**ADTA-5550: Deep learning with Big Data**

**Assignment 1**

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**Part I: Confirm Email Address**

I have replied on professor’s email.

**Part II: Select OS**

I have selected my working OS for this course is Mac. I have good knowledge and exposure to the components in MacOS. I have subtle understanding about drives, directories, folders, and admin privileges. I know and run basic operations in MacOS. I can be able to create folders, access contents in them, download and install software and run terminal commands (Command Prompt of MacOS) without any problem. I can be able to resolve issues related to OS on my own.

**Part III: Setup Deep Learning VM in GCP**

I have successfully created Deep Learning VM instance in GCP.

Firstly, I have installed Gcloud suite on my Mac device. I have installed Python 3.9 since that is required to run gcloud on mac. Next, I downloaded the installation bundle from official website, and ran install.sh.

Later, I have configured the working GCP project (adta-5550-sricharan). Then, it is ready to use GCP services from terminal.

A screenshot of a computer

Description automatically generated

Next, I have ran commands to setup environment variables.

A screenshot of a computer

Description automatically generated

Next, I ran the gcloud compute instances create $INSTANCE\_NAME --zone=$ZONE --image-family=$IMAGE\_FAMILY --image-project=deeplearning-platform-release --machine-type=$INSTANCE\_TYPE --boot-disk-type=$DISK\_TYPE --boot-disk-size=1024GB

A screenshot of a computer

Description automatically generated

Which resulted in creating Deep Learning VM instance on cloud. We can see below screenshot. The name of the VM is deep-learning-vm-example.

A screenshot of a computer

Description automatically generated

Now, in order to, make a SSH connection to GCP VM instance we need to create a private and public SSH key files.

It is important to make a note of paraphrase that is created. It will be asked when we access VM using SSH.

A screenshot of a computer program

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Finally, I have made a SSH connection to Deep Learning VM through my local terminal., it is been shown on below screenshot.

A screenshot of a computer

Description automatically generated

**Part IV: Connect & Explore VM using SSH**

I have opened an SSH connection from local computer to VM. I then ran few Linux command to navigate within the VM.

I have also created new directory named JPTR\_NTBK. I have changed the current directory to newly created directory.

A screenshot of a computer code

Description automatically generated

**Part V: Start & Connect to Jupyter Notebook in VM**

We can see below screenshot that I have started the Jupyter Notebook process on VM using “jupyter notebook –port 8888”

A close-up of a computer code

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We can see below I have also able to close Jupyter process and logged out of VM.

A screenshot of a computer

Description automatically generated

Then, I have opened new SSH connection to make sure local and remote connection is established. I have changed the current directory to JPTR\_NTBK

A screenshot of a computer program

Description automatically generated

I have connected to Jupyter Notebooks using previous command.

A computer screen shot of a computer error

Description automatically generated

We can see below screenshot that I have successfully able to connect to VM hosted jupyter process from my local web browser.

A screenshot of a computer

Description automatically generated

I can also check the version of TensorFlow in the deep learning VM. Which is v1.15.5.

A screenshot of a computer

Description automatically generated

**Part VI: Write Simple Python Code**

Question 1: creating vector with size 20 by initializing it with 0s except 8th element(index 7) as 8.

A screenshot of a computer

Description automatically generated

Question 2: creating vector of size 16 with random values from 0-63.

A screenshot of a computer code

Description automatically generated

Question 3: creating 5x5 matrix in Python with values from 0 to 24.

A screenshot of a computer

Description automatically generated

Question 4: creating 8x8 arry with random values and finding min and max values of values stored

A screenshot of a computer code

Description automatically generated

Question 5: creating vector of size 32 and initializing values randomly between 0 to 99 and then finding mean of all values.

A screenshot of a computer code

Description automatically generated