TensorFlow Tutorial

This tutorial consists of three sections and covers a brief introduction of machine learning in TensorFlow. For this tutorial, you will need to install version 0.6.0 of TensorFlow as this will be the version you will be using for the project. Installation instructions can be found here. You will want to change the version number in the pip installation to be 0.6.0 instead of 0.5.0.

Submission Instructions:

- A single zip folder containing `softmax.py`, `answers.txt`, and `linear.py`, which contain the code and answers to the following sections.

Section 1

Follow the 0.6.0 version of the MNIST Beginners tutorial for Tensorflow located here:
https://www.tensorflow.org/versions/0.6.0/tutorials/mnist/beginners/index.html

Note: I had to alter the very first command in the tutorial slightly to the following:

```
from tensorflow.examples.tutorials.mnist import input_data
```

Section 2

Read the following resource provided, and answer the following questions:
https://www.tensorflow.org/versions/0.6.0/resources/dims_types.html

1. What is the *tensor rank* of the following matrices?
    a. [1,2,3,4]:
    b. [[1],[2],[2],[1]]
    c. [[[1]]]
2. Suppose you have two vectors with the following shapes: A = [None,1] and B = [None]. If you try to multiply these two matrices, the following error will be thrown:

    ```
    "ValueError: A([Dimension(None),Dimension(1)]) and
    B([Dimension(None)]) must have the same rank"
    ```

    Provide the fix to the shape of B to fix this error.

Section 3

Using Tensorflow, create a **linear regression model** over the Boston house prices dataset that is available in scikit-learn. Train the model using stochastic gradient descent (like with the Neural Network model), but using the squared error as a loss function.