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## Deploy Machine Learning Model in Google Cloud Platform Using Flask — Part 3



Machine Learning Model Deployment

### Load data, train model and save model — part 1

If you have not completed this part please go through below link

[Deploy Machine Learning Model in Google Cloud Platform Using Flask — Part 1](#)

### Create Flask application — part 2

[Deploy Machine Learning Model in Google Cloud Platform Using Flask — Part 2](#)

### Install Google Cloud Installer in your system

Google Cloud SDK is a set of tools that you can use to manage resources and applications hosted on Google Cloud. These tools include the `gcloud`, `gsutil`, and `bq` command-line tools.

### Download and Install Google Cloud SDK from below link:

<https://dl.google.com/dl/cloudsdk/channels/rapid/GoogleCloudSDKInstaller.exe>

### Create requirements.txt file

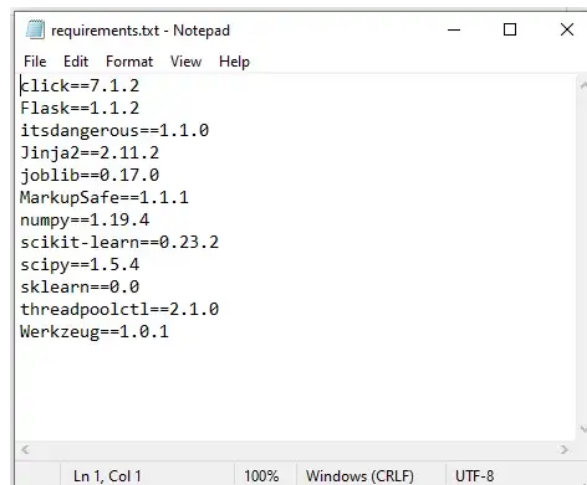
To get all the dependencies for the virtual environment, which is required for our project.

Go to project folder, activate your virtual environment after that run below command.

```
F:  
cd F:\python-projects\flask-projects\sales-app  
sales-app-venv\Scripts\activate.bat # activate the virtual  
environment  
pip freeze > requirements.txt
```

```
C:\Users\Nutan>F:  
F:\>cd F:\python-projects\flask-projects\sales-app  
F:\python-projects\flask-projects\sales-app>sales-app-venv\Scripts\activate.bat  
(sales-app-venv) F:\python-projects\flask-projects\sales-app>pip freeze > requirements.txt  
(sales-app-venv) F:\python-projects\flask-projects\sales-app>
```

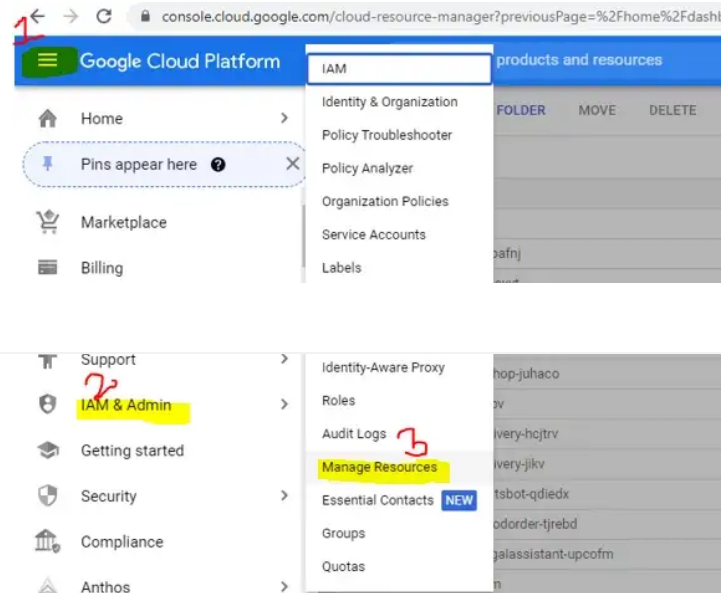
pip freeze command will create requirements.txt file in project root folder. You can open requirements.txt and see required modules.



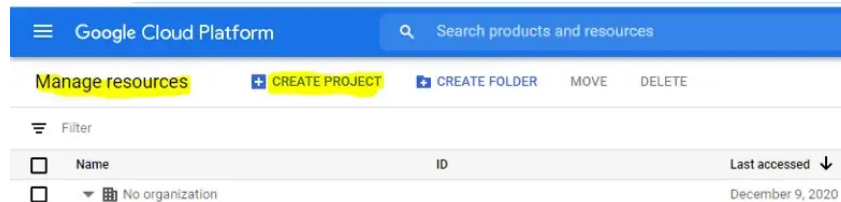
## Create project in Google Cloud Platform

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

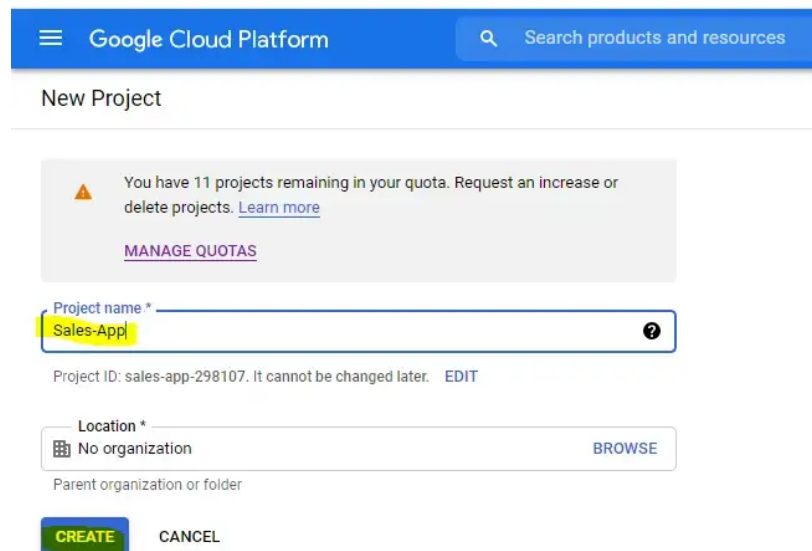
Click on menu icon -> IAM & Admin -> Manage Resources



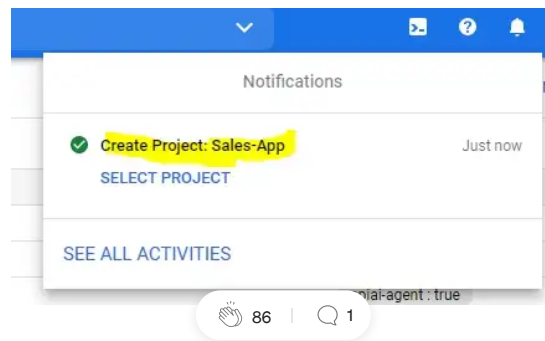
Next screen will show like below:



Click on “CREATE PROJECT” -> Enter project name -> click on CREATE



Next screen should get like below:



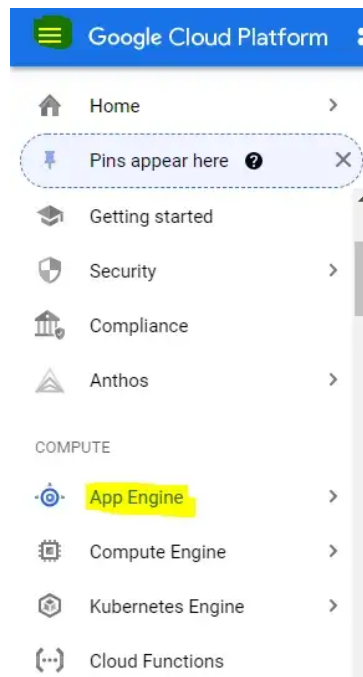
Project created successfully.

### What is App Engine?

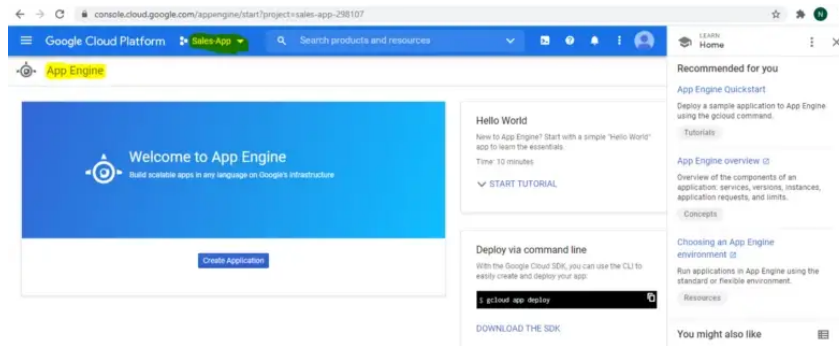
App Engine standard environment makes it easy to build and deploy an application that runs reliably under heavy load and with large amounts of data.

Your application runs within its own secure, reliable environment that is independent of the hardware, operating system, or physical location of the server.

**We can view created project in App Engine.**



Next screen will show like below:



### Create app.yaml Configuration File in project root folder

We need to configure App Engine app's settings in the app.yaml file. The app.yaml file also contains information about your app's code, such as the runtime and the latest version identifier.

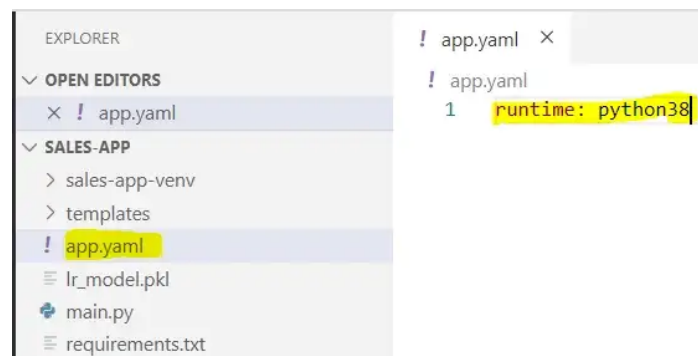
Each service in your app will have its own app.yaml file, which acts as a descriptor for its deployment.

Generally, app.yaml file requires only the runtime element for a simple Python 3 app in the standard environment, like:

runtime: python38 # or python37 for Python 3.7

### Create app.yaml file in root project folder and write following code in that:

```
runtime: python38
```



## Deploying the Flask application

### Initialize Google Cloud in your project

“gcloud init” command to perform initial setup tasks.

### gcloud init performs the following setup steps:

1. Authorizes Cloud SDK tools to use your user account credentials to access Google Cloud, or lets you select an account if you have previously authorized

access

2. Sets up a Cloud SDK configuration and sets a base set of properties, including the active account from the step above, the current project, and if applicable, the default Google Compute Engine region and zone.

**Open Google Cloud SDK Shell in your system, go to project folder and type below command**

```
F:
cd F:\python-projects\flask-projects\sales-app
gcloud init
```

```
F:\python-projects\flask-projects\sales-app>gcloud init
"cd\Program" is not recognized as an internal or external command,
operable program or batch file.
Python was not found; run without arguments to install from the Microsoft Store, or disable this shortcut from Settings > Manage App Execution Aliases.
"cd\Program" is not recognized as an internal or external command,
operable program or batch file.
Python was not found; run without arguments to install from the Microsoft Store, or disable this shortcut from Settings > Manage App Execution Aliases.
Welcome! This command will take you through the configuration of gcloud.

Settings from your current configuration [default] are:
accessibility:
  screen_reader: 'false'
core:
  account: nutanthakur3101@gmail.com
  disable_usage_reporting: 'false'
  project: sales-app-298107

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

Your current configuration has been set to: [default]

You can skip diagnostics next time by using the following flag:
  gcloud init --skip-diagnostics

Network diagnostic detects and fixes local network connection issues.
Checking network connection...done.
Reachability Check passed.
Network diagnostic passed (1/1 checks passed).
```

It will ask to “Pick Configuration to use” -> Choose option 1 if you are already logged in. Otherwise type 2 to Log in with a new account.

```
Choose the account you would like to use to perform operations for
this configuration:
[1] nutanthakur3101@gmail.com
[2] Log in with a new account
Please enter your numeric choice: 1

You are logged in as: [nutanthakur3101@gmail.com].

Pick cloud project to use:
[1] bikerepair-ghfidq
[2] bikerepair-hbfwlu
[3] coffee-shop-juhaco
[4] faq-ojrnby
[5] food-delivery-hcjtrv
[6] food-delivery-jikv
[7] onlineeatsbot-qdiedx
[8] onlinefoodorder-tjrebd
[9] onlinelegalassistant-upcofm
[10] sales-app-298107
[11] test-raam
[12] xvagent-fqthmu
[13] xvbikerepair-w9pr
[14] xvtest-spafnj
[15] Create a new project
Please enter numeric choice or text value (must exactly match list
item): 10

Your current project has been set to: [sales-app-298107].

Not setting default zone/region (this feature makes it easier to use
[gcloud compute] by setting an appropriate default value for the
--zone and --region flag).
See https://cloud.google.com/compute/docs/gcloud-compute section on how to set
default compute region and zone manually. If you would like [gcloud init] to be
able to do this for you the next time you run it, make sure the
Compute Engine API is enabled for your project on the
https://console.developers.google.com/apis page.
```

You need type your project number which you want to deploy. Here i typed 10 as my project is sales-app-298107.

## Deploy the application

Deploy your application to App Engine using the “gcloud app deploy” command.

If you want you can add project id like screenshot:

```
gcloud app deploy --project sales-app-298107
```

```
F:\python-projects\flask-projects\sales-app>gcloud app deploy --project sales-app-298107
"C:\Program" is not recognized as an internal or external command,
operable program or batch file.
Python was not found; run without arguments to install from the Microsoft Store, or disable this shortcut from Settings > Manage App Execution Aliases.
"C:\Program" is not recognized as an internal or external command,
operable program or batch file.
Python was not found; run without arguments to install from the Microsoft Store, or disable this shortcut from Settings > Manage App Execution Aliases.
You are creating an app for project [sales-app-298107].
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-central1
[15] us-east1
[16] us-east4
[17] us-west2
[18] us-west3
[19] us-west4
[20] cancel
Please enter your numeric choice: 5
```

It will ask to “Choose a region you want your App Engine application”. You can choose according to your choice, i have used 5. It will take some time to deploy, till the time you need to wait.

```
Creating App Engine application in project [sales-app-298107] and region [asia-south1]...done.
Services to deploy:

descriptor:      [F:\python-projects\flask-projects\sales-app\app.yaml]
source:          [F:\python-projects\flask-projects\sales-app]
target project:  [sales-app-298107]
target service:  [default]
target version:  [20201209t131552]
target url:      [https://sales-app-298107.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 4378 files to Google Cloud Storage      =#
=====
File upload done.
Updating service [default]...done.
Setting traffic split for service [default]...done.
Deployed service [default] to [https://sales-app-298107.el.r.appspot.com]

You can stream logs from the command line by running:
$ gcloud app logs tail -s default

To view your application in the web browser run:
$ gcloud app browse
```

We can see project deployed successfully. Deployed url is

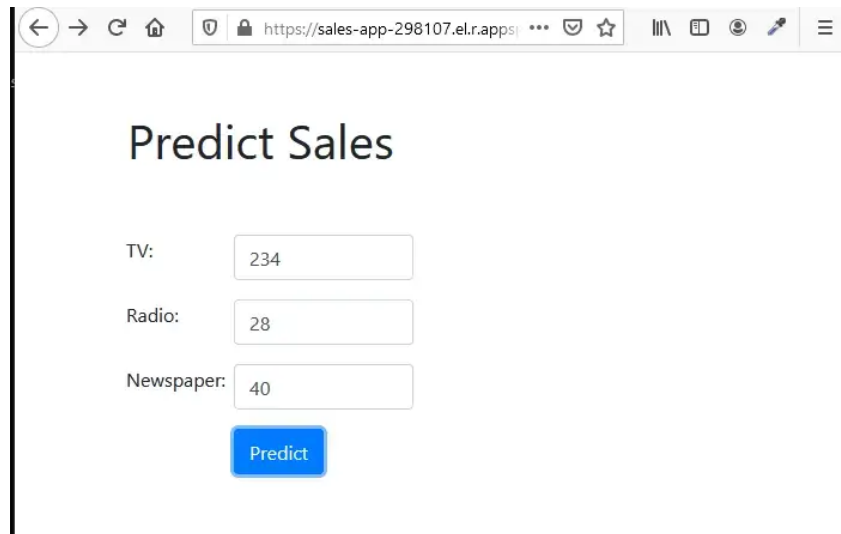
<https://sales-app-298107.el.r.appspot.com/>

## Let us browse deployed url and predict

Open deployed url in browser.

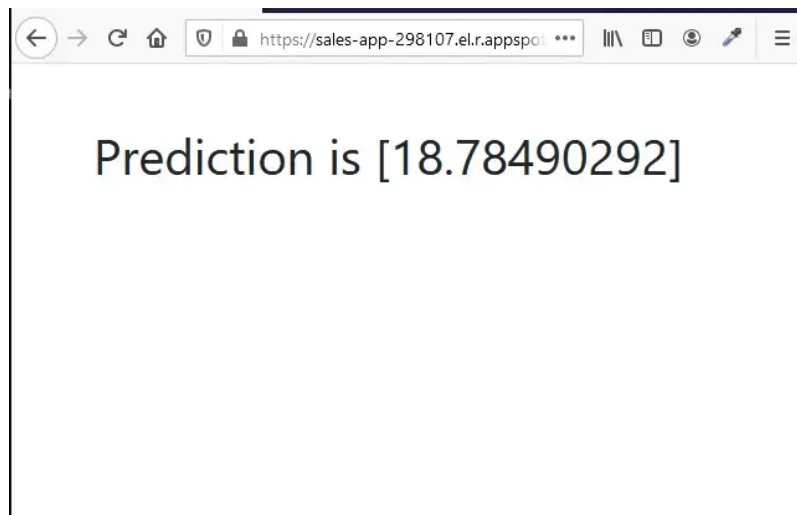
<https://sales-app-298107.el.r.appspot.com/>

Fill the form and click on Predict



The screenshot shows a web browser window with the URL `https://sales-app-298107.el.r.appspot.com`. The page has a title "Predict Sales". Below the title, there are three input fields: "TV:" with the value "234", "Radio:" with the value "28", and "Newspaper:" with the value "40". Below these fields is a blue button labeled "Predict".

Prediction will show like below:



The screenshot shows the same web browser window, but the page content has changed to display "Prediction is [18.78490292]" in a large, bold font.

**This flask application was deployed for training purpose.**

It has been deleted to avoid billing from Google Cloud.

ML Model Deployment

Model Deployment Flask

ML Deployment On Gcp

Google Cloud Platform

ML Flask Deployment



