1. Requirement:
   https://codelabs.developers.google.com/codelabs/cloud-tensorflow-mnist#13

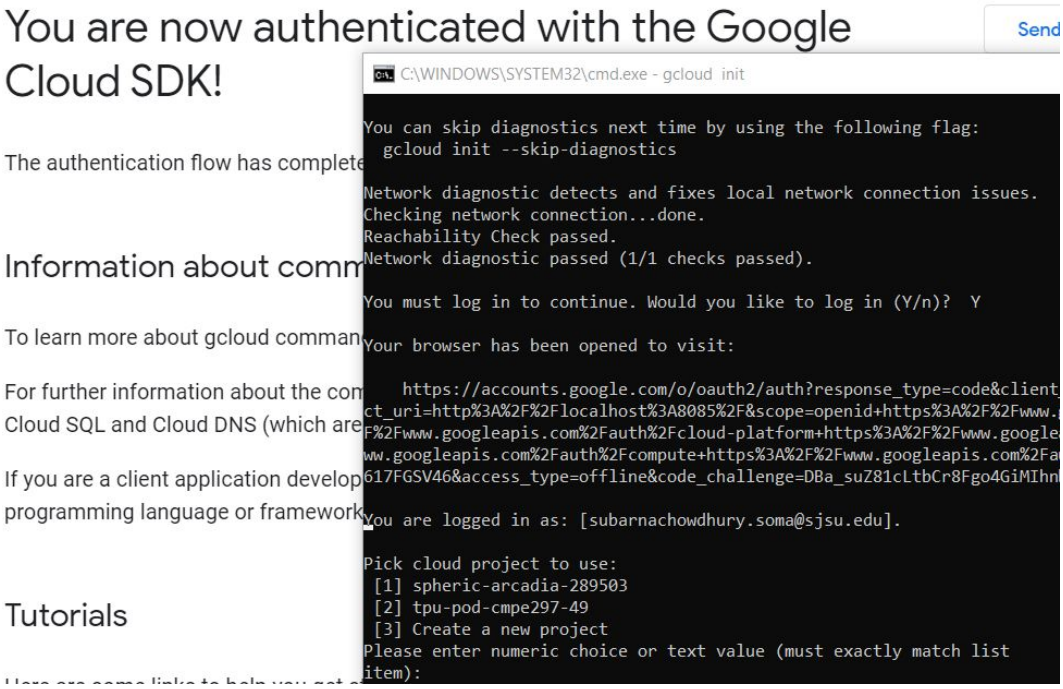
14. Train in the cloud on powerful hardware: AI Platform

You will find a cloud-ready version of the code in the mlengine folder on GitHub, along with instructions for running it on Google Cloud AI Platform. Before you can run this part, you will have to create a Google Cloud account and enable billing. The resources necessary to complete the lab should be less than a couple of dollars (assuming 1h of training time on one GPU). To prepare your account:

1. Create a Google Cloud Platform project (http://cloud.google.com/console).
2. Enable billing.
3. Install the GCP command line tools (GCP SDK here).
4. Create a Google Cloud Storage bucket (put in the region `us-central1`). It will be used to stage the training code and store your trained model.
5. Enable the necessary APIs and request the necessary quotas (run the training command once and you sh
   error messages telling you what to enable).

Next

2. Install and setup GCP SDK for the account - subarnachowdhury.soma@sjsu.edu

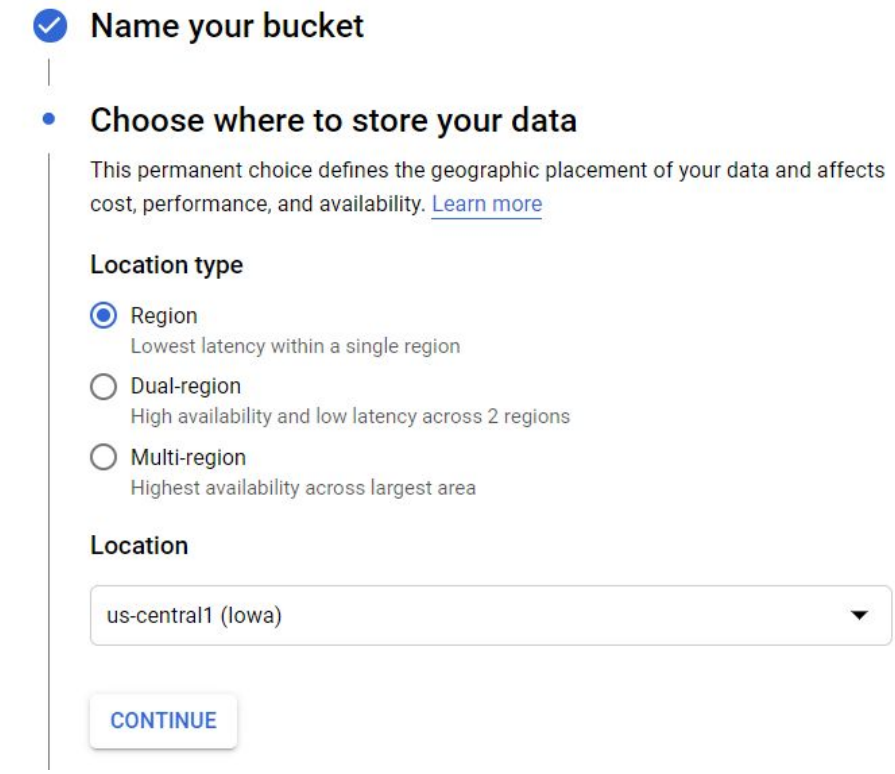


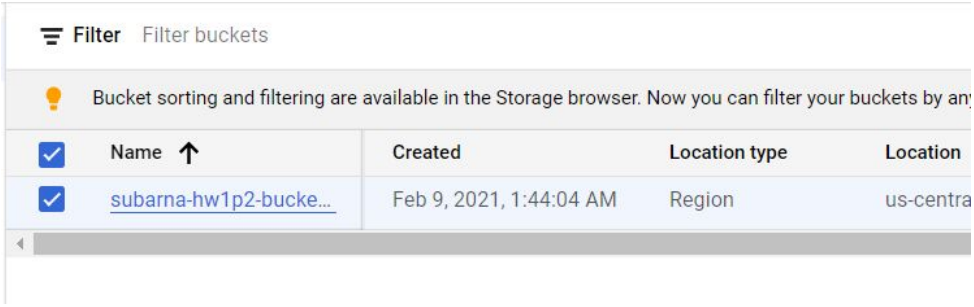
3. Project created named: subarna-hw1p2

```
You are logged in as: [subarnachowdhury.soma@sjsu.edu].

Pick cloud project to use:
 [1] spheric-arcadia-289503
 [2] tpu-pod-cmpe297-49
 [3] Create a new project
Please enter numeric choice or text value (must exactly match list
item):  3

Enter a Project ID. Note that a Project ID CANNOT be changed later.
Project IDs must be 6-30 characters (lowercase ASCII, digits, or
hyphens) in length and start with a lowercase letter. subarna-hw1p2
```

```
Enter a Project ID. Note that a Project ID CANNOT be changed later.
Project IDs must be 6-30 characters (lowercase ASCII, digits, or
hyphens) in length and start with a lowercase letter. subarna-hw1p2
Waiting for [operations/cp.5368177622337196002] to finish...done.
Your current project has been set to: [subarna-hw1p2].
```

4. Created storage bucket: subarna-hw1p2-bucket1





5. Enabling service API/region

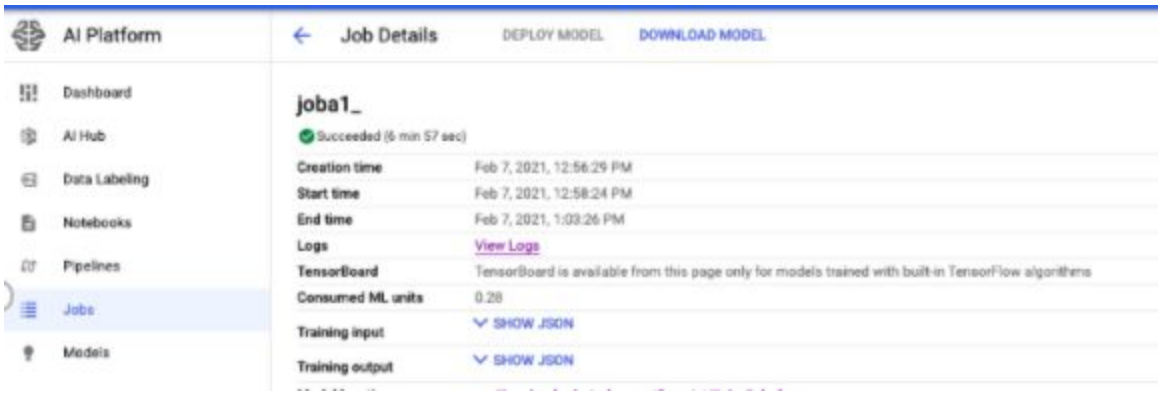
```
C:\Users\subar\AppData\Local\Google\Cloud SDK>gcloud config set compute/region VALUE
Updated property [compute/region].
API [compute.googleapis.com] not enabled on project [485162059223].
Would you like to enable and retry (this will take a few minutes)?
(y/N)?  Y

Enabling service [compute.googleapis.com] on project [485162059223]...
```

6. Successfully submit the jobs sample from mlengine tutorial in AI Platform using this command and deployed the model:

Ref: gcloud ml-engine jobs submit training jobXXX --job-dir gs://<bucket>/jobs/jobXXX --project <project> --config config.yaml --module-name trainer.task --package-path trainer --runtime-version 1.15

gcloud ml-engine jobs submit training joba1_ --job-dir gs://subarna-hw1p2-bucket1/jobs/joba1_ --project subarna-hw1p2 --config config.yaml --module-name trainer.task --package-path trainer --runtime-version 1.15

```
C:\Users\subar\AppData\Local\Google\Cloud SDK>gcloud ml-engine jobs submit training joba1_ --job-dir gs://subarna-hw1p2-
bucket1/jobs/joba1_ --project subarna-hw1p2 --config config.yaml --module-name trainer.task --package-path trainer --run
time-version 1.15
WARNING: The `gcloud ml-engine` commands have been renamed and will soon be removed. Please use `gcloud ai-platform` ins
tead.
```

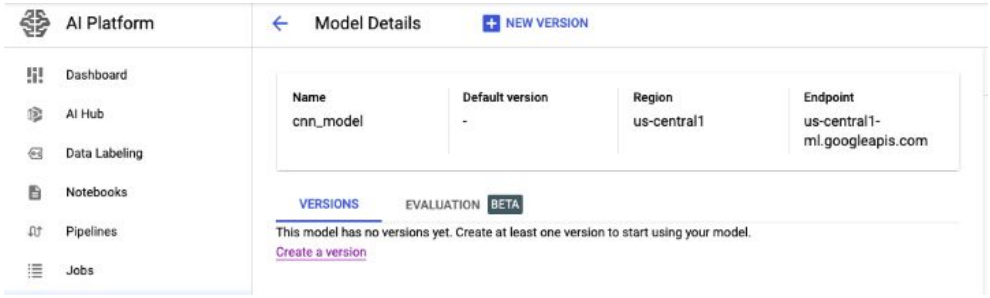


7. Created Model cnn_model and training in the cloud

```
/dev/sda15        126710    8002    118708   7% /boot/efi
tmpfs            6184436       0   6184436   0% /run/user/1000
/dev/sdb       515010816   73756 514920676   1% /mnt/disks/resnet_DIR
subarnachowdhury_soma@resnet-tutorial:~$
subarnachowdhury_soma@resnet-tutorial:~$ export IMAGENET_HOME=/mnt/disks/resnet_DIR
subarnachowdhury_soma@resnet-tutorial:~$ export DATA_DIR=gs://cloud-tpu-test-datasets/fake_imagenet
subarnachowdhury_soma@resnet-tutorial:~$ export PYTHONPATH="$PYTHONPATH:/usr/share/models/"
subarnachowdhury_soma@resnet-tutorial:~$ ctpu up --tpu-only \
>  --tpu-size=v3-8  \
>  --name=resnet-tutorial \
>  --zone=europe-west4-a \
>  --tf-version=2.3
ctpu will use the following configuration:

  Name:                resnet-tutorial
  Zone:                europe-west4-a
  GCP Project:         tpu-pod-cmpe297-49
  TensorFlow Version:  2.3
  Cloud TPU:
      Size:            v3-8
      Preemptible:     false
      Reserved:        false

OK to create your Cloud TPU resources with the above configuration? [Yn]: y
2020/09/14 04:05:00 Creating TPU resnet-tutorial (this may take a few minutes)...
2020/09/14 04:05:08 TPU operation still running...
2020/09/14 04:05:28 TPU operation still running...
2020/09/14 04:05:49 TPU operation still running...
2020/09/14 04:06:10 TPU operation still running...
2020/09/14 04:06:30 TPU operation still running...
2020/09/14 04:06:50 TPU operation still running...
2020/09/14 04:07:05 Created TPU resnet-tutorial!
2020/09/14 04:07:06 Warning: ctpu encountered an error when adding the TPU's service account to your project's access control lists. Some integ
 you (or your GCP project's owner) adds appropriate permissions (see: https://cloud.google.com/tpu/docs/storage-buckets#storage_access). Pass --
rror and get a more detailed error message.
Operation success; not ssh-ing to GCE VM due to --tpu-only flag.
subarnachowdhury_soma@resnet-tutorial:~$ export TPU_NAME=resnet-tutorial
subarnachowdhury_soma@resnet-tutorial:~$ sudo pip3 install tensorflow-model-optimization>=0.1.3
WARNING: You are using pip version 20.2; however, version 20.2.3 is available.
You should consider upgrading via the '/usr/bin/python3 -m pip install --upgrade pip' command.
subarnachowdhury_soma@resnet-tutorial:~$
```

```
Please specify a region:
 [1] global
 [2] asia-east1
 [3] asia-northeast1
 [4] asia-southeast1
 [5] australia-southeast1
 [6] europe-west1
 [7] europe-west2
 [8] europe-west3
 [9] europe-west4
 [10] northamerica-northeast1
 [11] us-central1
 [12] us-east1
 [13] us-east4
 [14] us-west1
 [15] cancel
Please enter your numeric choice:  11

To make this the default region, run `gcloud config set ai_platform/region us-central1`.

Using endpoint [https://us-central1-ml.googleapis.com/]
Created ai platform model [projects/jocelyn-baduria-hw1p2/models/cnn_model].
```

8. Trained Model In GCP platform



Task complete, then disabled billing process for this project:

Select an organization: SJSU.EDU

MY BILLING ACCOUNTS | MY PROJECTS

Filter table

Name	ID	Billing account	Billing account ID	Actions
My First Project	spheric-arcadia-289503	Billing is disabled	–	
subarna-hw1p2	subarna-hw1p2	Billing is disabled	–	