Linear Regression

Open-book Quiz (Team)

Member #1 Name : Student ID:
Member #2 Name : Student ID:
Member #3 Name : Student ID:

- Briefly describe the role or meaning of the code in each of the blanks below.
- 아래의 각 빈칸에 윗 부분의 코드에 대한 역할 또는 의미를 간략하게 기술하세요

```
import tensorflow as tf
import numpy as np
import matplotlib.pyplot as plt
```

```
x_train = [1, 2, 3, 4, 5]

#y_train = [2, 4, 6, 8, 10]
y_train = [2+0.1+3, 4-0.3+3, 6+0.15+3, 8+0.1+3, 10-0.12+3]#  Add some noise
```

>>

```
w0 = 7.0;
b0 = 5.0;

W = tf.Variable(w0*tf.ones([1]), name='weight')
b = tf.Variable(b0*tf.ones([1]), name='bias')
```

```
WARNING:tensorflow:From /usr/local/lib/python3.6/dist-packages/tensorflow/python/framework/c
Instructions for updating:
Colocations handled automatically by placer.
```

>>

```
hypothesis = x_train * W + b
```

>>

```
cost = tf.reduce_mean(tf.square(hypothesis - y_train))
```

>>

```
optimizer = tf.train.GradientDescentOptimizer(learning_rate=0.01)
train = optimizer.minimize(cost)
```

>>

Launch the graph in a session

```
sess = tf.Session()
```

Initializes global variables in the graph.

```
sess.run(tf.global_variables_initializer())
```

```
vw=[] # weights
vb=[] # bias
```

>>

```
for step in range(1001):
    sess.run(train)
    w1 = sess.run(W)[0] # slope
    b1 = sess.run(b)[0] # bias
    vw.append(w1)
    vb.append(b1)

    if step % 100 == 0:
        print(step, sess.run(cost), w1, b1)
```



```
plt.plot(vw)
```

Complete training

```
w1 = sess.run(W)[0] # slope
b1 = sess.run(b)[0] # bias
str1 = 'y = ' + str(w1) +'x + ' + str(b1)
print(w1, b1)
print(str1)
```


>>

```
plt.figure(1)
plt.plot(x_train, y_train,'o')

x1 = np.linspace(np.min(x_train)-1, np.max(x_train)+1)
y1 = w1*x1 + b1
plt.plot(x1, y1)
plt.grid()
plt.title(str1)
```