Contents

GCP account

I have created GCP service account

Then created keys json file and downloaded it.

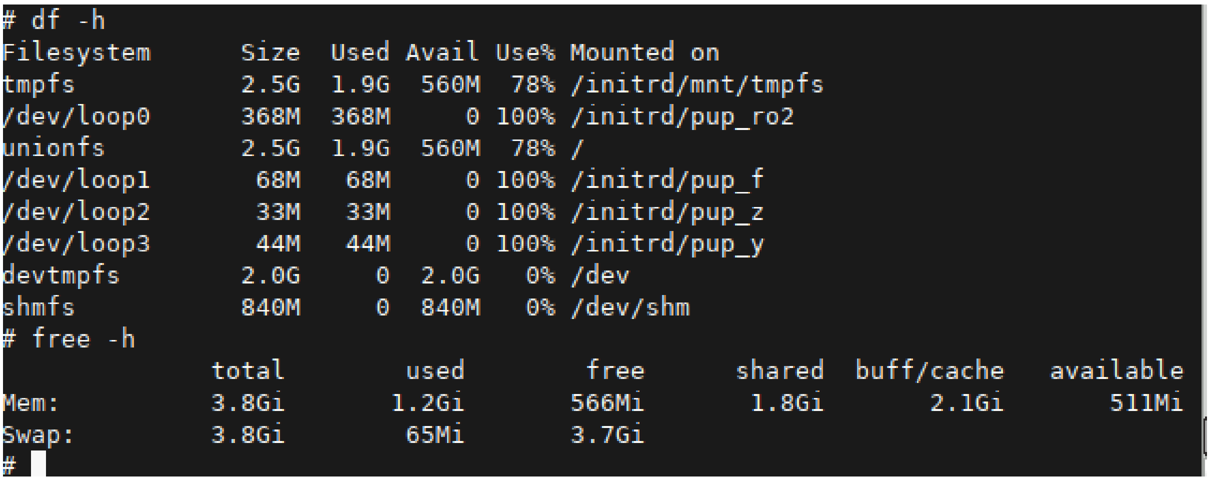
Monitor metrics

Inbuilt commands:

Used TOP command to display the cpu usage monitoring

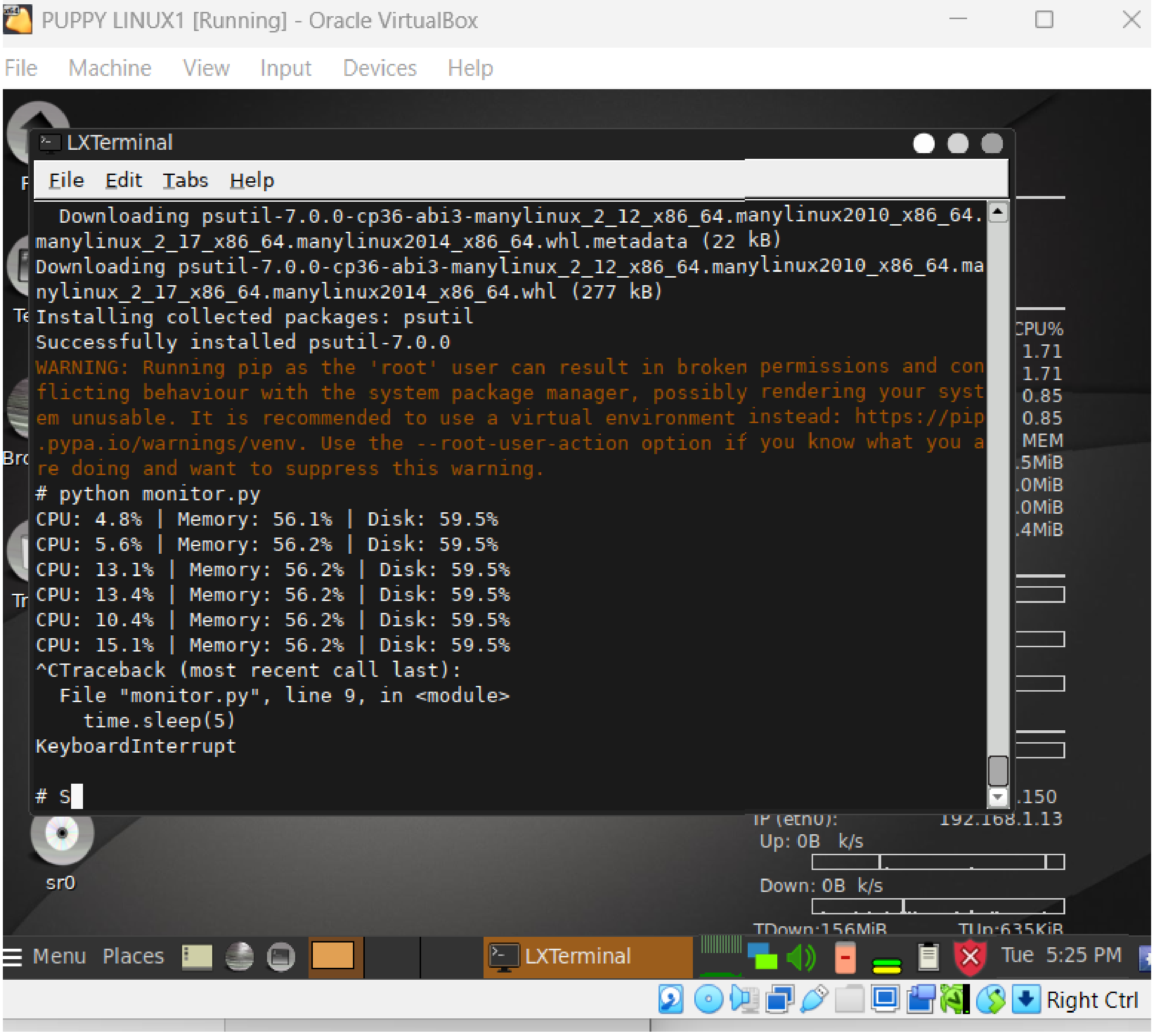
free -h memory usage monitoring

df -h disk usage



```
# df -h
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           2.5G  1.9G  560M  78% /initrd/mnt/tmpfs
/dev/loop0      368M  368M     0 100% /initrd/pup_ro2
unionfs         2.5G  1.9G  560M  78% /
/dev/loop1       68M   68M     0 100% /initrd/pup_f
/dev/loop2       33M   33M     0 100% /initrd/pup_z
/dev/loop3       44M   44M     0 100% /initrd/pup_y
devtmpfs        2.0G     0  2.0G   0% /dev
shmfs           840M     0  840M   0% /dev/shm
# free -h
              total        used        free      shared  buff/cache   available
Mem:          3.8Gi       1.2Gi       566Mi       1.8Gi       2.1Gi       511Mi
Swap:         3.8Gi        65Mi       3.7Gi
# 
```

Custom script



```
  Downloading psutil-7.0.0-cp36-abi3-manylinux_2_12_x86_64.manylinux2010_x86_64.
manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (22 kB)
Downloading psutil-7.0.0-cp36-abi3-manylinux_2_12_x86_64.manylinux2010_x86_64.ma
nylinux_2_17_x86_64.manylinux2014_x86_64.whl (277 kB)
Installing collected packages: psutil
Successfully installed psutil-7.0.0
WARNING: Running pip as the 'root' user can result in broken permissions and con
flicting behaviour with the system package manager, possibly rendering your syst
em unusable. It is recommended to use a virtual environment instead: https://pip
.pypa.io/warnings/venv. Use the --root-user-action option if you know what you a
re doing and want to suppress this warning.
# python monitor.py
CPU: 4.8% | Memory: 56.1% | Disk: 59.5%
CPU: 5.6% | Memory: 56.2% | Disk: 59.5%
CPU: 13.1% | Memory: 56.2% | Disk: 59.5%
CPU: 13.4% | Memory: 56.2% | Disk: 59.5%
CPU: 10.4% | Memory: 56.2% | Disk: 59.5%
CPU: 15.1% | Memory: 56.2% | Disk: 59.5%
^CTraceback (most recent call last):
  File "monitor.py", line 9, in <module>
    time.sleep(5)
KeyboardInterrupt

# s
```

VM Config:

Puppy linux

4 GM RAM

20 GB Disk

Bridged Network Adapter

Install sdk:

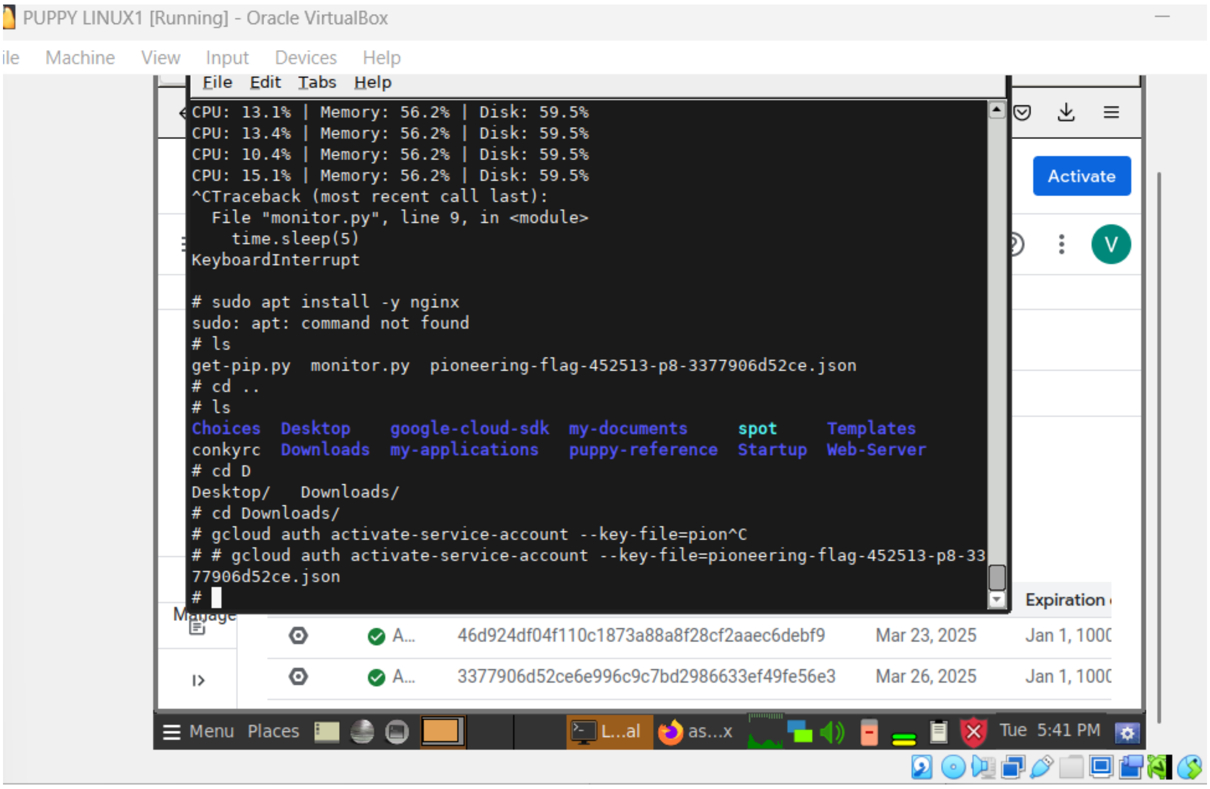
Installed the sdk on my local VM

curl https://sdk.cloud.google.com | bash

~/google-cloud-sdk

exec -l $SHELL

Authenticated



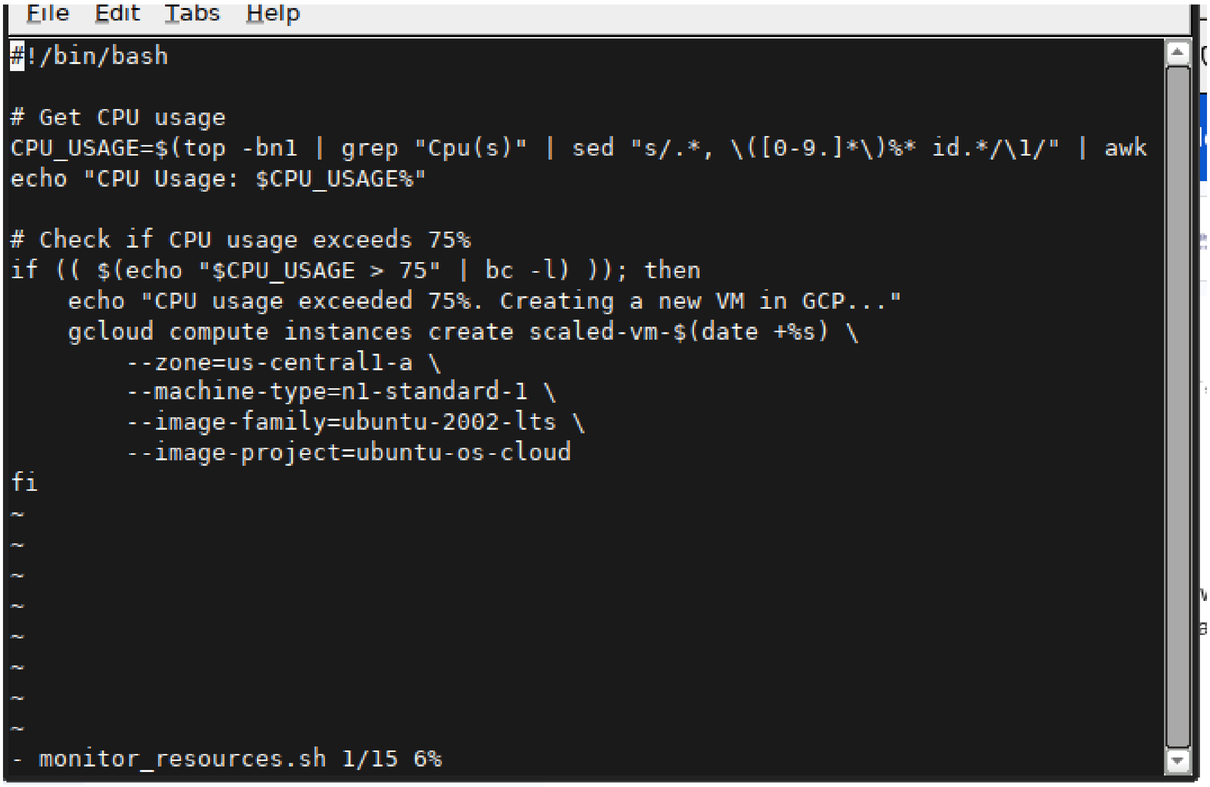
PUPPY LINUX1 [Running] - Oracle VirtualBox
ile Machine View Input Devices Help
File Edit Tabs Help
Activate
V
Manage
Menu Places
L...al
as...x
Tue 5:41 PM

```
CPU: 13.1% | Memory: 56.2% | Disk: 59.5%
CPU: 13.4% | Memory: 56.2% | Disk: 59.5%
CPU: 10.4% | Memory: 56.2% | Disk: 59.5%
CPU: 15.1% | Memory: 56.2% | Disk: 59.5%
^CTraceback (most recent call last):
  File "monitor.py", line 9, in <module>
    time.sleep(5)
KeyboardInterrupt

# sudo apt install -y nginx
sudo: apt: command not found
# ls
get-pip.py  monitor.py  pioneering-flag-452513-p8-3377906d52ce.json
# cd ..
# ls
Choices  Desktop    google-cloud-sdk  my-documents     spot     Templates
conkyrc  Downloads  my-applications   puppy-reference  Startup  Web-Server
# cd D
Desktop/   Downloads/
# cd Downloads/
# gcloud auth activate-service-account --key-file=pion^C
# # gcloud auth activate-service-account --key-file=pioneering-flag-452513-p8-33
77906d52ce.json
# 
```

				Expiration
✓	A...	46d924df04f110c1873a88a8f28cf2aaec6debf9	Mar 23, 2025	Jan 1, 100(
✓	A...	3377906d52ce6e996c9c7bd2986633ef49fe56e3	Mar 26, 2025	Jan 1, 100(

Monitor_resources.sh



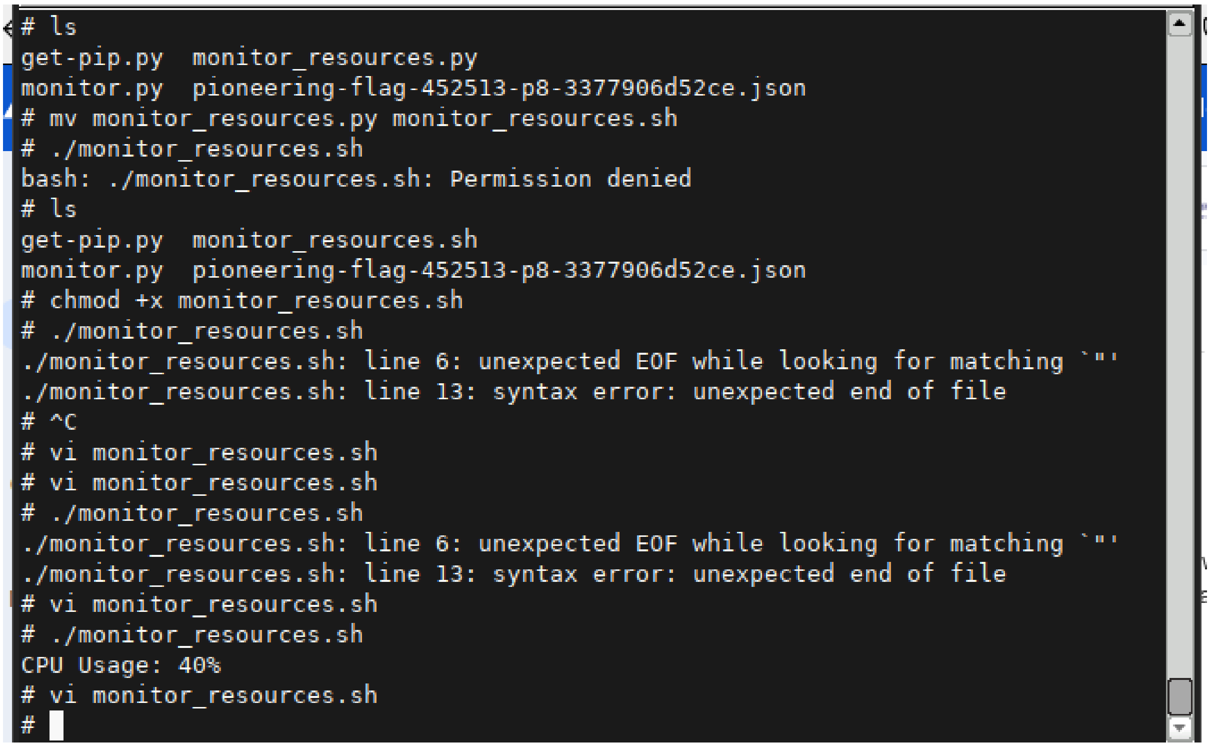
```
#!/bin/bash

# Get CPU usage
CPU_USAGE=$(top -bn1 | grep "Cpu(s)" | sed "s/.*, \([0-9.]*\)%* id.*/\1/" | awk
echo "CPU Usage: $CPU_USAGE%"

# Check if CPU usage exceeds 75%
if (( $(echo "$CPU_USAGE > 75" | bc -l) )); then
    echo "CPU usage exceeded 75%. Creating a new VM in GCP..."
    gcloud compute instances create scaled-vm-$(date +%s) \
        --zone=us-central1-a \
        --machine-type=n1-standard-1 \
        --image-family=ubuntu-2002-lts \
        --image-project=ubuntu-os-cloud
fi
~
~
~
~
~
~
~
~
- monitor_resources.sh 1/15 6%
```

Then execute the shell script

chmod +x monitor_resources.sh

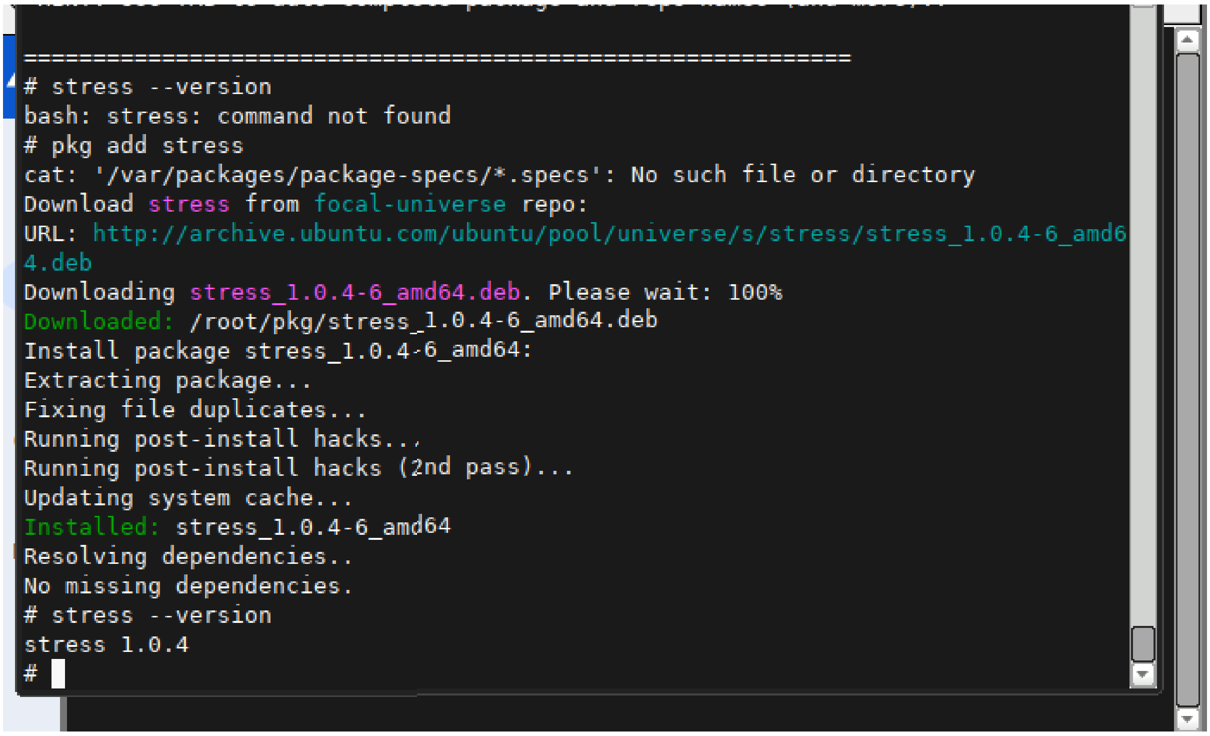


```
# ls
get-pip.py  monitor_resources.py
monitor.py  pioneering-flag-452513-p8-3377906d52ce.json
# mv monitor_resources.py monitor_resources.sh
# ./monitor_resources.sh
bash: ./monitor_resources.sh: Permission denied
# ls
get-pip.py  monitor_resources.sh
monitor.py  pioneering-flag-452513-p8-3377906d52ce.json
# chmod +x monitor_resources.sh
# ./monitor_resources.sh
./monitor_resources.sh: line 6: unexpected EOF while looking for matching `"'
./monitor_resources.sh: line 13: syntax error: unexpected end of file
# ^C
# vi monitor_resources.sh
# vi monitor_resources.sh
# ./monitor_resources.sh
./monitor_resources.sh: line 6: unexpected EOF while looking for matching `"'
./monitor_resources.sh: line 13: syntax error: unexpected end of file
# vi monitor_resources.sh
# ./monitor_resources.sh
CPU Usage: 40%
# vi monitor_resources.sh
# 
```

It says cpu usage is 40%

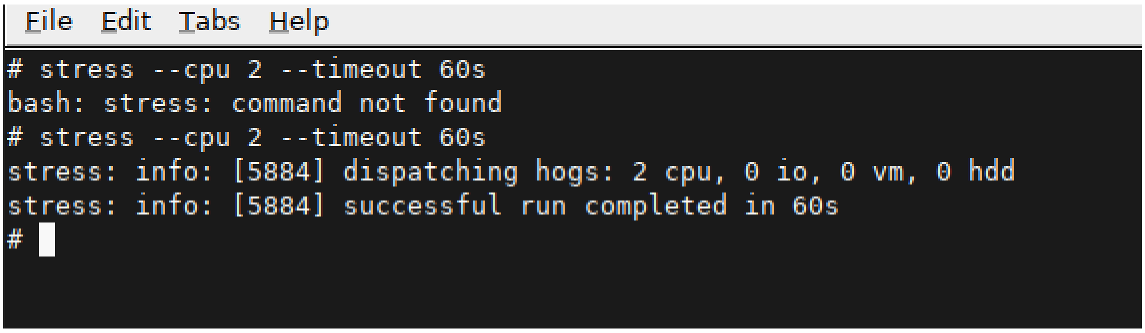
Stress:

pkg add stress



```
============================================================
# stress --version
bash: stress: command not found
# pkg add stress
cat: '/var/packages/package-specs/*.specs': No such file or directory
Download stress from focal-universe repo:
URL: http://archive.ubuntu.com/ubuntu/pool/universe/s/stress/stress_1.0.4-6_amd6
4.deb
Downloading stress_1.0.4-6_amd64.deb. Please wait: 100%
Downloaded: /root/pkg/stress_1.0.4-6_amd64.deb
Install package stress_1.0.4-6_amd64:
Extracting package...
Fixing file duplicates...
Running post-install hacks...
Running post-install hacks (2nd pass)...
Updating system cache...
Installed: stress_1.0.4-6_amd64
Resolving dependencies..
No missing dependencies.
# stress --version
stress 1.0.4
#
```

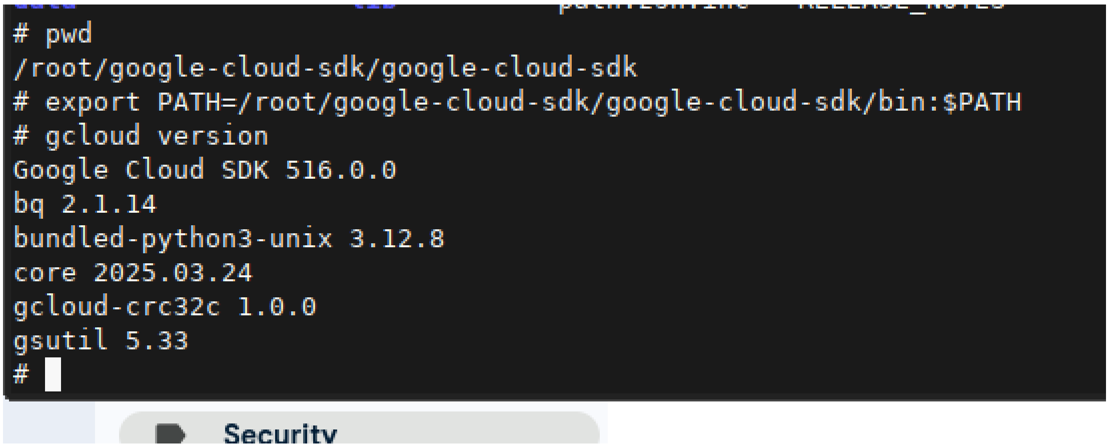
Then run the stress command



```
# stress --cpu 2 --timeout 60s
bash: stress: command not found
# stress --cpu 2 --timeout 60s
stress: info: [5884] dispatching hogs: 2 cpu, 0 io, 0 vm, 0 hdd
stress: info: [5884] successful run completed in 60s
#
```

Then

export PATH=/root/google-cloud-sdk/google-cloud-sdk/bin:$PATH



```
# pwd
/root/google-cloud-sdk/google-cloud-sdk
# export PATH=/root/google-cloud-sdk/google-cloud-sdk/bin:$PATH
# gcloud version
Google Cloud SDK 516.0.0
bq 2.1.14
bundled-python3-unix 3.12.8
core 2025.03.24
gcloud-crc32c 1.0.0
gsutil 5.33
# 
```

Then

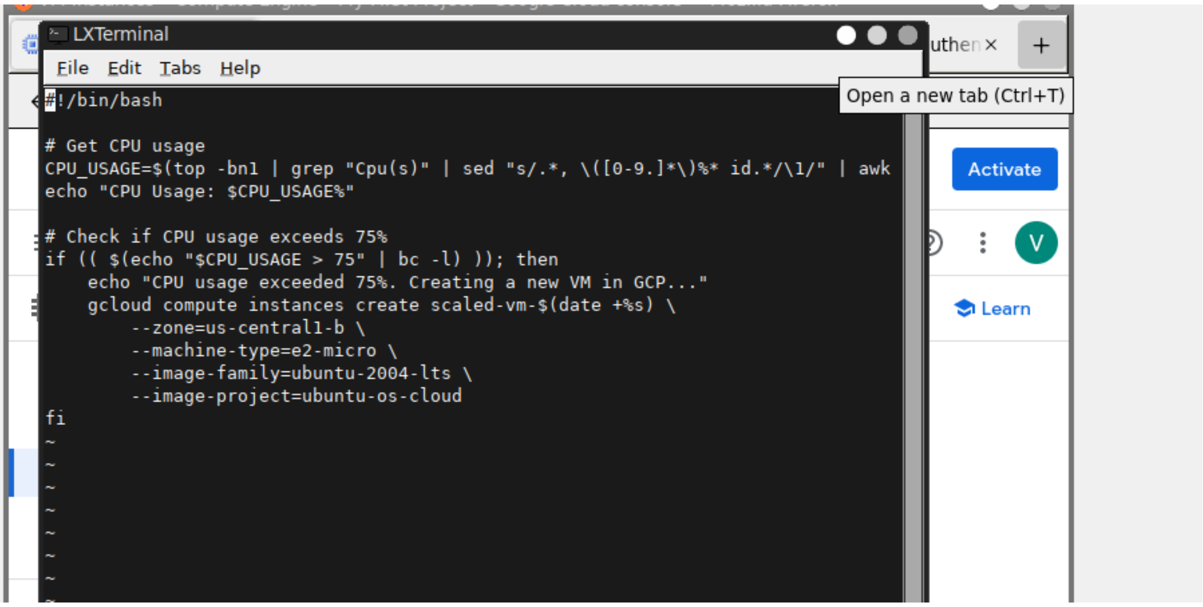
I ran

gcloud init command

and followed the steps

VM Creation when cpu >75%:

Then when I ran the code I have initially got resources not available error. So, I have modified the region as below.

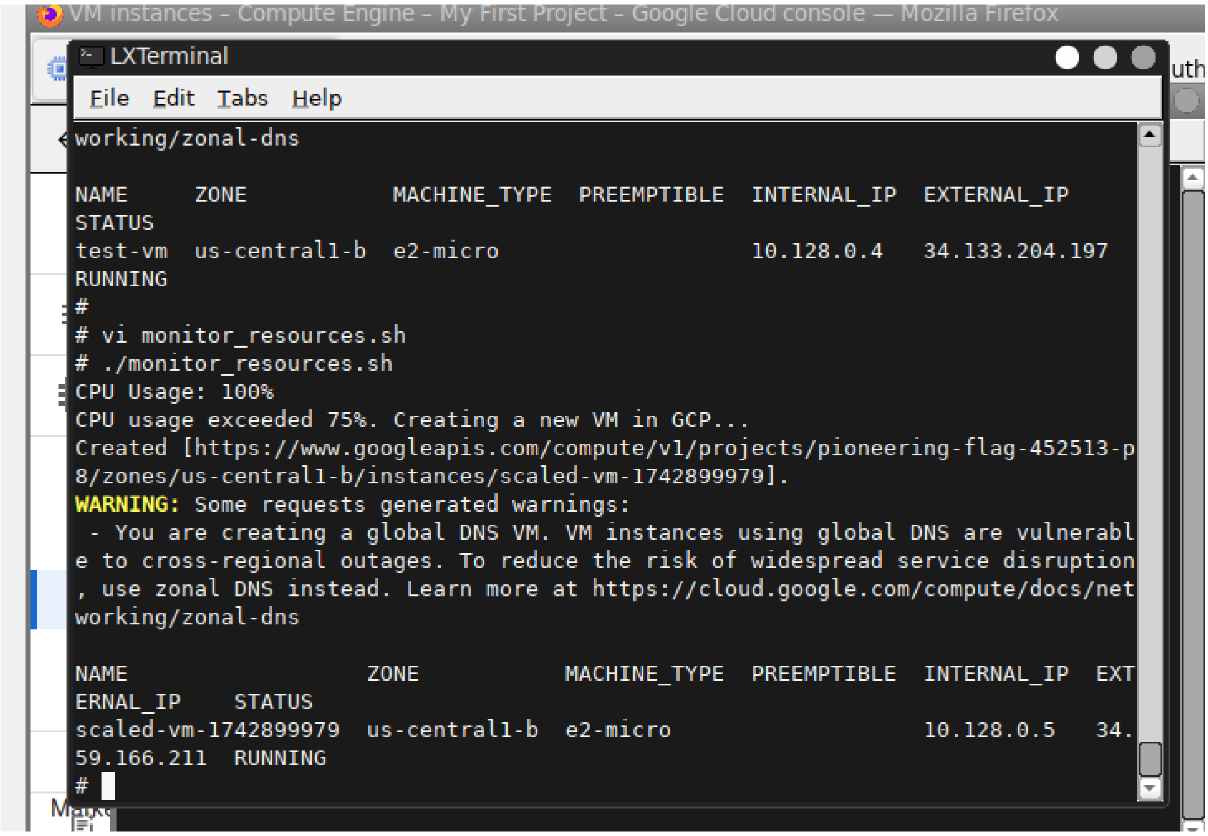


```
#!/bin/bash

# Get CPU usage
CPU_USAGE=$(top -bn1 | grep "Cpu(s)" | sed "s/.*, \([0-9.]*\)%* id.*/\1/" | awk
echo "CPU Usage: $CPU_USAGE%"

# Check if CPU usage exceeds 75%
if (( $(echo "$CPU_USAGE > 75" | bc -l) )); then
    echo "CPU usage exceeded 75%. Creating a new VM in GCP..."
    gcloud compute instances create scaled-vm-$(date +%s) \
        --zone=us-central1-b \
        --machine-type=e2-micro \
        --image-family=ubuntu-2004-lts \
        --image-project=ubuntu-os-cloud
fi
~
~
~
~
~
~
~
```

We can also run it in a loop to check continuously code present in git link

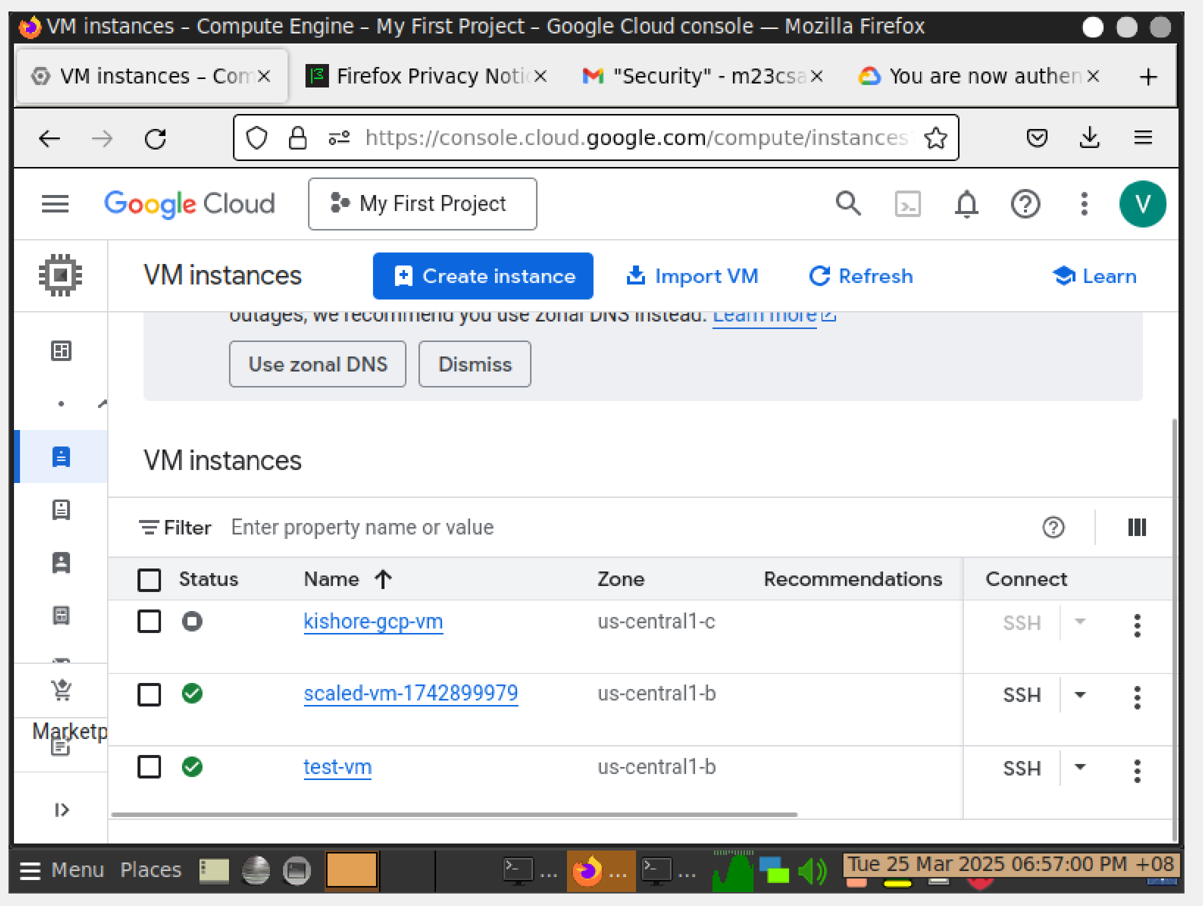

VM instances – Compute Engine – My First Project – Google Cloud console — Mozilla Firefox
LXTerminal
File
Edit
Tabs
Help

```
working/zonal-dns

NAME     ZONE           MACHINE_TYPE  PREEMPTIBLE  INTERNAL_IP  EXTERNAL_IP
STATUS
test-vm  us-central1-b  e2-micro                   10.128.0.4   34.133.204.197
RUNNING
#
# vi monitor_resources.sh
# ./monitor_resources.sh
CPU Usage: 100%
CPU usage exceeded 75%. Creating a new VM in GCP...
Created [https://www.googleapis.com/compute/v1/projects/pioneering-flag-452513-p
8/zones/us-central1-b/instances/scaled-vm-1742899979].
WARNING: Some requests generated warnings:
 - You are creating a global DNS VM. VM instances using global DNS are vulnerabl
e to cross-regional outages. To reduce the risk of widespread service disruption
, use zonal DNS instead. Learn more at https://cloud.google.com/compute/docs/net
working/zonal-dns

NAME                  ZONE           MACHINE_TYPE  PREEMPTIBLE  INTERNAL_IP  EXT
ERNAL_IP     STATUS
scaled-vm-1742899979  us-central1-b  e2-micro                   10.128.0.5   34.
59.166.211   RUNNING
#
```

Here is the vm in google cloud platform

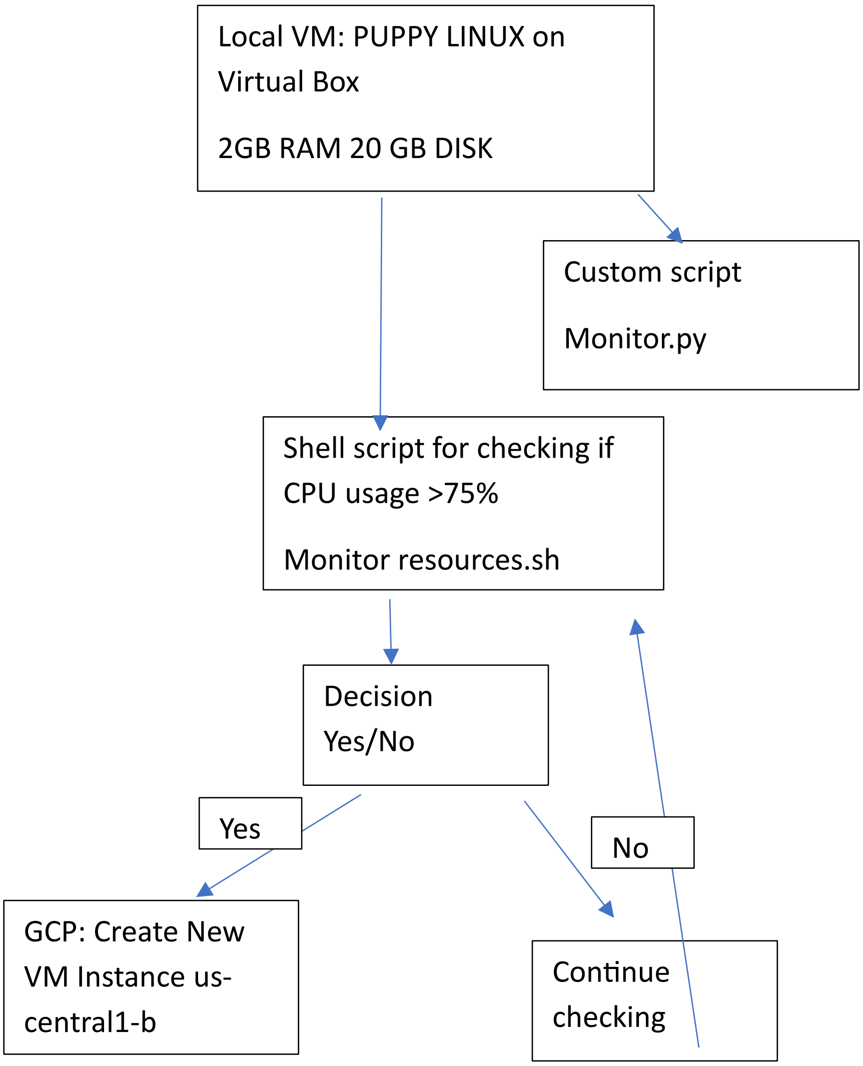

VM instances – Compute Engine – My First Project – Google Cloud console — Mozilla Firefox
VM instances – Com
Firefox Privacy Noti
"Security" - m23csa
You are now authen
https://console.cloud.google.com/compute/instances
Google Cloud
My First Project
V
VM instances
Create instance
Import VM
Refresh
Learn
Use zonal DNS
Dismiss
Marketp
Filter
Enter property name or value
Menu
Places
Tue 25 Mar 2025 06:57:00 PM +08

outages, we recommend you use zonal DNS instead. Learn more

VM instances

□	Status	Name ↑	Zone	Recommendations	Connect	
□	■	kishore-gcp-vm	us-central1-c		SSH ▾	⋮
□	✓	scaled-vm-1742899979	us-central1-b		SSH ▾	⋮
□	✓	test-vm	us-central1-b		SSH ▾	⋮

2. Architecture design:


Local VM: PUPPY LINUX on Virtual Box
2GB RAM 20 GB DISK
Custom script
Monitor.py
Shell script for checking if CPU usage >75%
Monitor resources.sh
Decision Yes/No
Yes
No
GCP: Create New VM Instance us-central1-b
Continue checking

3: Git

https://github.com/kishoreb4/GCP_VM_Assignment3/tree/main

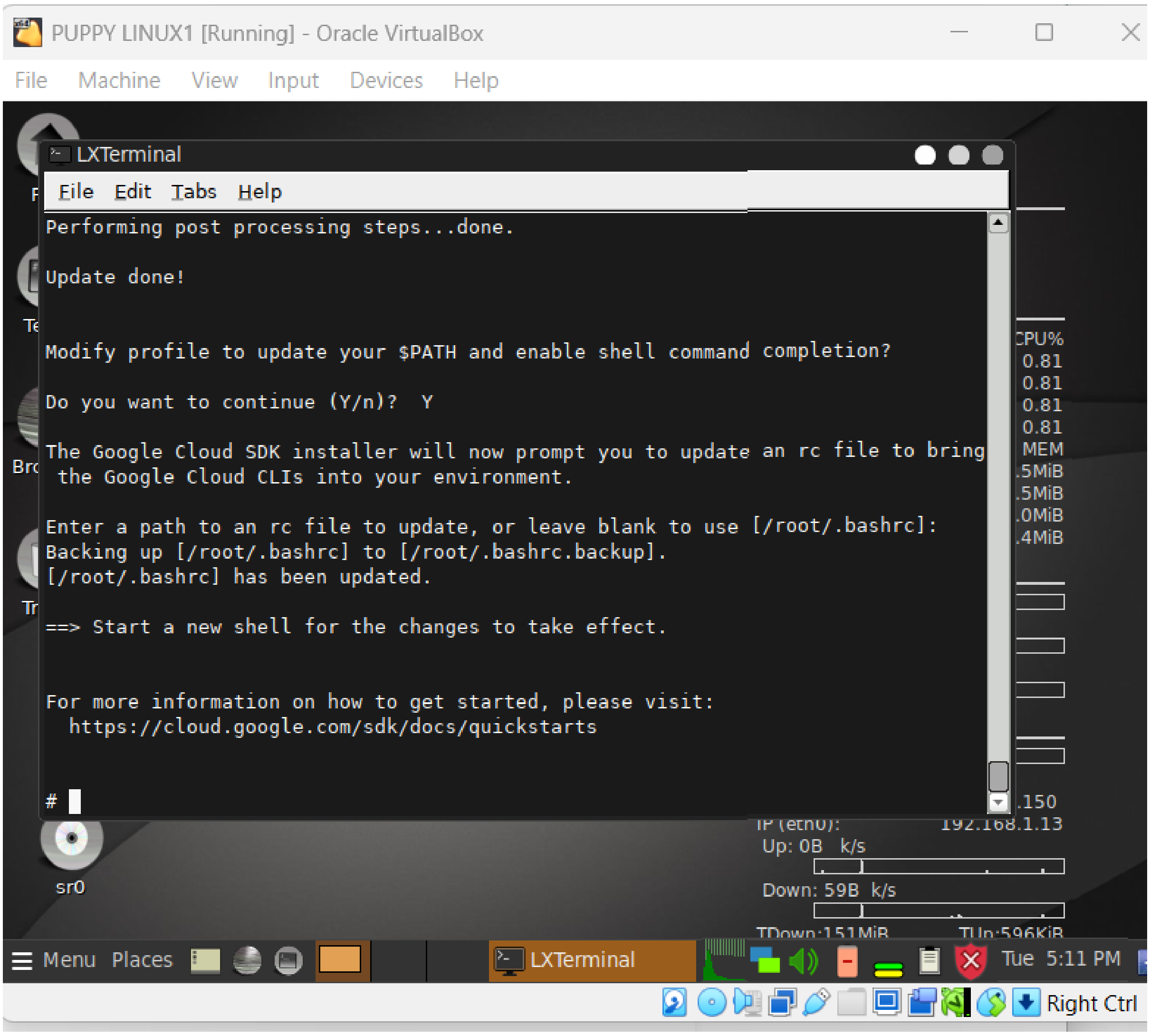
4. Video

https://drive.google.com/drive/folders/1o2QRQxYNyqCsgY1QAqtJdcNO2URiNYvp?usp=sharing

Other references:

https://cloud.google.com/docs

Oracle VirtualBox: User Guide for Release 7.1



PUPPY LINUX1 [Running] - Oracle VirtualBox
File Machine View Input Devices Help
LXTerminal
File Edit Tabs Help
Menu Places
LXTerminal
Tue 5:11 PM
Right Ctrl

```
Performing post processing steps...done.

Update done!


Modify profile to update your $PATH and enable shell command completion?

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

The Google Cloud SDK installer will now prompt you to update an rc file to bring
 the Google Cloud CLIs into your environment.

Enter a path to an rc file to update, or leave blank to use [/root/.bashrc]:
Backing up [/root/.bashrc] to [/root/.bashrc.backup].
[/root/.bashrc] has been updated.

==> Start a new shell for the changes to take effect.


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


#
```

Authenticate using the service account key:-

gcloud auth activate-service-account –key-file=/

gcloud auth login

gcloud auth activate-service-account --key-file=<YOUR_SERVICE_ACCOUNT_KEY>

gcloud config set project <YOUR_PROJECT_ID>