“Text Image to Text Converter Using Google Cloud platform and Vision API”

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-It is a small article on text image to text converter using GCP (Google Cloud Platform) and google Vision API.
It includes:

1. Creating Virtual Machine on Google Cloud Platform.
2. SSH Connection from local machine to VM on Google Cloud Platform.
3. Setting up Vision API credentials.
4. Python code for conversion.

Step 1:
-Create account on Google Cloud Platform.
-Go to https://cloud.google.com/ to open an account.

Step 2:
-After creating account successfully. Go to Compute Engine>VM instances and create VM with Ubuntu OS.

For tutorial on VM Creation check the below link:
https://cloud.google.com/compute/docs/quickstart-linux

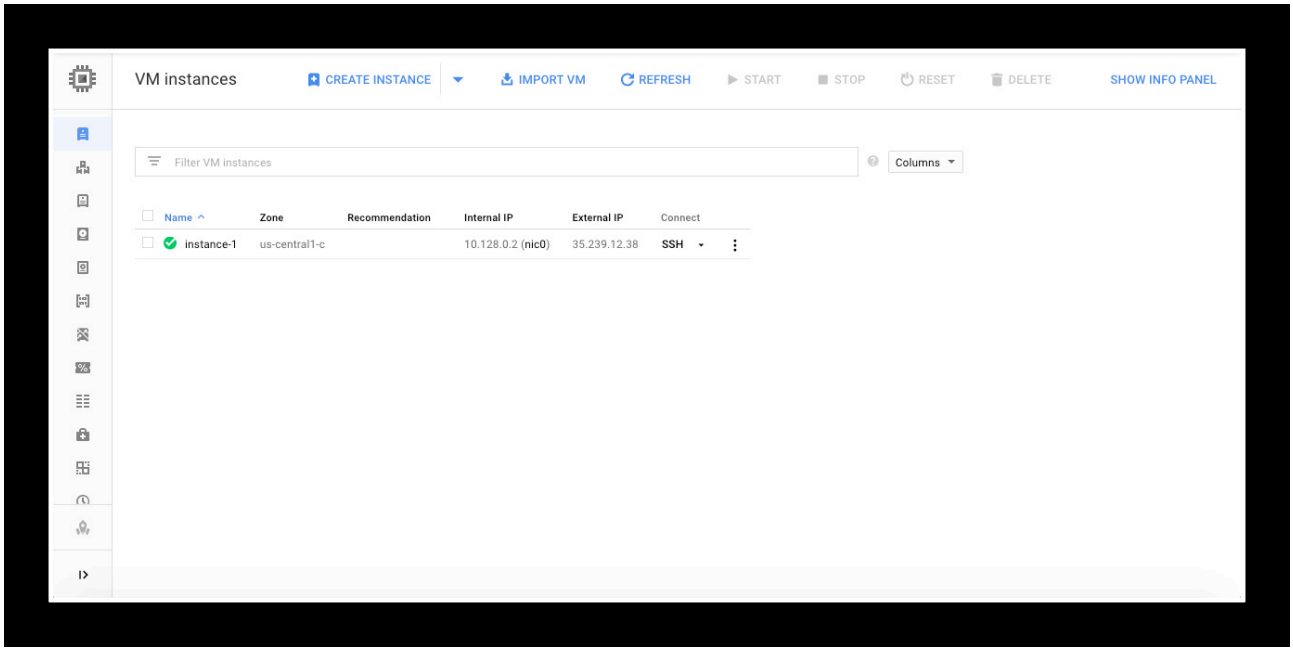
We will use SSH for connecting Local Machine to Cloud VM:

SSH Instructions for Windows User:

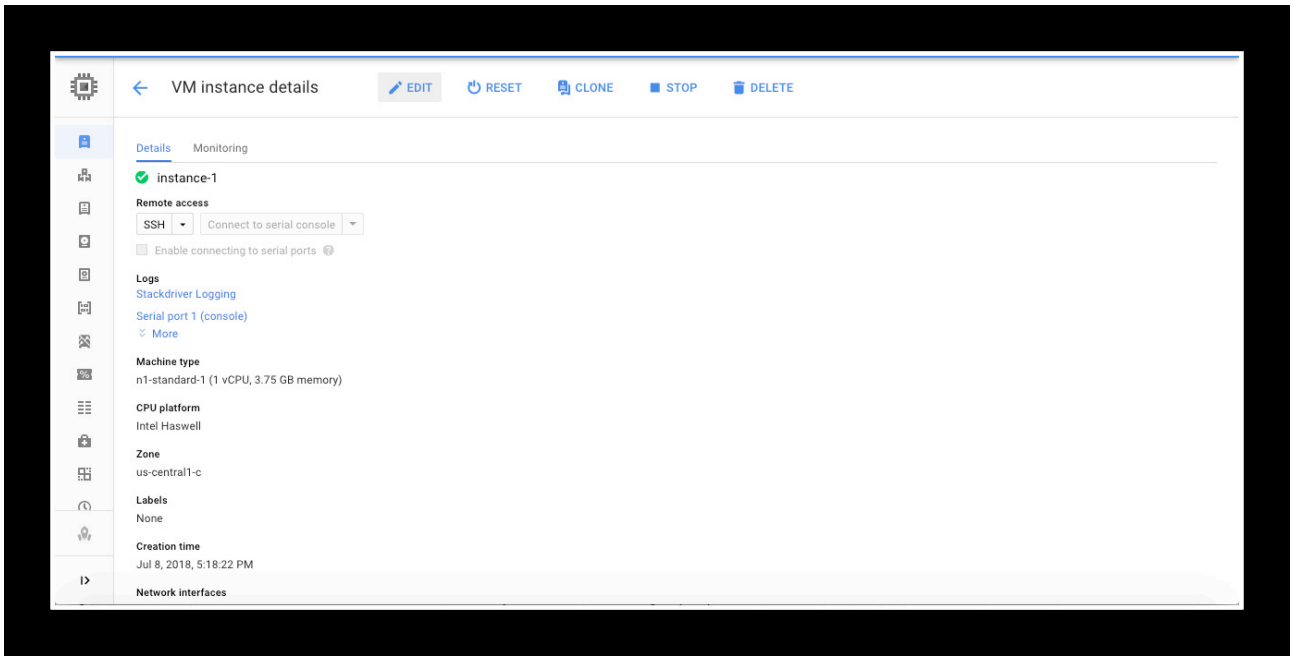
1.Download Putty

2.Open Putty Key Generator
- Click on generate key
- You can change Key Comment field with your project name.
- Copy Complete Key value.

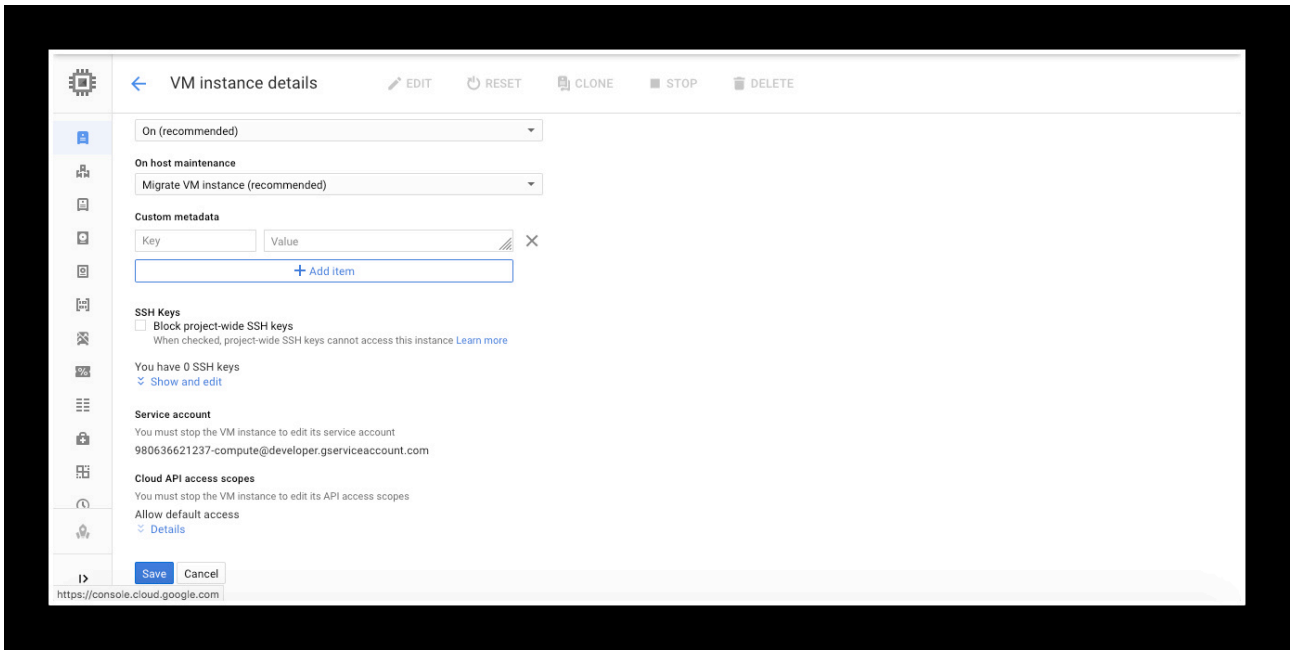
3.Now open VM instance



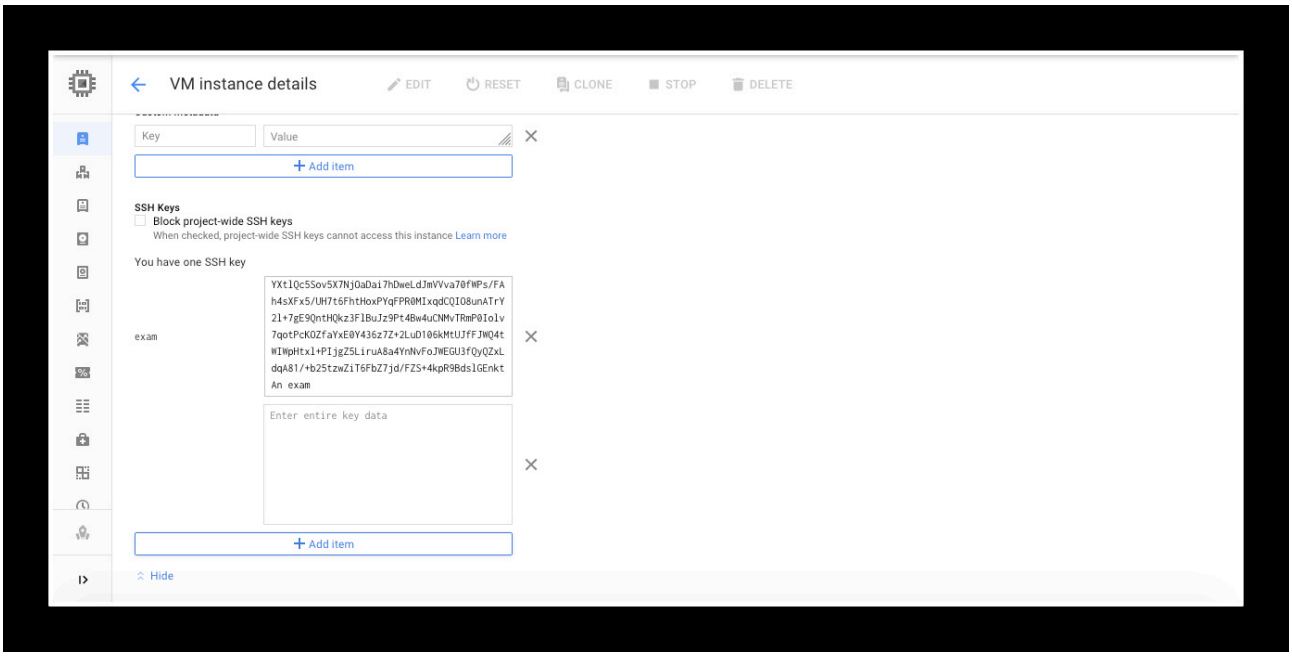
- Click on instance-1(Whatever name you have given to VM instance)



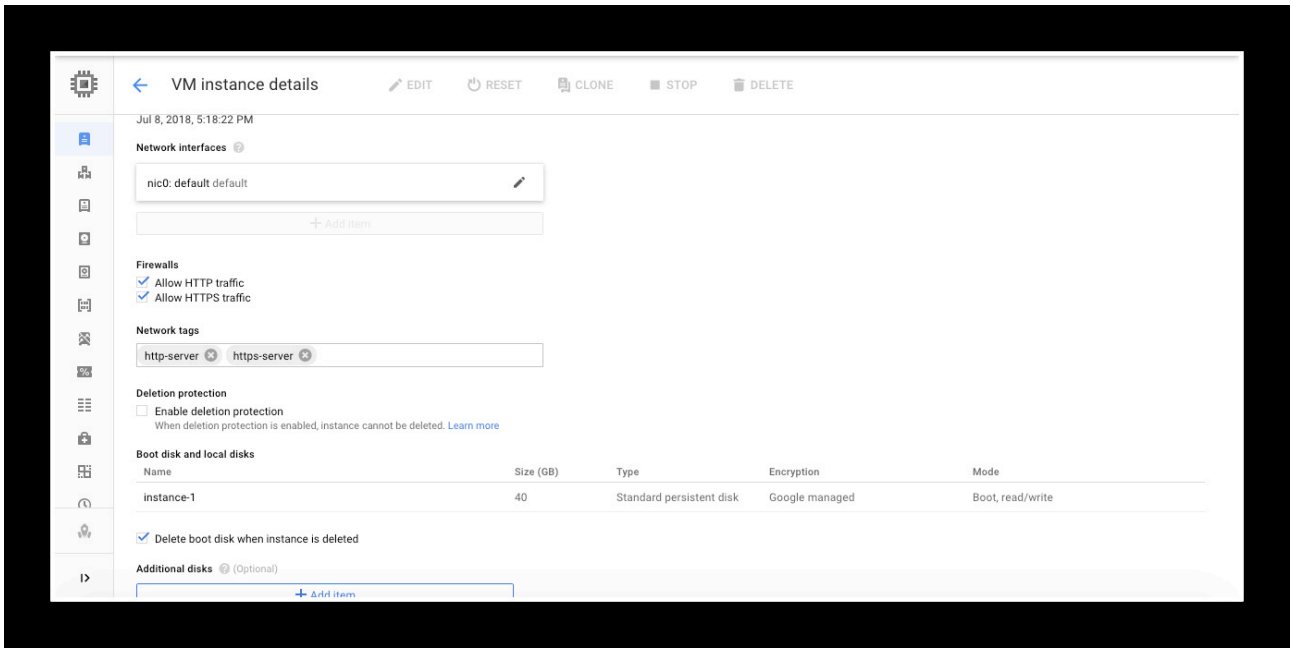
-Click on Edit



-In SSH keys section click on “show and edit” option



-Paste Public key here.



-Allow HTTP and HTTPS traffic and click on save.

4.Save Public and Private keys in Putty Key Generator. (It saves in the form of files)

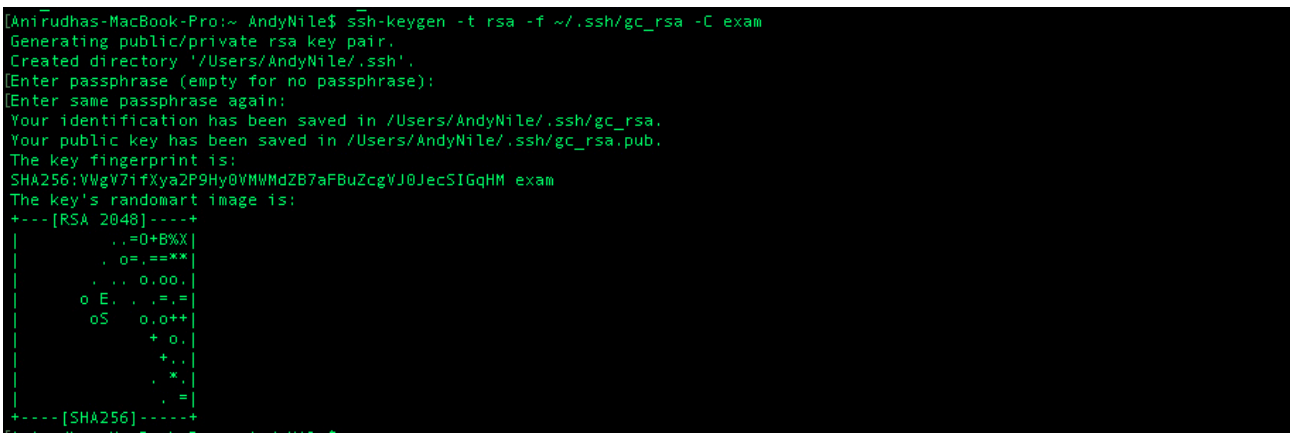
5.In Putty Configuration window go to SSH >Auth and browse private key file that you already saved in your system.

6. In Putty Configuration window go to Session enter external IP address of VM instance and Hit Enter...It's done.....

SSH Instructions for Mac/Linux User:

1.Generating Public key

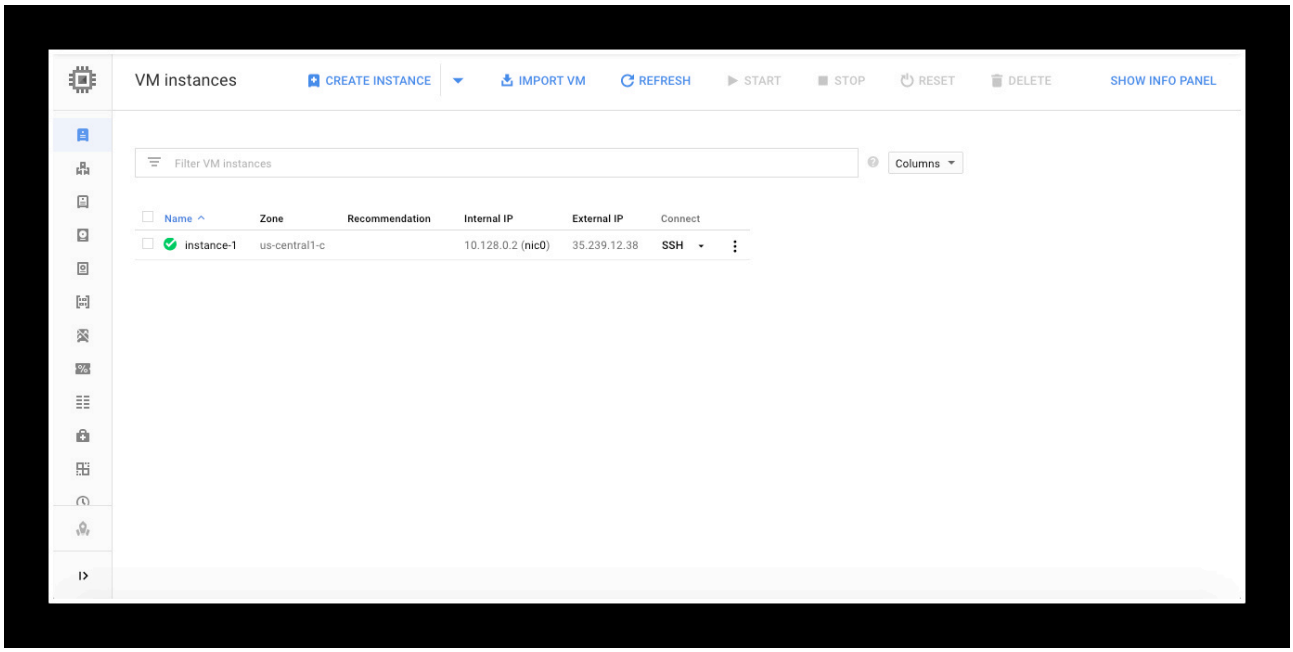
- On CLI enter following command: " ssh-keygen -t rsa -f ~/.ssh/gc_rsa -C exam "
It will create gc_rsa.pub in .ssh folder which contains public key. Where "exam" is project name and "-C" is attribute for comment.



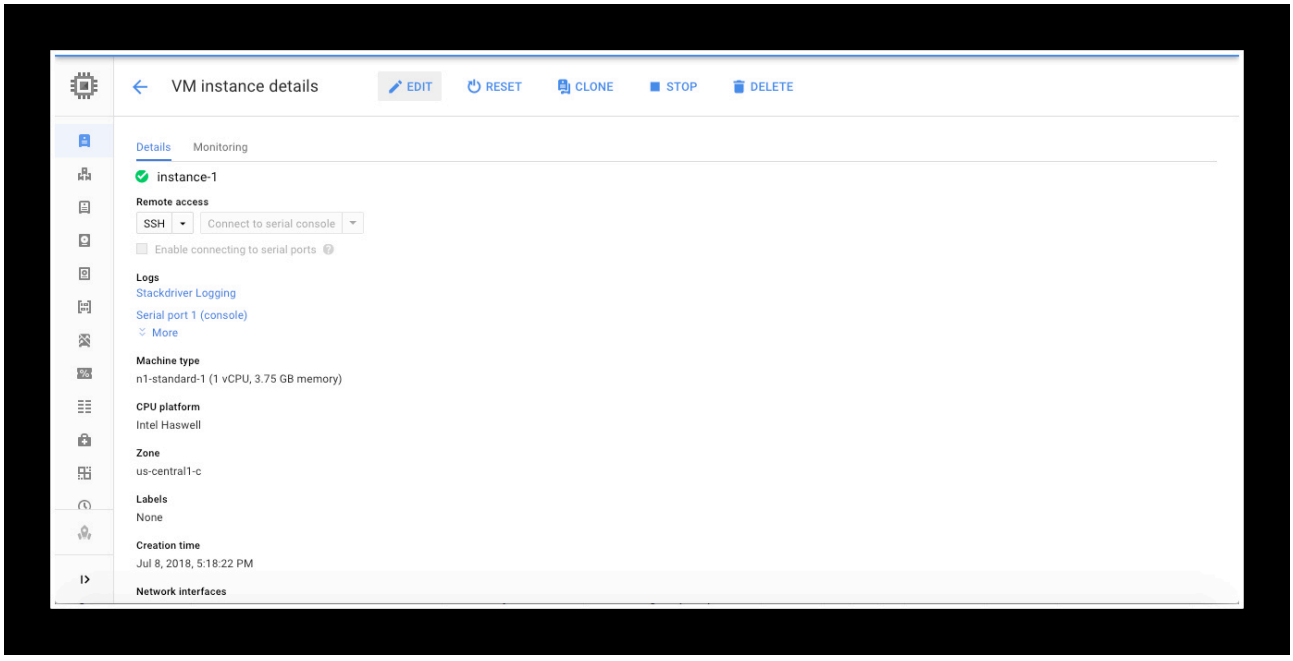
2.Copy public key from gc_rsa.pub file

```
[Anirudhas-MacBook-Pro:~ AndyNile$ cd ~/.ssh
[Anirudhas-MacBook-Pro:.ssh AndyNile$ ls
gc_rsa          gc_rsa.pub
[Anirudhas-MacBook-Pro:.ssh AndyNile$ vi gc_rsa.pub
```

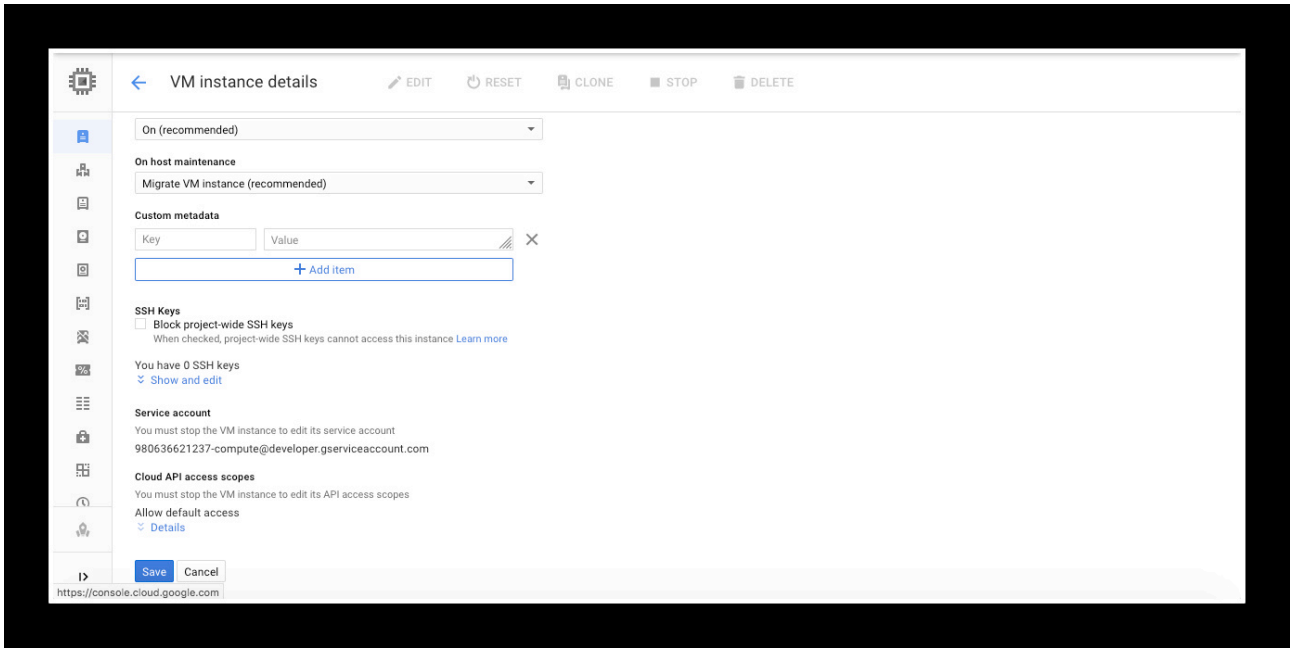
3.Now open VM instance



- Click on instance-1(Whatever name you have given to VM instance)



-Click on Edit



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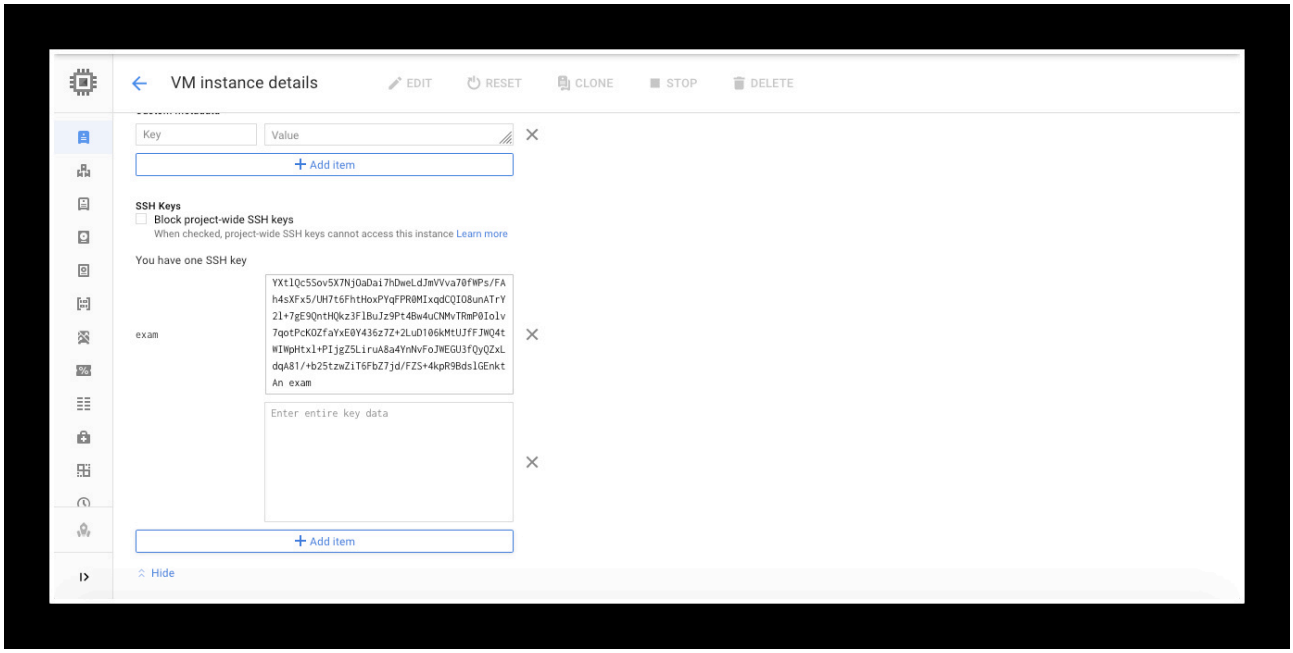
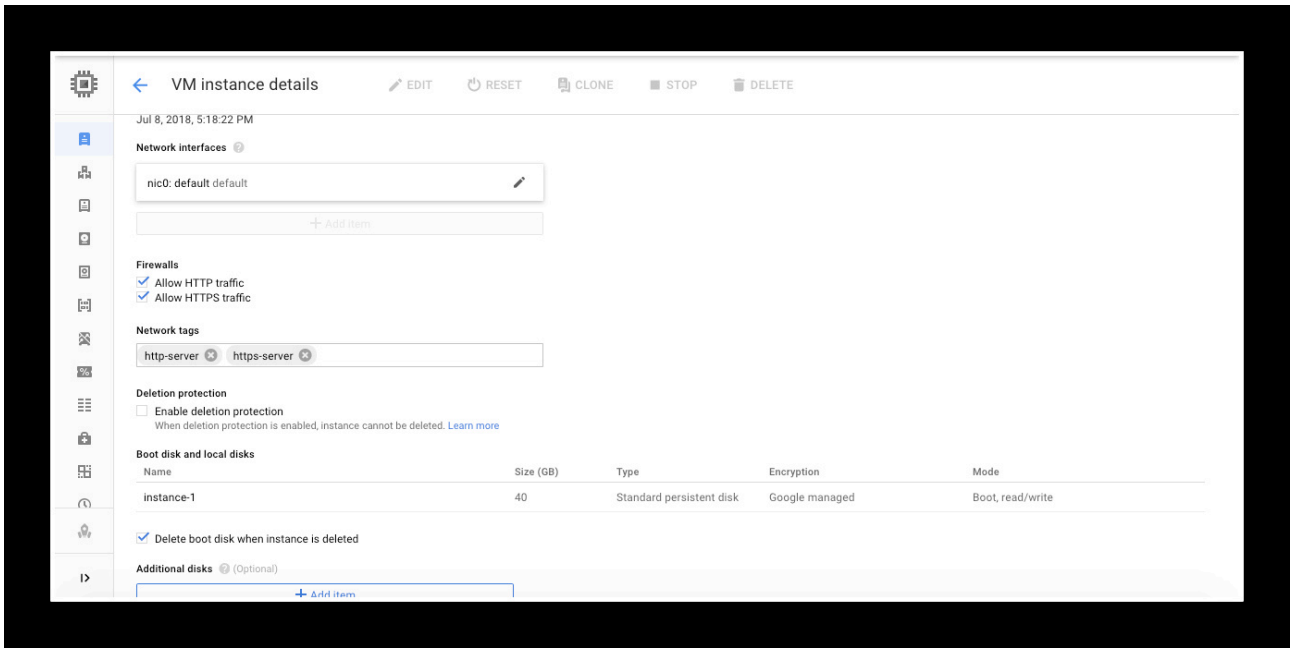


-Paste Public key here and click on save.



-Allow HTTP and HTTPS traffic.

4.Now on CLI enter command “chmod 400 gc_rsa” to give read permission to gc_rsa file.

5.Let’s try connecting this VM instance from your Machine.

On CLI enter command “ssh -i Public_key_Filename GCP_ProjectName @ instance_external_IP”.

```
[Anirudhas-MacBook-Pro:.ssh AndyNile$ ssh -i gc_rsa exam@35.239.12.38
The authenticity of host '35.239.12.38 (35.239.12.38)' can't be established.
ECDSA key fingerprint is SHA256:PgOTmXe6SCmrQO8dNu5RaYKbWJsf5xHs+bLB7S2Fckw.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '35.239.12.38' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 16.04.4 LTS (GNU/Linux 4.13.0-1019-gcp x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

  Get cloud support with Ubuntu Advantage Cloud Guest:
    http://www.ubuntu.com/business/services/cloud

0 packages can be updated.
0 updates are security updates.



The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

WARNING! Your environment specifies an invalid locale.
 The unknown environment variables are:
   LC_CTYPE=UTF-8 LC_ALL=
 This can affect your user experience significantly, including the
 ability to manage packages. You may install the locales by running:

   sudo apt-get install language-pack-UTF-8
     or
   sudo locale-gen UTF-8

To see all available language packs, run:
   apt-cache search "^language-pack-[a-z][a-z]$"
To disable this message for all users, run:
   sudo touch /var/lib/cloud/instance/locale-check.skip

[exam@instance-1:~$ ls
```

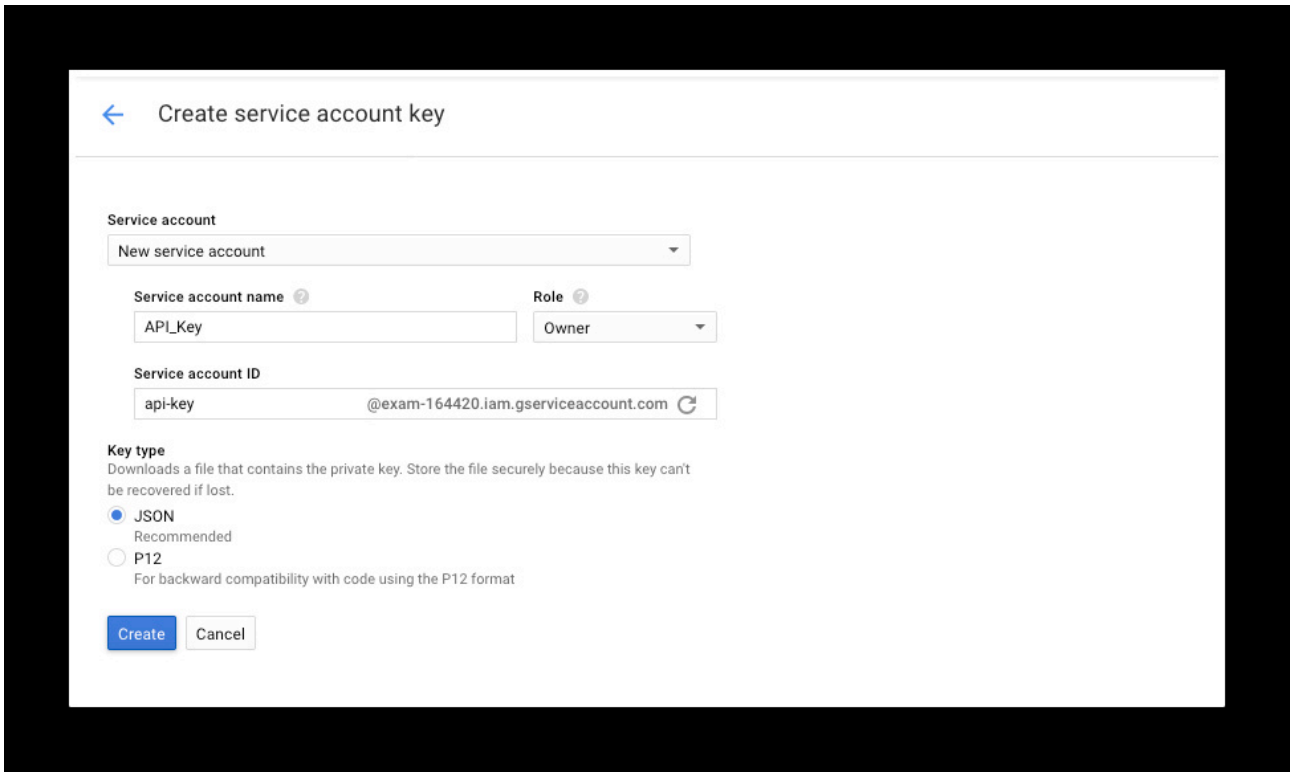
Step 3:

-We are connected to VM instance.
-In VM instance create a directory to install all required files.
-Go into this newly created directory.

-We will install python packages,
" sudo apt-get install python-pip "

-We will install google cloud vision API,
" sudo pip install google-cloud-vision"

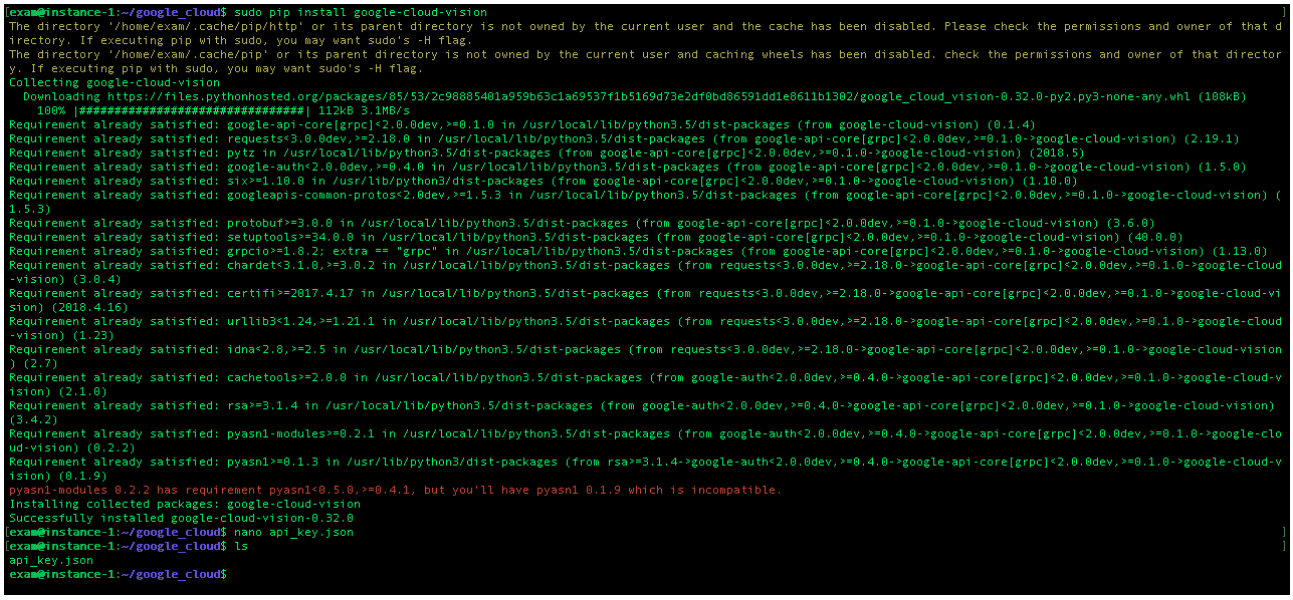
-Now we have to create API Key on GCP. So, go to APIs & Services > Credentials. After that go to Create Credentials > Service Account Key. In Service account key section select service account as new service account and do rest changes as per below screenshot.



After clicking on Create button you will get a .json file. Save that file in local machine.

-Now we have to copy the contents of the downloaded .json file to paste it in our server machine.

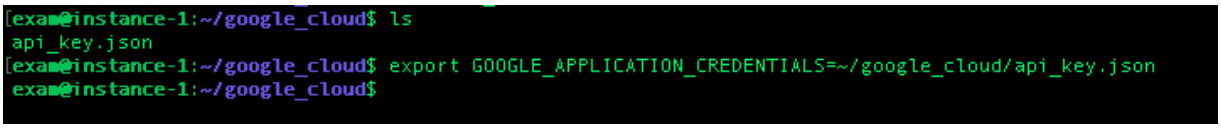
1.Copy contents of .json file.
2.In VM Instance create .json file and paste contents in it.



This .json file contains private key for secure connection to APIs.

-Let's connect to API by using following command:

"export GOOGLE_APPLICATION_CREDENTIALS=~/Path of your .json file"



-After doing this your server may not work even after restart. So now we will update .profile file.
-open .profile file and paste,
"export GOOGLE_APPLICATION_CREDENTIALS=~/Path of your .json file" at the end of file.
-Now to update this change in entire system enter command "source ~/.bashrc".

Step 4:

-Now everything is done at background. Our VM is ready and We installed Vision API on it. It's time to write python code.

-First download the image that you want to convert into text. Use "wget Image_address" to download it from web. (Copy image address by right clicking on image)

For example, This is the input image we want to Convert:


```
exam@instance-1:~/google_cloud$ wget https://www.brainyquote.com/photos_tr/en/h/hjacksonbrownjr/382774/hjacksonbrow
njr1-2x.jpg
--2018-07-21 16:58:28--  https://www.brainyquote.com/photos_tr/en/h/hjacksonbrownjr/382774/hjacksonbrownjr1-2x.jpg
Resolving www.brainyquote.com (www.brainyquote.com)... 104.20.1.186, 104.20.0.186, 2400:cb00:2048:1::6814:1ba, ...
Connecting to www.brainyquote.com (www.brainyquote.com)|104.20.1.186|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 73997 (72K) [image/jpeg]
Saving to: 'hjacksonbrownjr1-2x.jpg'

hjacksonbrownjr1-2x.jpg      100%[=============================================>]  72.26K  --.-KB/s    in 0.02s

2018-07-21 16:58:29 (2.99 MB/s) - 'hjacksonbrownjr1-2x.jpg' saved [73997/73997]

exam@instance-1:~/google_cloud$ ls
api_key.json  hjacksonbrownjr1-2x.jpg
```

############################ converter.py ############################

```
import io

# Imports the Google Cloud client library
from google.cloud import vision
from google.cloud.vision import types

#Instantiates a client
vision_client = vision.ImageAnnotatorClient()

# The name of the image file to annotate
file_name = 'hjacksonbrownjr1-2x.jpg'

# Loads the image into memory
with io.open(file_name,'rb') as image_file:
        content = image_file.read()
        image = types.Image(content=content)

# Performs text detection on the image file
response = vision_client.text_detection(image=image)
texts = response.text_annotations

for text in texts:
        print(text.description)
```

###OUTPUT###

```
exam@instance-1:~/google_cloud$ python converter.py
The best preparation for
tomorrow is doing your best
today.
H. Jackson Brown, Jr.
BrainyQuote
```

And We are done!!!...You can copy this quote and paste anywhere!!!
You can design good user interface or android application on top of it.

Thank You