ASSIGNMENT 3 – DOCKER LAB

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Workflow and Obervations:

1. Forked the Vagrant and Dockerfile setup from the repository:  [yuhaohaoyu/ibmcloud-fall-2023](https://github.com/yuhaohaoyu/ibmcloud-fall-2023)
2. Made some changes to the Dockerfile to ensure that it runs correctly with mnist
3. I moved the mnist directory into the root directory from which I will run the following commands.
4. Changes Made:
   1. Dockerfile: Used the python:3.7.4 image for setting up the initial base packages of python
   2. Removed the python runtime installation commands
   3. Added ther requirements for mnist using “ADD mnist/requirements.txt /app” command
   4. Added the “RUN pip install –upgrade pip” command to use update pip
   5. Replaced the path to mnist/app.py
   6. Replaced the service from [“python”, “app.py”] to [“python”, “main.py”] where the model resides.
5. You can find the updated files by cloning this repo here: https://github.com/VirajYParikh/DockerLab-Assignment3.git
6. Ran the following commands in the root directory
   1. **vagrant up :** This command sets up the virtual machine for that env
   2. **vagrant ssh :** This command deploys the virtual machine
   3. **docker build -t mnist .** This command took a lot of time to run since there were heavy packages like torch and torch vision to be installed.
   4. **docker run -it mnist 2>&1 | tee docker-run.out**  ---- This command ran the neural network model and trained it. The output was then stored in the docker-run.out file
7. Observations:
   1. The virtual machine takes sometime to setup:
      1. It involves sharding
      2. Involves the installation of docker since the Vagrant file already has the configuration.
      3. Sets up a shell terminal for use.
      4. Sets up a UBUNTU terminal and allocates around 1.8 GB memory for use.
   2. Once the vagrant machine is up, and we have sshed into it, we simply need to build the Docker image using the Dockerfile. There were a few changes that needed to be made. I was able to download the torch library using the python:3.7.4 image only.

* 1. It took me around 2-3 minutes to download all the packages required like torch, torchvision
  2. After running the docker run command, the mnist model started training itself. These outputs have been stored in the docker-run.out file.