1. **What is TensorFlow? Which company is the leading contributor to TensorFlow?**

**Opensource library for machine learning. Google.**

1. **What is TensorRT? How is it different from TensorFlow?**

**TensorRT is a GPU developed by NVIDIA. TensorRT integration speeds up the tensorflow inference by GPU usage.**

1. **What is ImageNet? How many images does it contain? How many classes?**

**ImageNET is a hierarchical database for images. 14197122 images, 21841 classes.**

1. **Please research and explain the differences between MobileNet and GoogleNet (Inception) architectures.**

**MobileNet uses CNN, it is lightweighted, easy to use for mobile devices.**

**GoogleNet is much more convoluted, wider and heavier weighted. It uses pooling and initiation modules.**

1. **In your own words, what is a bottleneck?**

**Second to last output layer.**

1. **How is a bottleneck different from the concept of layer freezing?**

The bottleneck can be responsible for dimensionality reduction before the classification layer (output), while layer freezing is used to keep weights fixed in one or more layer(s) to accelerate the training process

1. **In this lab, you trained the last layer (all the previous layers retain their already-trained state). Explain how the lab used the previous layers (where did they come from? how were they used in the process?)**

**The previous layers come from a pre-trained image classification from the ImageNet Dataset. They do not have the flower data but the last layer enabled the flower classification.**

1. **How does a low --learning\_rate (step 7) value (like 0.005) affect the precision? How much longer does training take?**

**it brings precision down to 88%. Amount of time taken is around the same.**

1. **How about a --learning\_rate (step 7) of 1.0? Is the precision still good enough to produce a usable graph?**

**88%**

1. **For step 8, you can use any images you like. Pictures of food, people, or animals work well. You can even use [ImageNet](http://www.image-net.org/)images. How accurate was your model? Were you able to train it using a few images, or did you need a lot?**

**I used pictures of strawberries and it says there is no image in the category validation. It was suggested that I need at least 30 pictures for me to train my model accurately.**

1. **Run the script on the CPU (see instructions above) How does the training time compare to the default network training (section 4)? Why?**

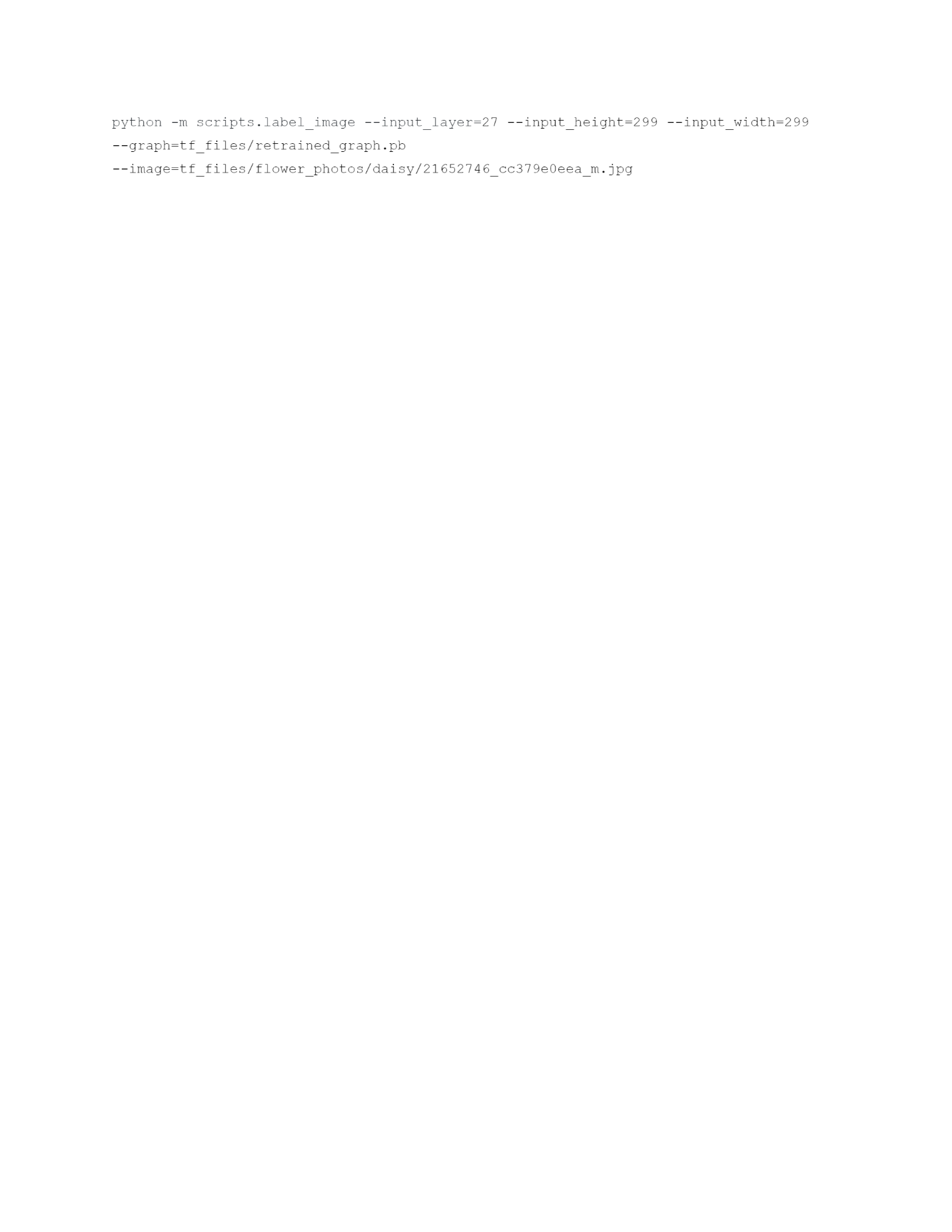
**Default training: 10 min 40 seconds**

**CPU training: 12 min 5 seconds**

**GPU processing is faster with its multiple thread call and parallel computing. It is not optimized though due to the MobileNet architecture.**

1. **Try the training again, but this time do export ARCHITECTURE="inception\_v3" Are CPU and GPU training times different?**

**Yes. My CPU is taking 87 minutes, GPU is 18 minutes.**

1. **Given the hints under the notes section, if we trained Inception\_v3, what do we need to pass to replace ??? below to the label\_image script? Can we also glean the answer from examining TensorBoard**