

Google Cloud Tutorial

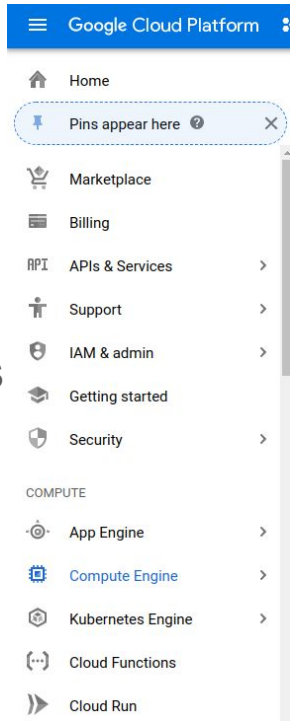
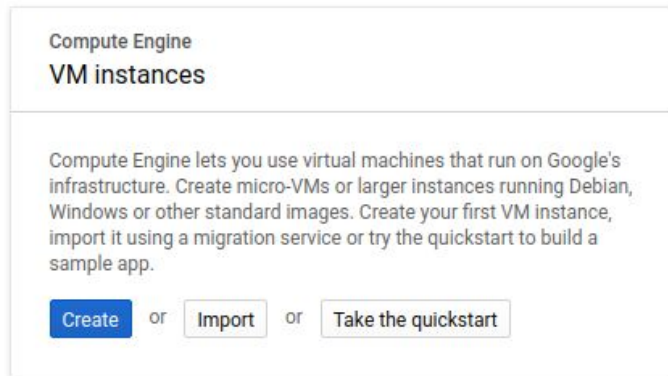
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Introduction

- Google cloud platform enables you to access google's resources.
- Google Education Grant enables students to experiment without spending \$\$.
- \$50 per person is available to you today to play with.
- We will set up VMs and execute our previous codes
- Submission, You need to provide screenshots to show the outputs of different operations.

Getting started

- Check LearnWeb Forum and redeem the code
- Create a project using the web interface.
- Click on the menu panel on the top left corner to expand the options
- Select “**Compute Engine**” and then “**VM Instances**”
- Click **Create**



Before getting started

- SSH KEYS

- Ssh keys are used for starting secure shell sessions, that enable us to access remote resources without the need for a password.

- Generate your keys

- Follow the following tutorial
 - <https://confluence.atlassian.com/bitbucketserver/creating-ssh-keys-776639788.html>
- If that doesn't work, then use
 - <https://www.putty.org/>
 - Putty is a windows application for ssh connections. It lets you generate the keys as well

VM specification

- A Virtual Machine or “VM” is a cloud resource you create and acts like a system just like any other.
- Use the configurations in the table
- Click on ‘Management,security....’
- Cont’d on next slide

Firewall

Add tags and firewall rules to allow specific network traffic from the Internet.

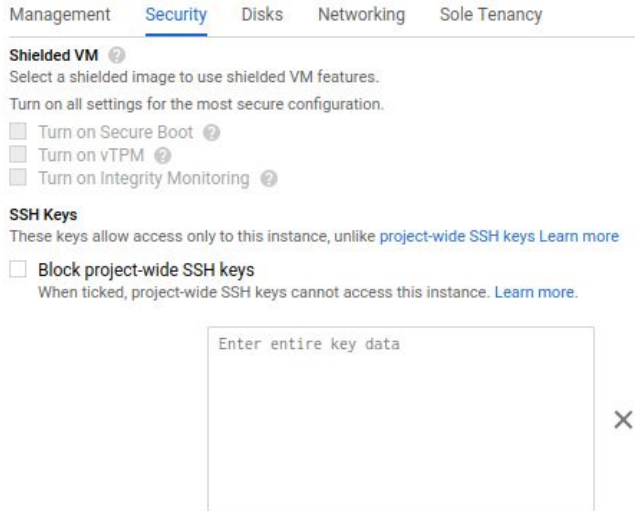
- ☐ Allow HTTP traffic
- ☐ Allow HTTPS traffic

⌵ [Management, security, disks, networking, sole tenancy](#)

Field	Value
Name	{Specify Name}
Region	Us-central1 (iowa)
Zone	us-central1-a
Machine Configuration	N1-standard-4 (4 vCPU, 15 GB memory)
Boot disk	Ubuntu 16.04 LTS
Size	20 GB

VM specifications

- In the **Security** tab, add your ssh keys.
 - Simple copy paste the content of your public key
 - Its called 'id_rsa.pub' by default,
 - Also add the key that was provided to you.
 - That key belongs to me, allowing me to access Your VM.
 - Click **Create**
- **Your VM will spawn up.**



NOTE: The SSH key you have pasted above has a username associated with it, use that name when connecting to the VM from your laptop.

Accessing VM

- Using your terminal type
 - “ssh {USERNAME}@{YOUR_EXTERNAL_IP}”
- You should now be in your VM

VM instances							+ CREATE INSTANCE	IMPORT VM	REFRESH	▶ START	■ STOP	RESET
<input type="text" value="Filter VM instances"/>							Columns					
<input type="checkbox"/>	Name ^	Zone	Recommendation	In use by	Internal IP	External IP	Connect					
<input type="checkbox"/>	✓ instance-1	us-central1-a			10.128.0.2 (nic0)	35.239.238.171	SSH					

Basic Linux Operations

- Run the following commands
 - Updating the install repos
 - `sudo apt-get update`
 - Making a dummy folder
 - `mkdir {FOLDER-NAME}`
 - Listing the folder, (saving a screenshot of the entire terminal for the report)
 - `ls -a`
 - Enter the dummy folder
 - `cd {FOLDER_NAME}`
 - Create a blank document
 - `touch FILE_NAME.txt`
 - Open document for editing (saving a screenshot of the entire terminal for the report)
 - `nano FILE_NAME.txt`
 - Enter some text
 - Exit file by “**CTRL+X**” and then hit **Y** to keep the original name.

Installing anaconda

- Go to Home dir
 - `cd`
- Download anaconda using **wget**
 - `wget https://repo.anaconda.com/archive/Anaconda3-2019.03-Linux-x86_64.sh`
- Install
 - `bash ./Anaconda3-2019.03-Linux-x86_64.sh`
 - Follow the on screen instructions
- This will install all the necessary files you could need for our labs
- Run
 - `source ~/.bashrc`
 - This initializes all the necessary paths

Moving files to VM

- Linux users

- `scp {File_Location}/{File_Name} <UserName>@<Network_location>:{Dest_Location}/`
- For example
 - `scp /home/mofassir/lab_1.py mofassir@35.239.238.171:/home/mofassir/dummy/`

- Windows Users

- Use Putty
 - `pscp -scp /home/mofassir/lab_1.py mofassir@35.239.238.171:/home/mofassir/dummy/`

NOTE: The above commands need to be run from your local machine

Running labs

Now that we have everything set up, Move the solution for one of the labs that we solved in the previous weeks and run it on the cloud.

You should remove any plotting operations since we are dealing with a command line OS now. What you could do is save the figure instead of plotting it. `plt.savefig()` does that for you.

Add the screenshots of the execution in the report.

TURN OFF YOUR INSTANCES

- Please make sure you turn off the instances. They will keep charging you unless you turn them off yourself.
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