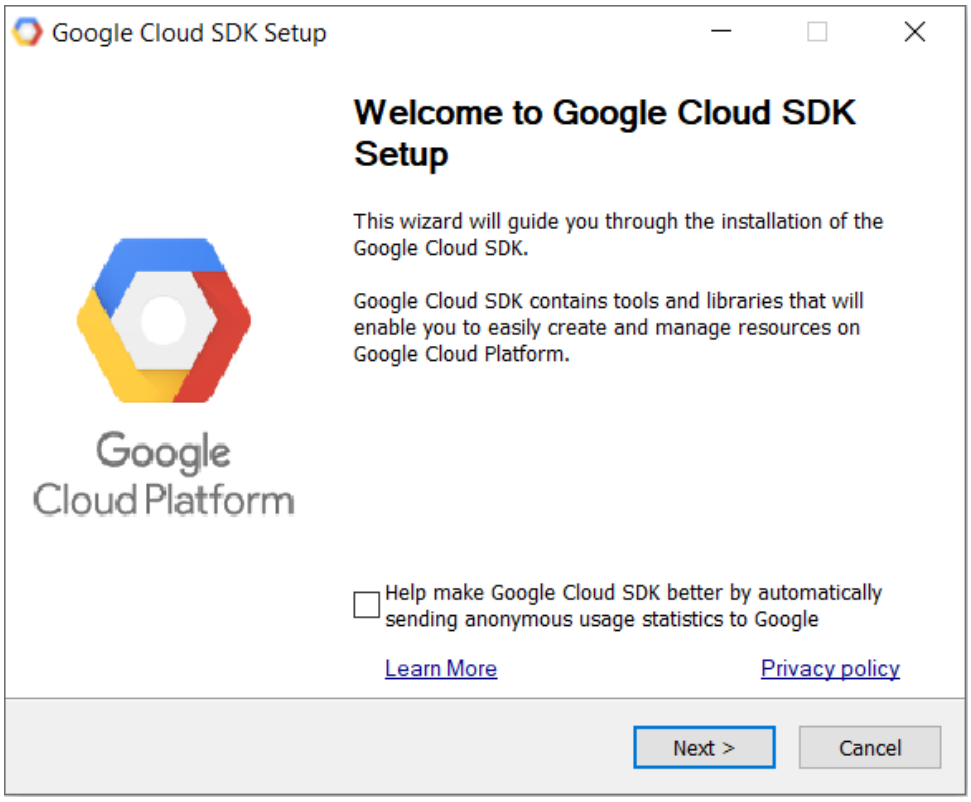
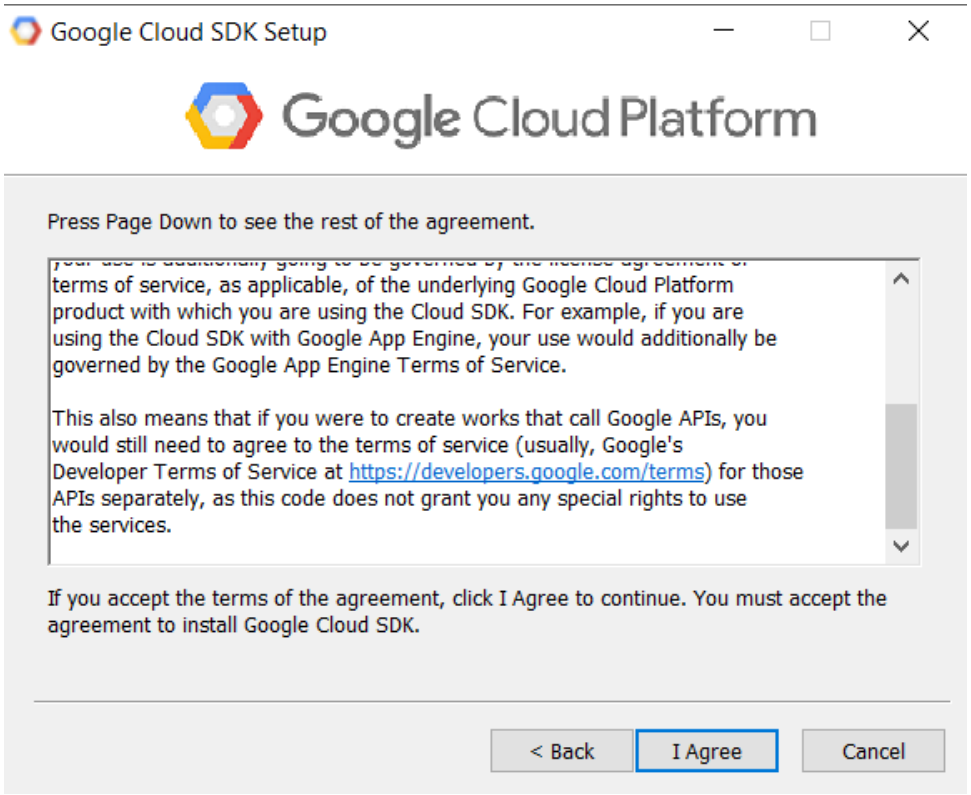
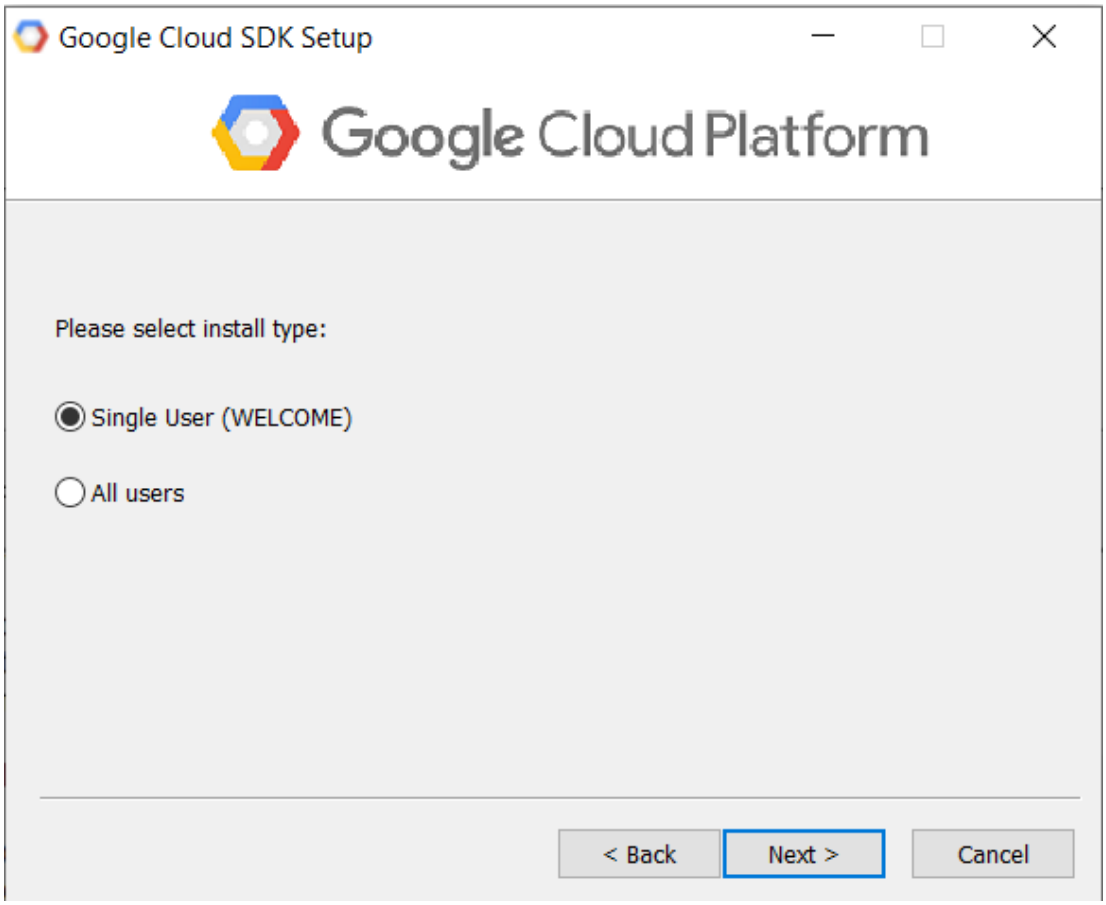
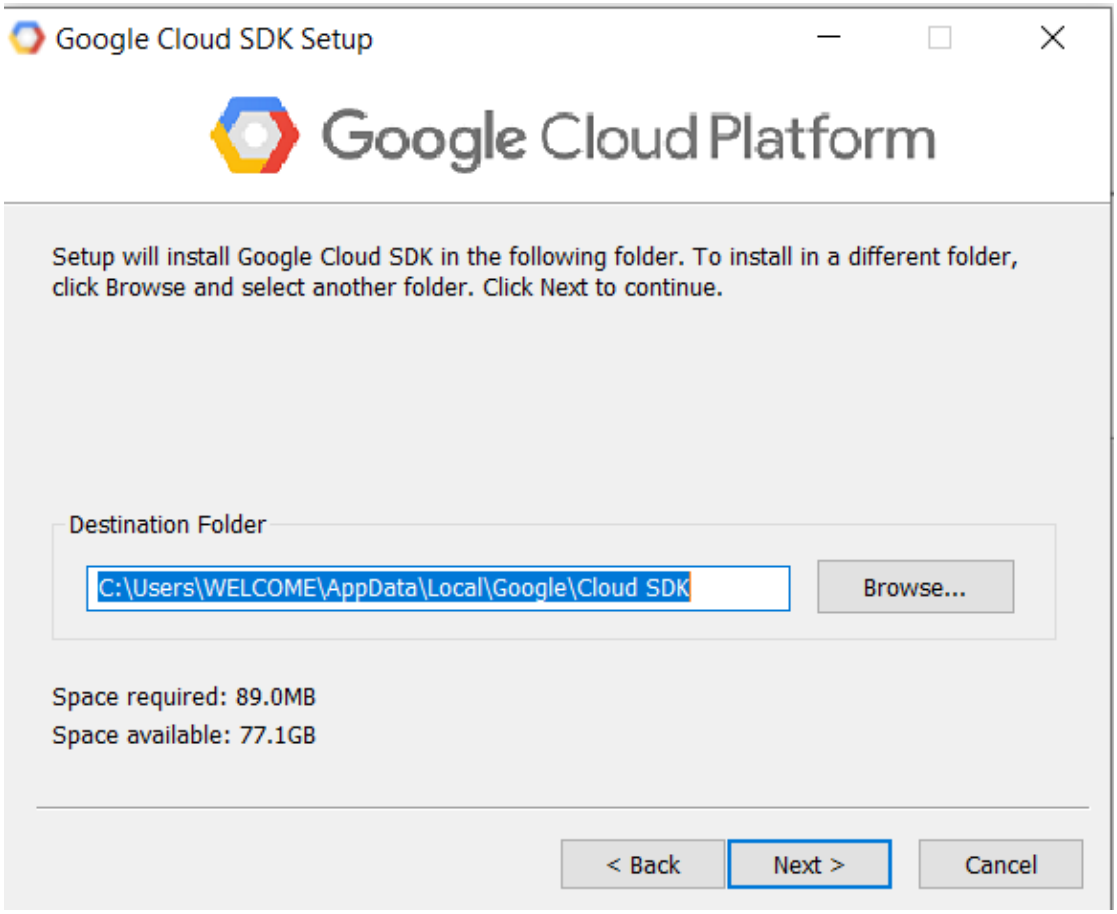
Ex.No.6: Developing Simple Application on Google App Engine

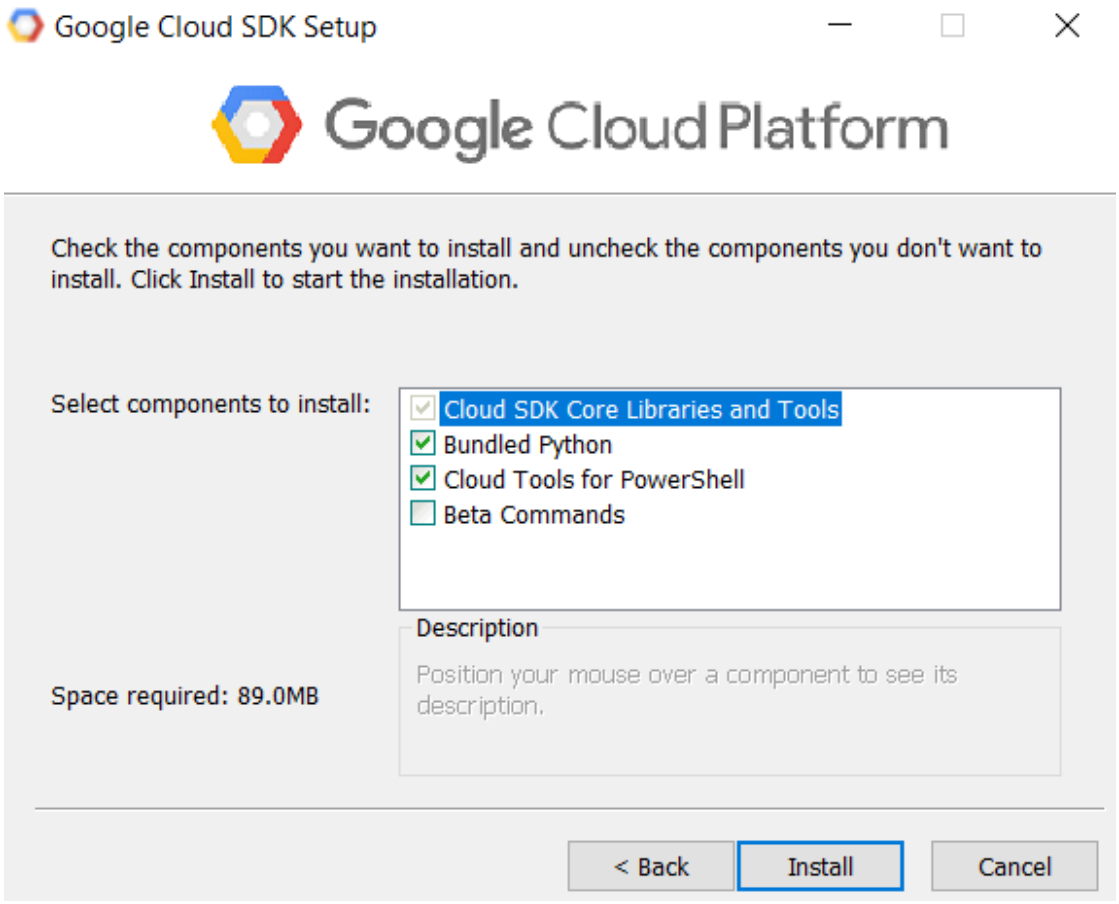
1) Install Google App Engine SDK for Python in Host OS (Windows)






Google Cloud SDK Setup
Google Cloud Platform
Please select install type:
Single User (WELCOME)
All users
< Back
Next >
Cancel


Google Cloud SDK Setup
Google Cloud Platform
Setup will install Google Cloud SDK in the following folder. To install in a different folder, click Browse and select another folder. Click Next to continue.
Destination Folder
C:\Users\WELCOME\AppData\Local\Google\Cloud SDK
Browse...
Space required: 89.0MB
Space available: 77.1GB
< Back
Next >
Cancel

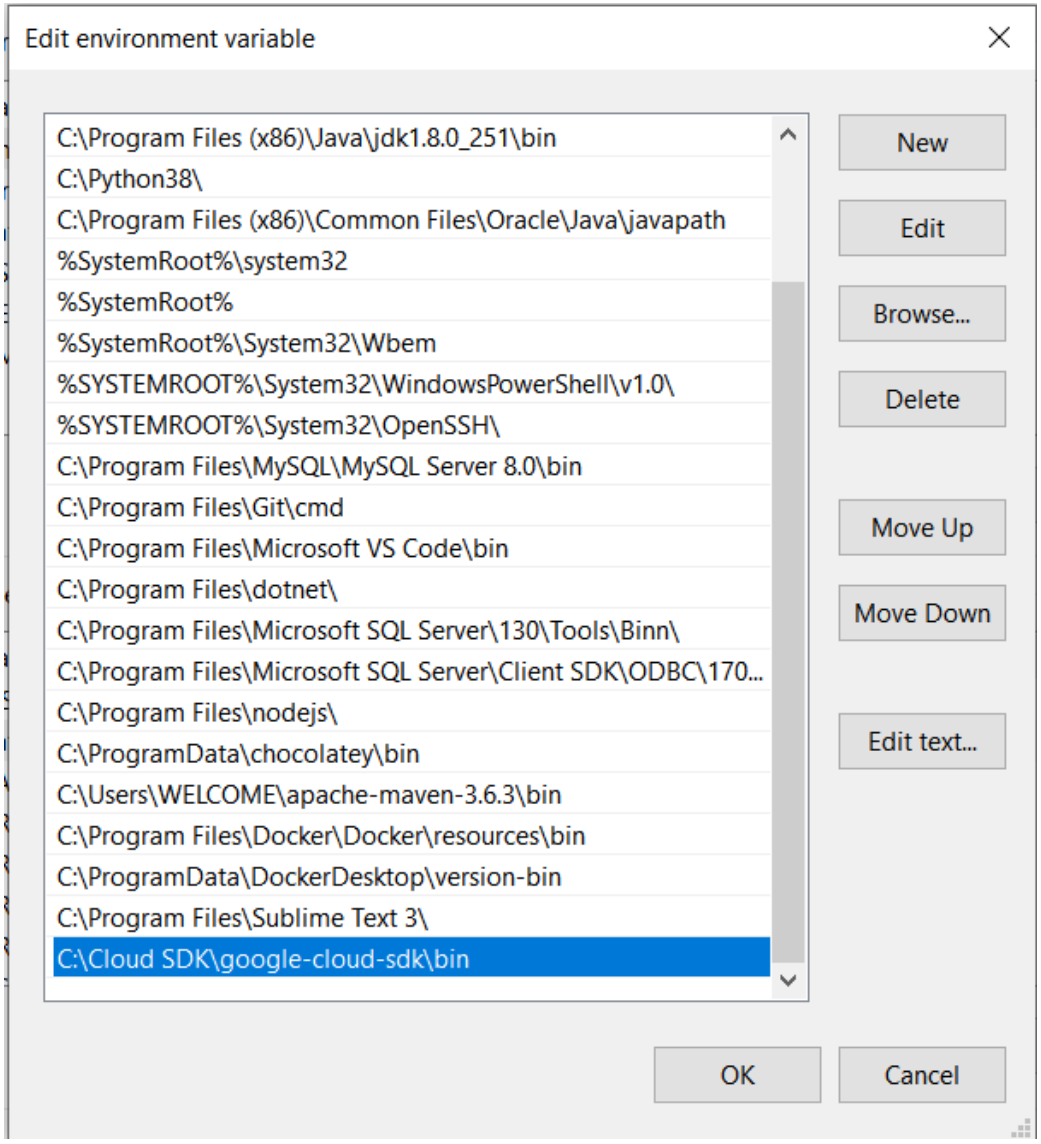


2)Execute install.bat

```
C:\Cloud SDK\google-cloud-sdk>install.bat
Welcome to the Google Cloud SDK!
Active code page: 65001

To help improve the quality of this product, we collect anonymized usage data
and anonymized stacktraces when crashes are encountered; additional information
is available at <https://cloud.google.com/sdk/usage-statistics>. This data is
handled in accordance with our privacy policy
<https://policies.google.com/privacy>. You may choose to opt in this
collection now (by choosing 'Y' at the below prompt), or at any time in the
future by running the following command:

    gcloud config set disable_usage_reporting false

Do you want to help improve the Google Cloud SDK (y/N)?  n


Your current Cloud SDK version is: 313.0.1
The latest available version is: 313.0.1
```

```
+-----------------------------------------------------------------------------------------------------+
|                                                Components                                           |
+---------------+------------------------------------------------------+--------------------------+----------+
|     Status    |                         Name                         |           ID             |   Size   |
+---------------+------------------------------------------------------+--------------------------+----------+
| Not Installed | App Engine Go Extensions                             | app-engine-go            |  4.8 MiB |
| Not Installed | Appctl                                               | appctl                   | 18.7 MiB |
| Not Installed | Cloud Bigtable Command Line Tool                     | cbt                      |  7.5 MiB |
| Not Installed | Cloud Bigtable Emulator                              | bigtable                 |  6.4 MiB |
| Not Installed | Cloud Datalab Command Line Tool                      | datalab                  |  < 1 MiB |
| Not Installed | Cloud Datastore Emulator                             | cloud-datastore-emulator | 18.4 MiB |
| Not Installed | Cloud Firestore Emulator                             | cloud-firestore-emulator | 41.0 MiB |
| Not Installed | Cloud Pub/Sub Emulator                               | pubsub-emulator          | 56.3 MiB |
| Not Installed | Cloud SQL Proxy                                      | cloud_sql_proxy          |  7.1 MiB |
| Not Installed | Emulator Reverse Proxy                               | emulator-reverse-proxy   | 14.5 MiB |
| Not Installed | Google Container Registry's Docker credential helper | docker-credential-gcr    |  1.8 MiB |
| Not Installed | Kind                                                 | kind                     |  4.5 MiB |
| Not Installed | Kustomize                                            | kustomize                | 23.1 MiB |
| Not Installed | Minikube                                             | minikube                 | 24.2 MiB |
| Not Installed | Nomos CLI                                            | nomos                    | 17.6 MiB |
| Not Installed | Skaffold                                             | skaffold                 | 14.5 MiB |
| Not Installed | anthos-auth                                          | anthos-auth              | 16.3 MiB |
| Not Installed | gcloud Alpha Commands                                | alpha                    |  < 1 MiB |
| Not Installed | gcloud Beta Commands                                 | beta                     |  < 1 MiB |
| Not Installed | gcloud app Java Extensions                           | app-engine-java          | 59.5 MiB |
| Not Installed | gcloud app PHP Extensions                            | app-engine-php           | 19.1 MiB |
| Not Installed | gcloud app Python Extensions                         | app-engine-python        |  6.1 MiB |
| Not Installed | gcloud app Python Extensions (Extra Libraries)       | app-engine-python-extras | 27.1 MiB |
| Not Installed | kpt                                                  | kpt                      | 11.3 MiB |
| Not Installed | kubectl                                              | kubectl                  |  < 1 MiB |
| Not Installed | kubectl                                              | kubectl                  |  < 1 MiB |
| Not Installed | pkg                                                  | pkg                      |          |
| Installed     | BigQuery Command Line Tool                           | bq                       |  < 1 MiB |
| Installed     | Cloud SDK Core Libraries                             | core                     | 15.2 MiB |
| Installed     | Cloud Storage Command Line Tool                      | gsutil                   |  3.5 MiB |
+---------------+------------------------------------------------------+--------------------------+----------+
To install or remove components at your current SDK version [313.0.1], run:
  $ gcloud components install COMPONENT_ID
  $ gcloud components remove COMPONENT_ID

To update your SDK installation to the latest version [313.0.1], run:
  $ gcloud components update

Update %PATH% to include Cloud SDK binaries? (Y/n)?  y

The installer is unable to automatically update your system PATH. Please add
  C:\Cloud SDK\google-cloud-sdk\bin
to your system PATH to enable easy use of the Cloud SDK Command Line Tools.


For more information on how to get started, please visit:
  https://cloud.google.com/sdk/docs/quickstarts


Active code page: 437

C:\Cloud SDK\google-cloud-sdk>
```

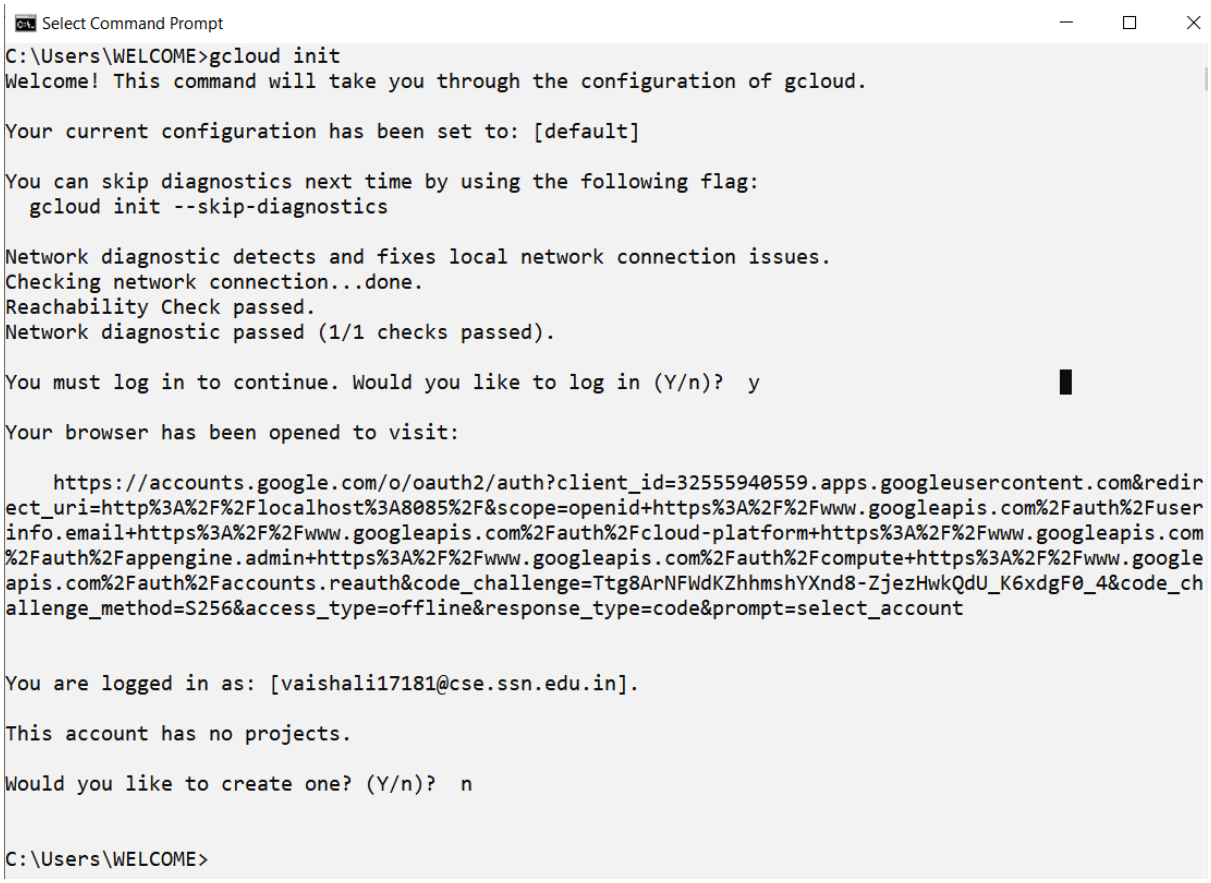
3) Add the path to bin:



4) Check the installation using “gcloud version” command

```
C:\Users\WELCOME>gcloud version
Google Cloud SDK 313.0.1
bq 2.0.61
core 2020.10.07
gsutil 4.53

C:\Users\WELCOME>
```

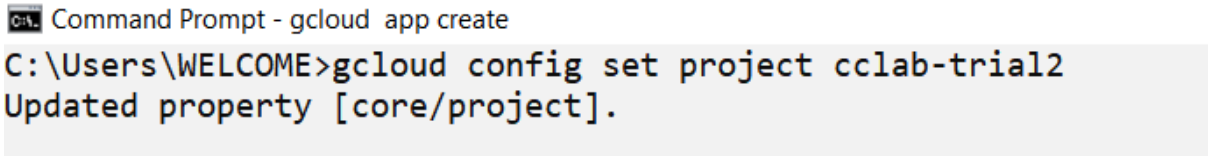
5) Use the command “gcloud init” to initialise the sdk



6) a) Create a project using “gcloud projects create PROJ_ID”

```
C:\Users\WELCOME>gcloud projects create cclab-trial2
Create in progress for [https://cloudresourcemanager.googleapis.com/v1/projects/cclab-trial2].
Waiting for [operations/cp.7003791107359369407] to finish...done.
Enabling service [cloudapis.googleapis.com] on project [cclab-trial2]...
Operation "operations/acf.c0bf9ce7-9238-4acf-ab80-2b819ff762e2" finished successfully.
```

b) Configure the project using “gcloud config set project PROJ_ID”



c) Create a gcloud application using “gcloud app create”

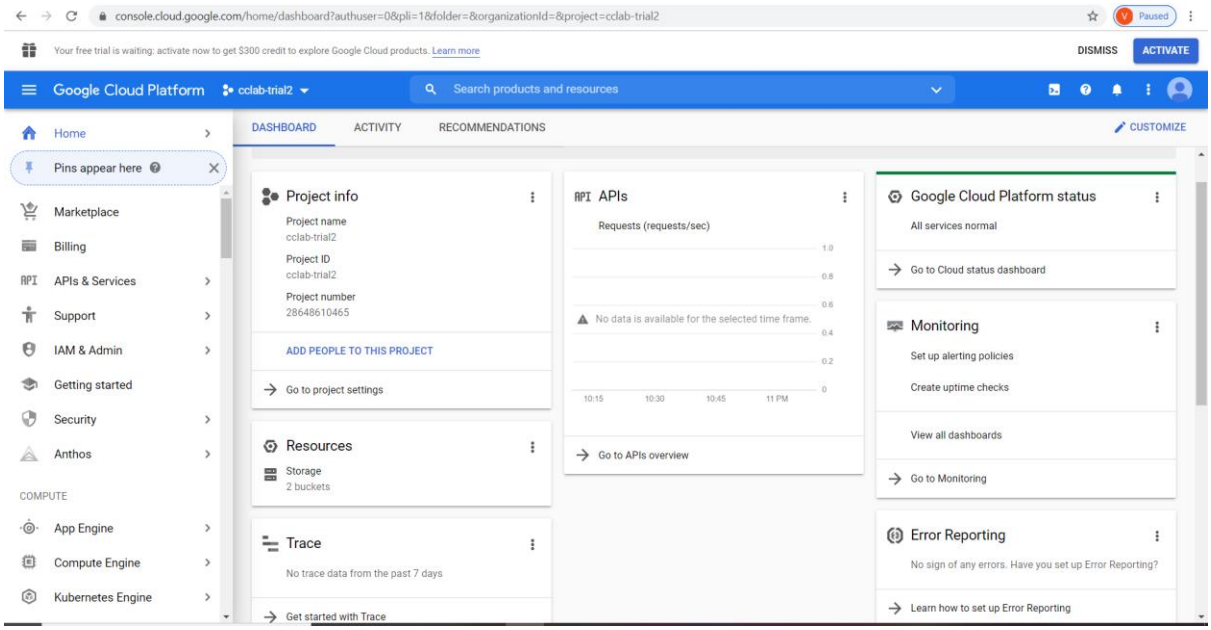
```
C:\Users\WELCOME>gcloud app create
You are creating an app for project [cclab-trial2].
WARNING: Creating an App Engine application for a project is irreversible and the region
cannot be changed. More information about regions is at
<https://cloud.google.com/appengine/docs/locations>.

Please choose the region where you want your App Engine application
located:

 [1] asia-east2
 [2] asia-northeast1
 [3] asia-northeast2
 [4] asia-northeast3
 [5] asia-south1
 [6] asia-southeast2
 [7] australia-southeast1
 [8] europe-west
 [9] europe-west2
 [10] europe-west3
 [11] europe-west6
 [12] northamerica-northeast1
 [13] southamerica-east1
 [14] us-central
 [15] us-east1
 [16] us-east4
 [17] us-west2
 [18] us-west3
 [19] us-west4
 [20] cancel
Please enter your numeric choice:  5

Creating App Engine application in project [cclab-trial2] and region [asia-south1]....done.
Success! The app is now created. Please use `gcloud app deploy` to deploy your first app.

C:\Users\WELCOME>
```

d) List the projects using “gcloud projects list”

```
C:\Users\WELCOME>gcloud projects list
PROJECT_ID    NAME          PROJECT_NUMBER
cclab-trial2  cclab-trial2  28648610465
```

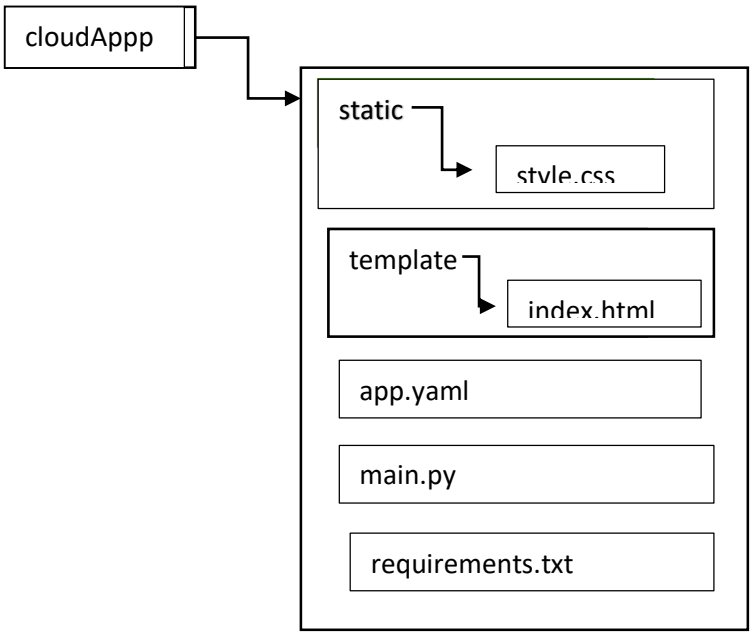
```
C:\Users\WELCOME>gcloud app describe
authDomain: gmail.com
codeBucket: staging.cclab-trial2.appspot.com
databaseType: CLOUD_DATASTORE_COMPATIBILITY
defaultBucket: cclab-trial2.appspot.com
defaultHostname: cclab-trial2.el.r.appspot.com
featureSettings:
  splitHealthChecks: true
  useContainerOptimizedOs: true
gcrDomain: asia.gcr.io
id: cclab-trial2
locationId: asia-south1
name: apps/cclab-trial2
servingStatus: SERVING
```

7)Log into the google cloud console and if the project has been created



8) Create a simple python web application using flask framework

The folder structure is :



app.yaml

```
C:\Users\WELCOME\Desktop\CC lab\cloudApp>type app.yaml
runtime: python38

handlers:
  # This configures Google App Engine to serve the files in the app's static
  # directory.
- url: /static
  static_dir: static

  # This handler routes all requests not caught above to your main app. It is
  # required when static routes are defined, but can be omitted (along with
  # the entire handlers section) when there are no static files defined.
- url: /.*
  script: auto
```

main.py

```
C:\Users\WELCOME\Desktop\CC lab\cloudApp>type main.py
# [START gae_python38_render_template]
import datetime
import time

from flask import Flask, render_template

app = Flask(__name__)


@app.route('/')
def root():

    return render_template('index.html', ser=time.strftime('%A %B, %d %Y %H:%M:%S'))


if __name__ == '__main__':
    # This is used when running locally only. When deploying to Google App
    # Engine, a webserver process such as Gunicorn will serve the app. This
    # can be configured by adding an `entrypoint` to app.yaml.
    # Flask's development server will automatically serve static files in
    # the "static" directory. See:
    # http://flask.pocoo.org/docs/1.0/quickstart/#static-files. Once deployed,
    # App Engine itself will serve those files as configured in app.yaml.
    app.run(host='127.0.0.1', port=8080, debug=True)
# [END gae_python38_render_template]
```

requirements.txt:

```
C:\Users\WELCOME\Desktop\CC lab\cloudApp>type requirements.txt
Flask==1.1.2
C:\Users\WELCOME\Desktop\CC lab\cloudApp>
```

index.html:

```
</html>
C:\Users\WELCOME\Desktop\CC lab\cloudApp\templates>type index.html
<!doctype html>
<html>

<head>
    <link type="text/css" rel="stylesheet" href="{{ url_for('static', filename='style.css') }}">
</head>

<body>

    <h1>Google Cloud app demo</h1>

    <h2>Welcome!!</h2>

    <p>Server time is : </p>
    <p>{{ser}}</p>

</body>

</html>
C:\Users\WELCOME\Desktop\CC lab\cloudApp\templates>
```

style.css:

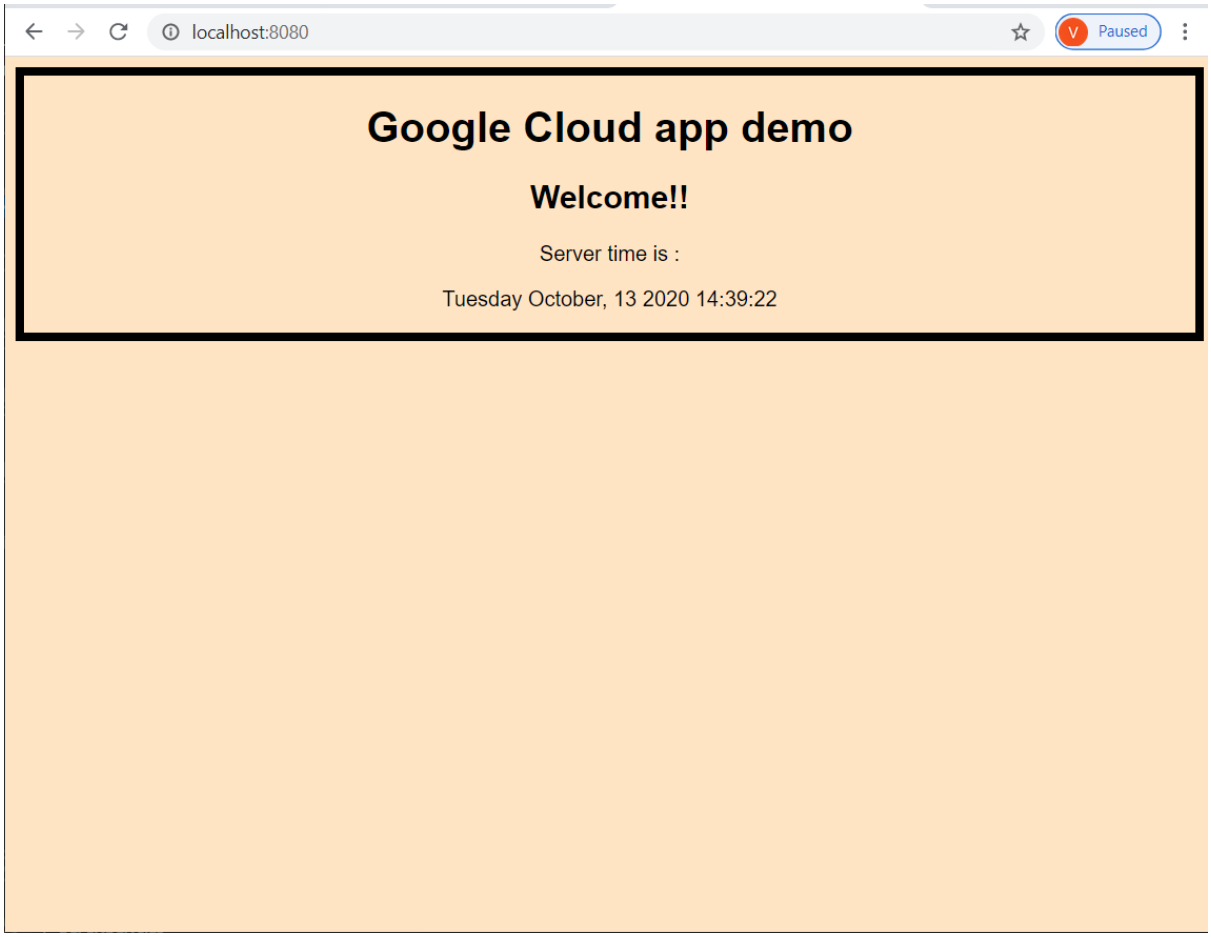
```
C:\Users\WELCOME\Desktop\CC lab\cloudApp\static>type style.css
body {
    font-family: "helvetica", sans-serif;
    text-align: center;
    background-color: bisque;
    border: 5pt solid black;
}
C:\Users\WELCOME\Desktop\CC lab\cloudApp\static>
```

9) Run the web application in local environment

```
PS C:\WINDOWS\system32> python -m venv env
PS C:\WINDOWS\system32> env\Scripts\activate
```

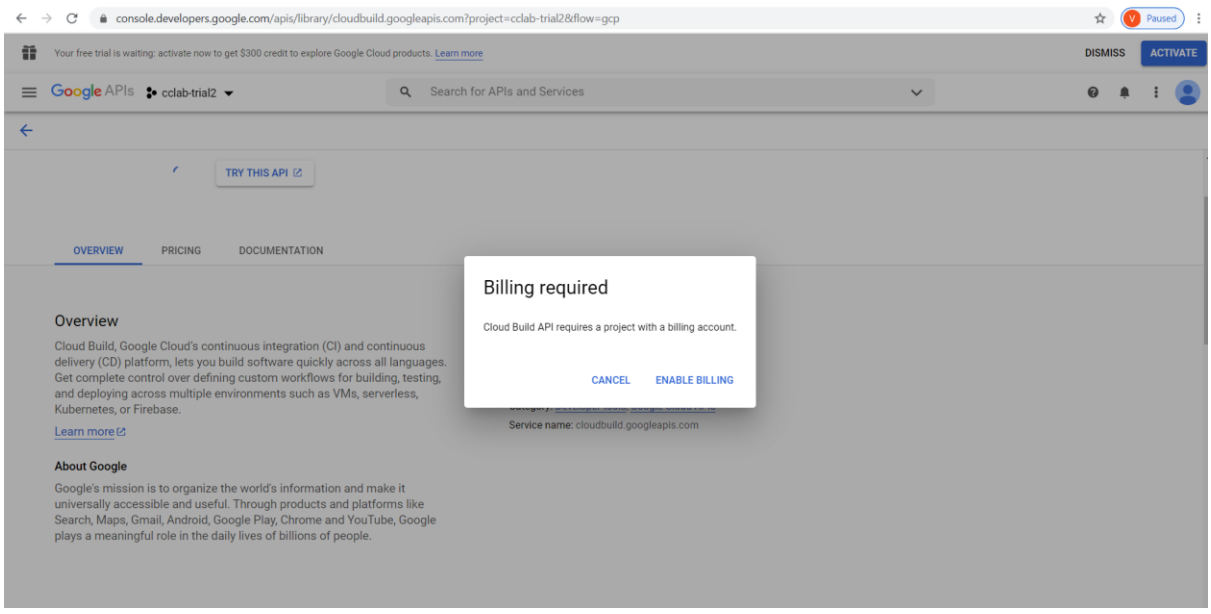
```
(env) PS C:\Users\WELCOME\Desktop\CC lab\cloudApp> pip install -r requirements.txt
Collecting Flask==1.1.2
  Using cached Flask-1.1.2-py2.py3-none-any.whl (94 kB)
Collecting click>=5.1
  Using cached click-7.1.2-py2.py3-none-any.whl (82 kB)
Collecting Werkzeug>=0.15
  Using cached Werkzeug-1.0.1-py2.py3-none-any.whl (298 kB)
Collecting Jinja2>=2.10.1
  Using cached Jinja2-2.11.2-py2.py3-none-any.whl (125 kB)
Collecting itsdangerous>=0.24
  Using cached itsdangerous-1.1.0-py2.py3-none-any.whl (16 kB)
Collecting MarkupSafe>=0.23
  Downloading MarkupSafe-1.1.1-cp37-cp37m-win_amd64.whl (16 kB)
Installing collected packages: click, Werkzeug, MarkupSafe, Jinja2, itsdangerous, Flask
Successfully installed Flask-1.1.2 Jinja2-2.11.2 MarkupSafe-1.1.1 Werkzeug-1.0.1 click-7.1.2 itsdangerous-1.1.0
WARNING: You are using pip version 20.1.1; however, version 20.2.3 is available.
You should consider upgrading via the 'c:\windows\system32\env\scripts\python.exe -m pip install --upgrade pip' command.

(env) PS C:\Users\WELCOME\Desktop\CC lab\cloudApp>
```

```
(env) PS C:\Users\WELCOME\Desktop\CC lab\cloudApp> python main.py
 * Serving Flask app "main" (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production deployment.
   Use a production WSGI server instead.
 * Debug mode: on
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 292-035-825
 * Running on http://127.0.0.1:8080/ (Press CTRL+C to quit)
127.0.0.1 - - [11/Oct/2020 23:57:28] "[37mGET / HTTP/1.1[0m" 200 -
127.0.0.1 - - [11/Oct/2020 23:57:28] "[37mGET /static/style.css HTTP/1.1[0m" 200 -
127.0.0.1 - - [11/Oct/2020 23:57:28] "[37mGET /static/script.js HTTP/1.1[0m" 200 -
127.0.0.1 - - [11/Oct/2020 23:57:28] "[33mGET /favicon.ico HTTP/1.1[0m" 404 -
```



9) Deploy using “gcloud app deploy”

```
C:\Users\WELCOME\Desktop\CC lab\cloudApp>gcloud app deploy
Services to deploy:

descriptor:      [C:\Users\WELCOME\Desktop\CC lab\cloudApp\app.yaml]
source:          [C:\Users\WELCOME\Desktop\CC lab\cloudApp]
target project:  [cclab-trial2]
target service:  [default]
target version:  [20201013t144225]
target url:      [https://cclab-trial2.el.r.appspot.com]


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

Beginning deployment of service [default]...
Created .gcloudignore file. See `gcloud topic gcloudignore` for details.
#============================================================#
#= Uploading 638 files to Google Cloud Storage              =#
#============================================================#
File upload done.
Updating service [default]...failed.
ERROR: (gcloud.app.deploy) Error Response: [7] Access Not Configured. Cloud Build has not been used in project cclab-tri
al2 before or it is disabled. Enable it by visiting https://console.developers.google.com/apis/api/cloudbuild.googleapis
.com/overview?project=cclab-trial2 then retry. If you enabled this API recently, wait a few minutes for the action to pr
opagate to our systems and retry.

C:\Users\WELCOME\Desktop\CC lab\cloudApp>
```



Since billing account is required, the app couldn’t be deployed.