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In [1]: print('My name is Zhicheng (Jason) Xue')
```

My name is Zhicheng (Jason) Xue

```
In [2]: import tensorflow as tf
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
import random
random.seed(2018)
```

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In [3]: graph = tf.Graph()
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In [4]: with graph.as_default():

    #Scope for the input section
    with tf.name_scope(name='Input_placeholder'):
        #1. Placeholder for an input array with dtype float32 and shape None
        a = tf.placeholder(shape=[None], dtype=tf.float32, name='input_a')

    #Scope for the middle section
    with tf.name_scope(name='Middle_section'):

        b = tf.reduce_prod(input_tensor=a, name='product_b')
        c = tf.reduce_mean(input_tensor=a, name='mean_c')
        d = tf.reduce_sum(input_tensor=a, name='sum_d')
        e = tf.add(b,c, name='add_e')

    #Scope for the final node
    with tf.name_scope(name='Final_node'):

        f = tf.multiply(x=e,y=d,name='mul_f')
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In [5]: input_array=np.random.normal(1,2,100)
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In [6]: print(input_array)
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```
[ 5.14194822e+00  9.02300081e-01  5.37212224e-01  1.44597191e+00
-1.67992343e-01  1.74342169e+00 -8.96682940e-01  1.12467485e-01
 1.09472849e+00  3.66627874e+00  2.45935885e+00  4.34486812e-01
 1.12764394e-01 -3.11092230e+00 -9.94326543e-03  8.27505904e-01
 4.16616676e+00 -1.26200083e-01  1.20843297e+00  3.07162457e+00
 2.90868927e+00 -2.10340053e+00 -1.31365849e-01  1.08068594e+00
 2.50222561e+00 -1.33919671e+00 -5.60428070e-01  3.88845729e+00
 4.92511236e+00  2.26500684e+00  1.82483670e+00  1.03956150e+00
 3.44011193e-02  1.70064788e+00 -1.15822495e-01  1.18528817e+00
-1.56730295e+00  7.00420232e-01 -1.16041284e+00  2.06848570e-01
 1.13358986e+00  8.86827288e-01  2.74720204e-01  1.04684032e-01
 4.67678393e+00 -1.44819498e+00  2.72088115e+00  1.87179491e-01
 1.01530732e+00  1.21497373e+00  5.46041708e-03  8.95703750e-01
 1.75296648e+00  5.17597544e-01  3.98533088e+00  5.47411234e+00
 5.64996713e-01  5.43893848e+00  6.66320539e-01  4.44197240e+00
-9.95288925e-01  3.10011336e-01  2.59222157e+00  3.39884113e+00
 6.32756098e-01  1.56951658e+00  2.30214779e-01  1.65725097e+00
 1.45637132e+00  8.80868619e-01  2.46360212e+00  9.35582067e-01
 2.31017668e+00  1.77288154e+00  2.99203068e+00  1.25966837e+00
 2.11428424e+00  1.90290339e+00 -1.46250089e+00  3.01723188e+00
-2.90289650e-01  1.55019928e+00 -2.95612725e+00  1.48466844e+00
 2.81592767e+00  5.65349350e-01 -4.73328371e-01  4.57959368e+00
 2.35988921e+00  1.49633619e+00  1.20638244e+00  4.13458580e+00
 1.31725746e+00  2.58651377e+00 -6.85176965e-01  2.59488422e+00
 4.50876761e+00 -4.88802691e+00  1.47345948e+00  4.60263709e-01]
```

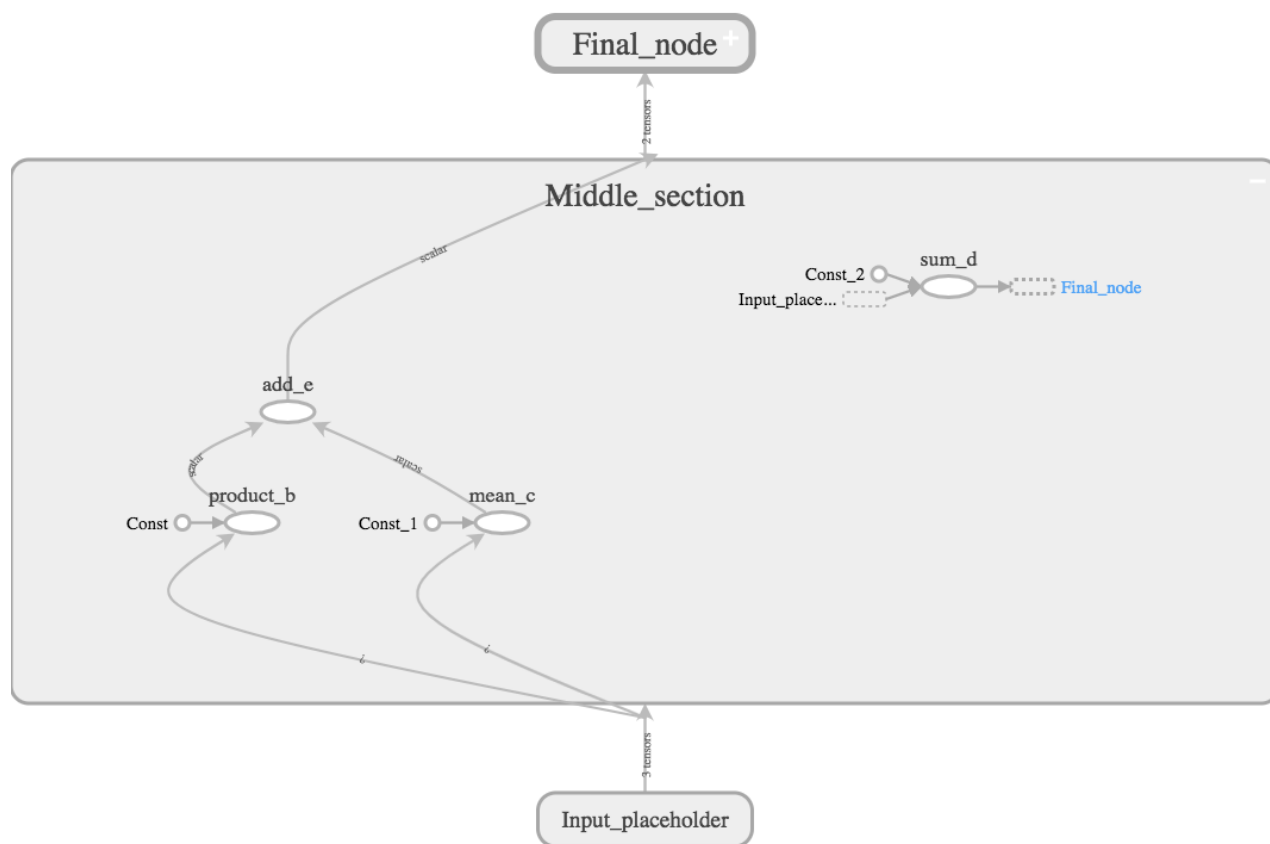
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In [7]: replace_dict={a:input_array}
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In [8]: sess=tf.Session(graph=graph)
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In [9]: sess.run(f,feed_dict=replace_dict)
```

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Out[9]: 91540.08
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In [10]: writer=tf.summary.FileWriter('./hw2',graph=graph)
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In [11]: writer.close()
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In [12]: sess.close()
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In [18]: # histogram of the input array
n, bins, patches = plt.hist(input_array, 5, density=1, facecolor='g', alpha=0.75)

plt.xlabel('Random Normal Number')
plt.ylabel('Probability')
plt.title('Histogram of Random Generated Array From Normal(1,2)',)
plt.text(3, .2, r'$\mu=1,\ \sigma=2$')
plt.axis([-5, 7, 0, 0.25])
plt.grid(True)
plt.show()
```

