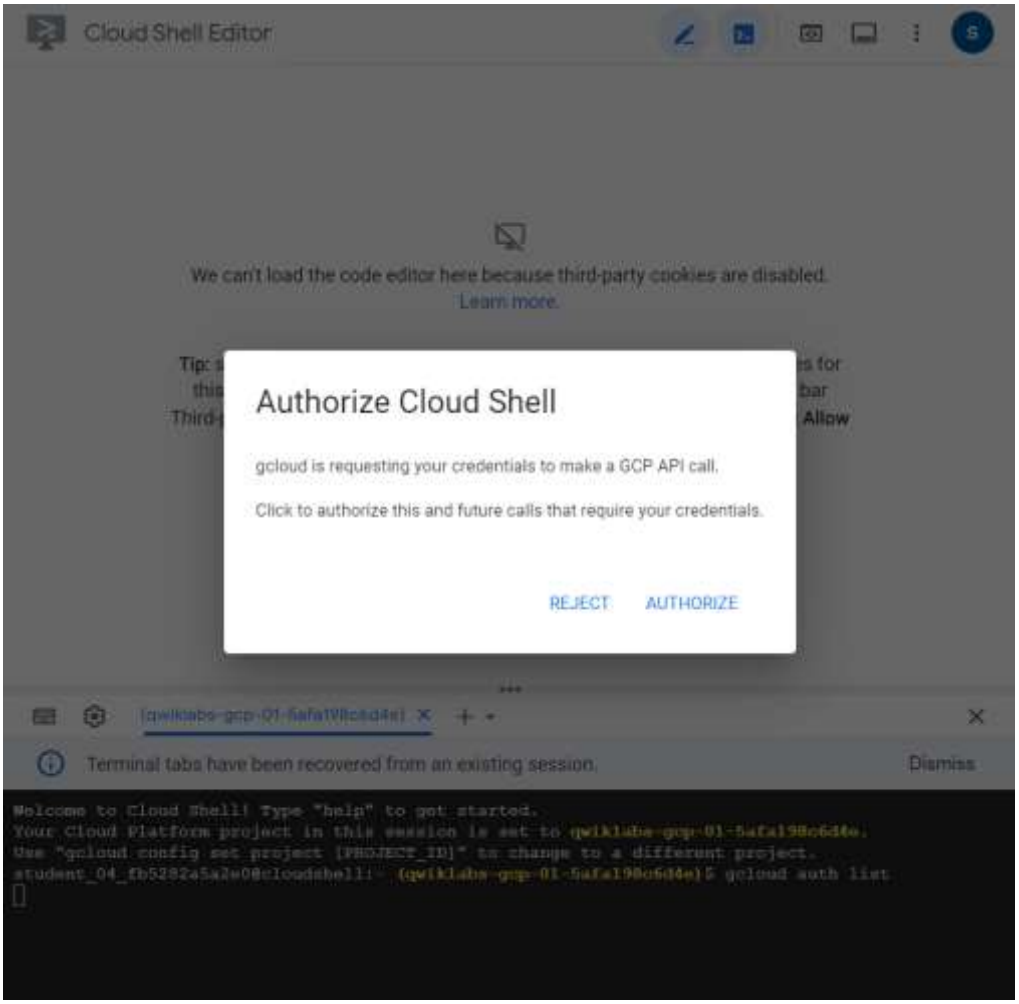

Fig 1.2 Activating google cloud shell

Fig 1.3 Listing Project

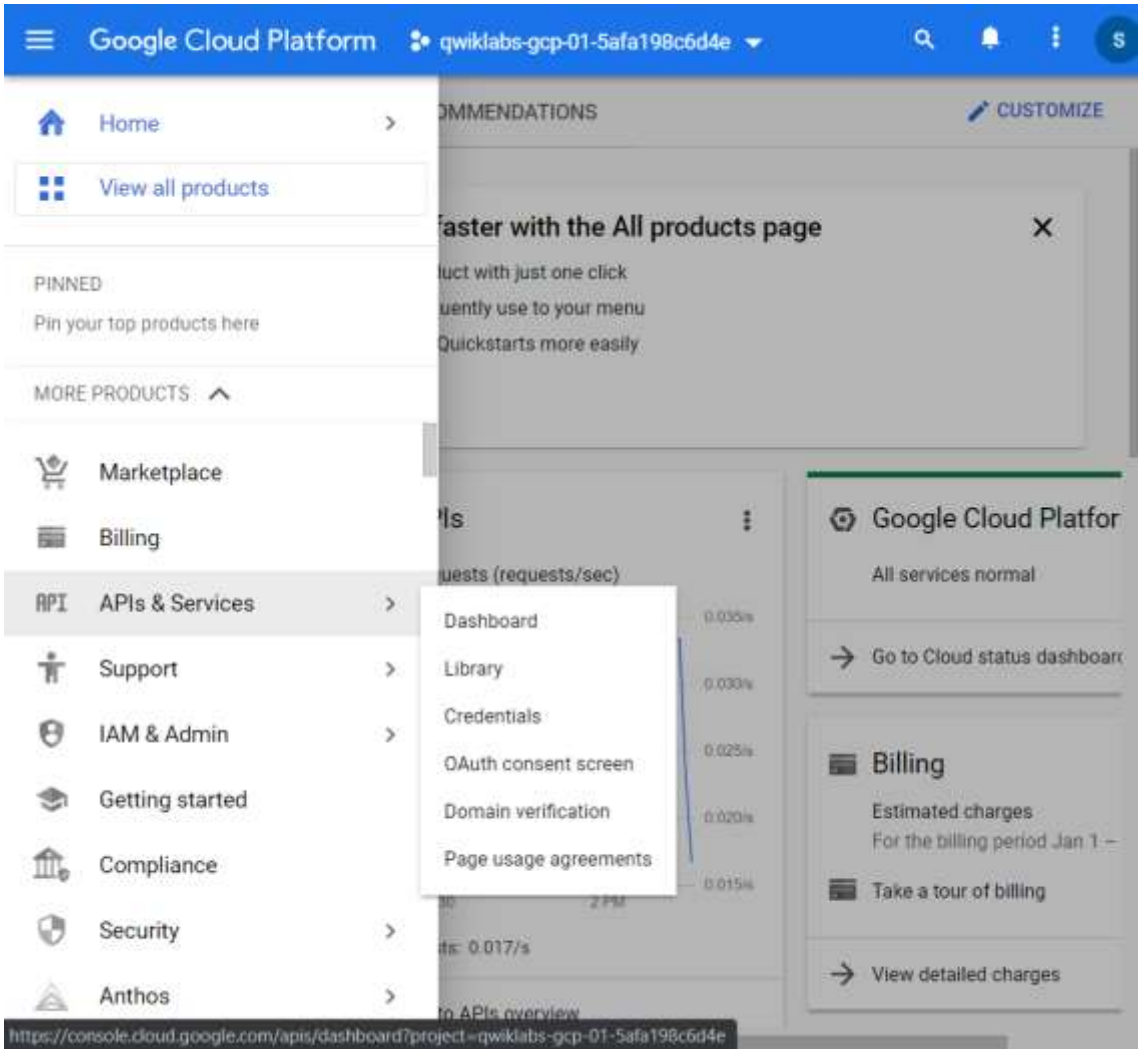

Fig 1.4 Google cloud platform

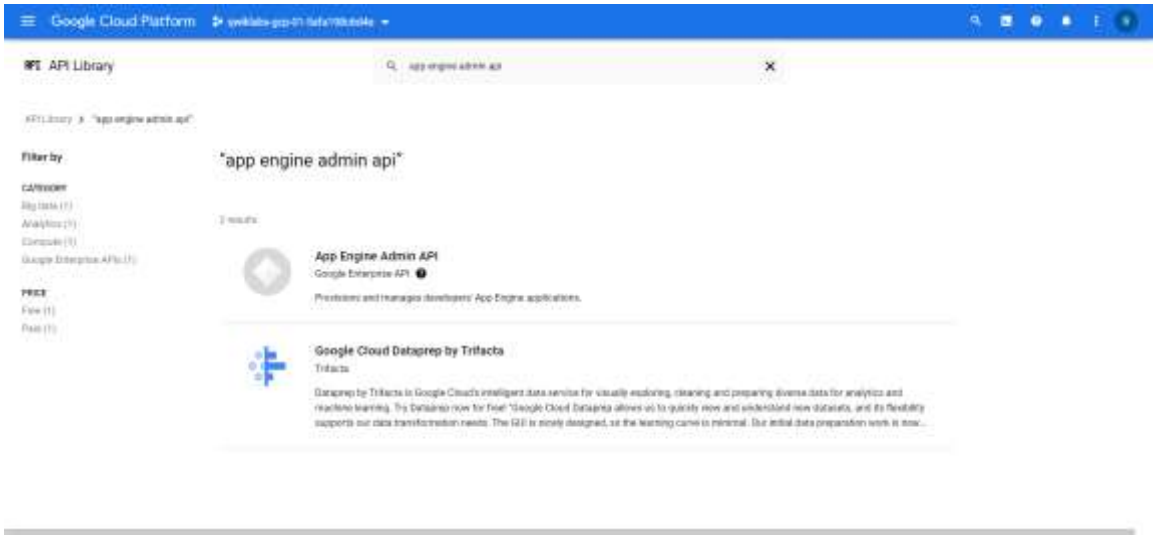

Fig 1.5 Search App engine API

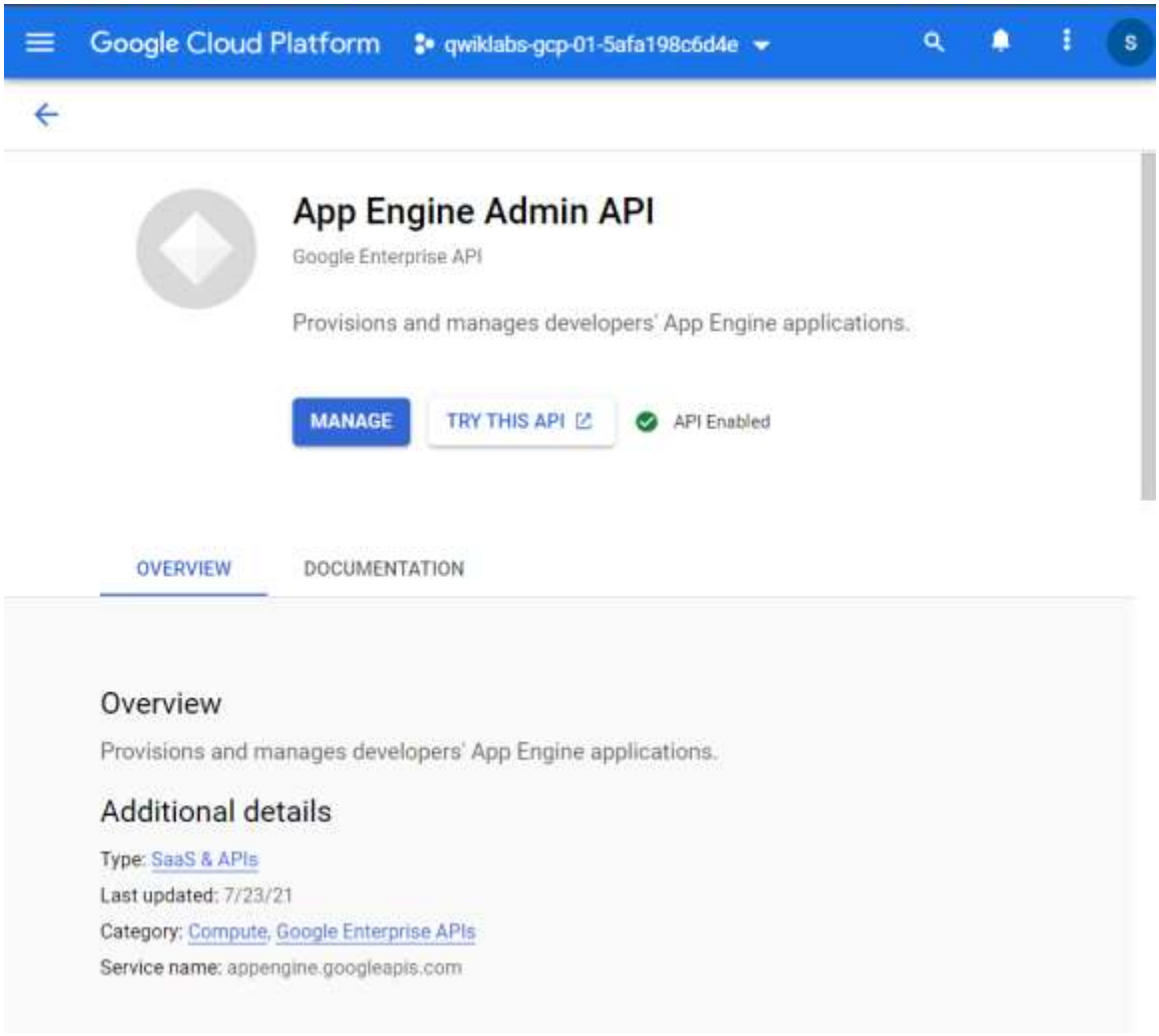

Fig 1.6 Activate API

```
student_04_fb5282a5a2e0@cloudshell:~ (qwiklabs-gcp-01-5afa198c6d4e)$ gsutil -m cp -r gs://spls/
gsp067/python-docs-samples .
Copying gs://spls/gsp067/python-docs-samples/appengine/standard_python3/hello_world/requirement
s.txt...
Copying gs://spls/gsp067/python-docs-samples/appengine/standard_python3/hello_world/main_test.p
y...
Copying gs://spls/gsp067/python-docs-samples/appengine/standard_python3/hello_world/requirement
s-test.txt...
Copying gs://spls/gsp067/python-docs-samples/appengine/standard_python3/hello_world/app.yaml...
Copying gs://spls/gsp067/python-docs-samples/appengine/standard_python3/hello_world/main.py...
student_04_fb5282a5a2e0@cloudshell:~ (qwiklabs-gcp-01-5afa198c6d4e)$
```

Fig 1.7 Cloning the dataset

```
student_04_fb5282a5a2e0@cloudshell:~ (qwiklabs-gcp-01-5afa198c6d4e)$ cd python-docs-samples/app
engine/standard_python3/hello_world
student_04_fb5282a5a2e0@cloudshell:~/python-docs-samples/appengine/standard_python3/hello_world
 (qwiklabs-gcp-01-5afa198c6d4e)$
```

Fig 1.8 Move to the directory of the “Hello World” app

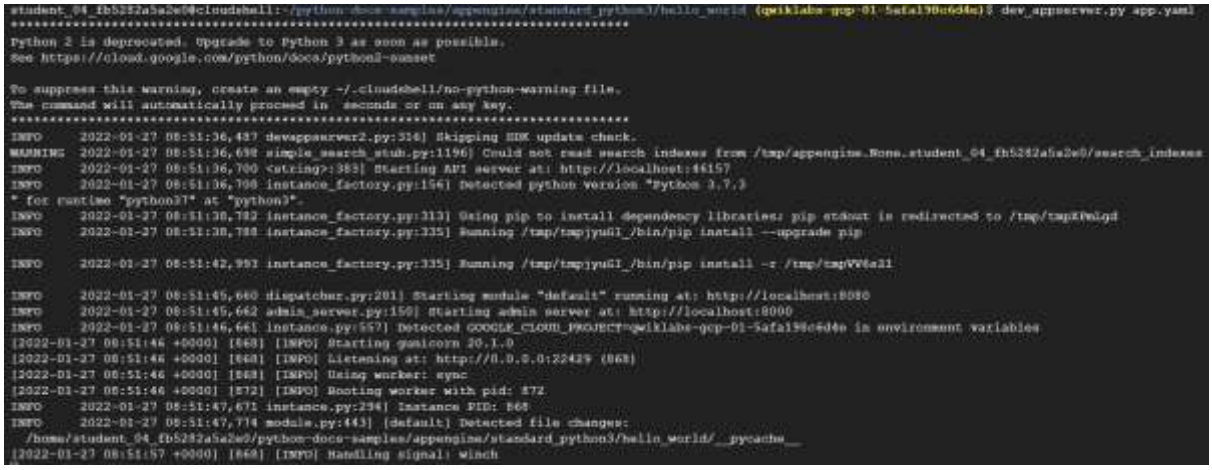

Fig 1.9 Command for seeing web Preview

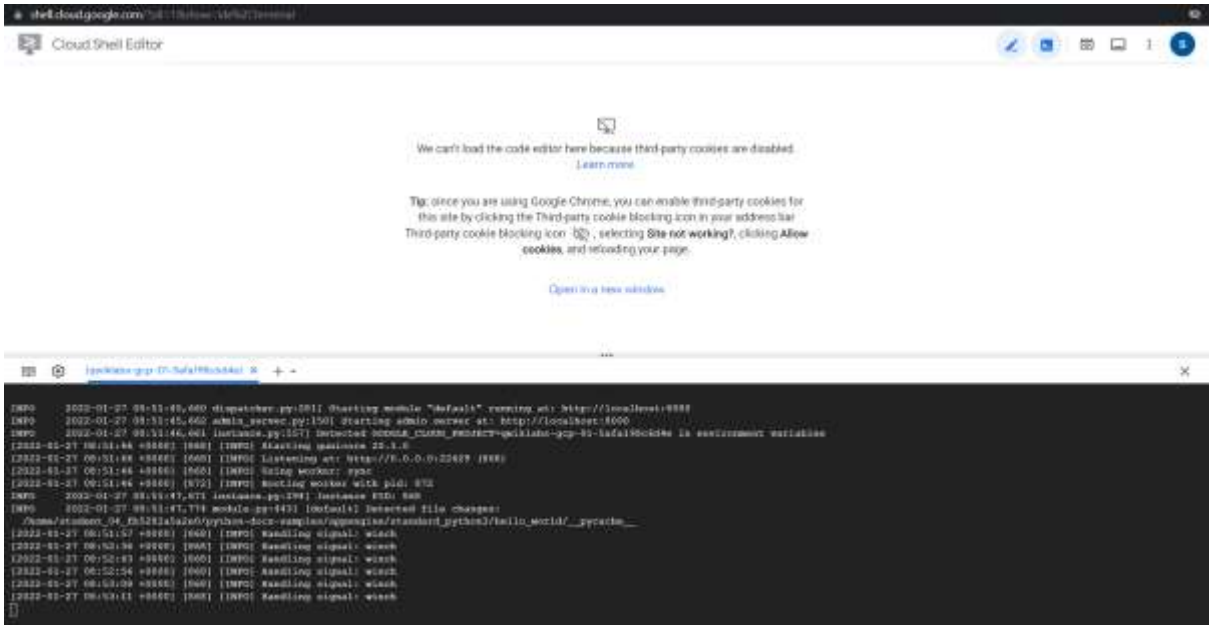

Fig 2.0 Execution of the command

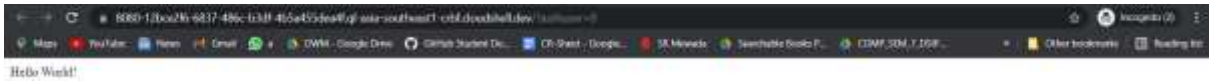

Fig 2.1 Web Preview

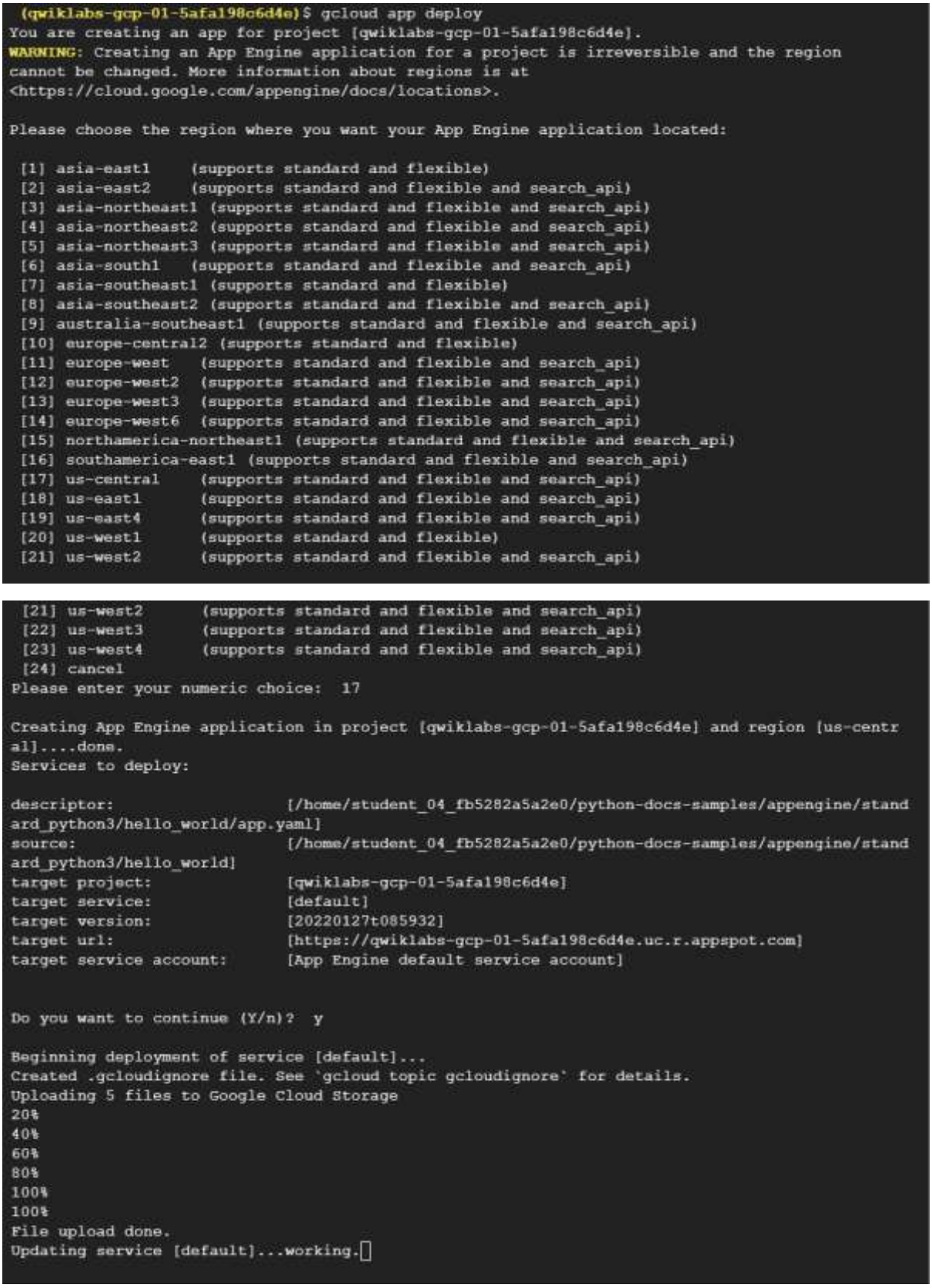

Fig 2.2 Execution of the command

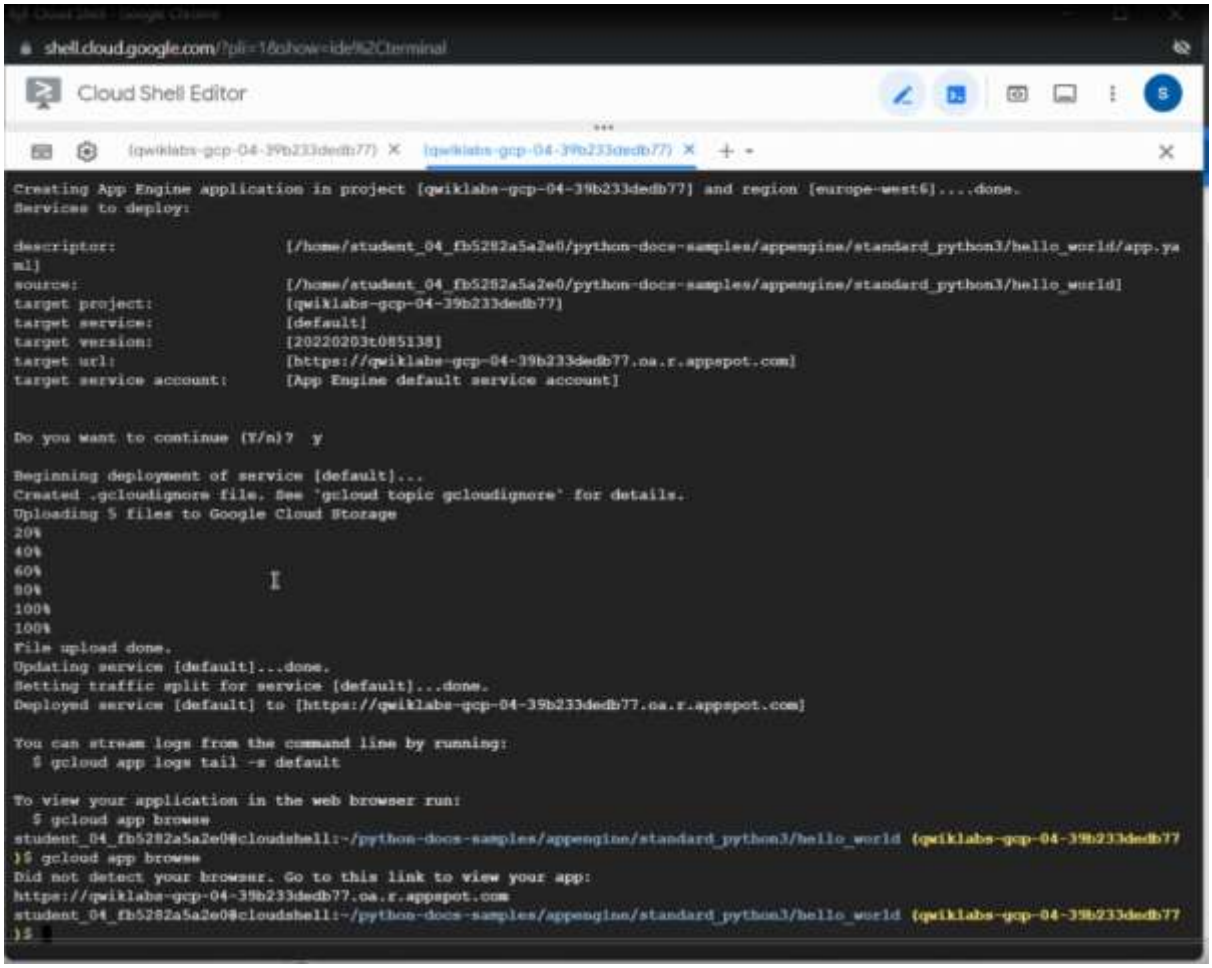

Fig 2.3 Browsing the deployed app

Fig 2.4 Shell Editor and python code

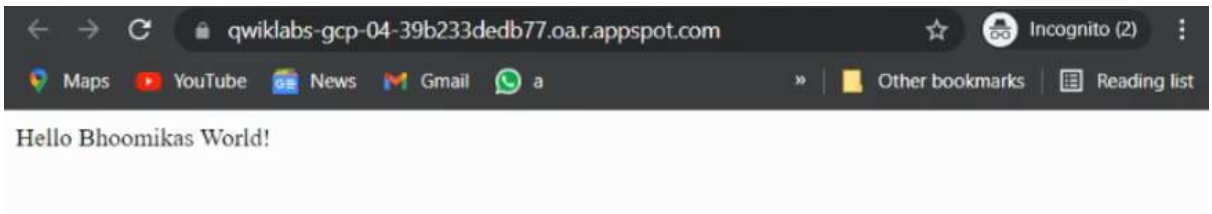

Fig 2.5 Output

Conclusion:

In this experiment, we learned about Platform as a service and successfully demonstrated how the google cloud platform can be used as Paas by exploring the google cloud platform and using the App engine in qwicklab's created environment. Deployed flask app on google cloud and used it.