TensorFlow通过名称作用域组织数据流图

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所用版本：python3.5.2，tensorflow1.8.0，tensorboard1.8.0

In [1]:
```
# 名称作用域的基本用法是将Op添加到with tf.name_scope(<name>)语句块中
```

In [2]:
```
import tensorflow as tf
```

In [3]:
```
with tf.name_scope("A"):
    a = tf.add(1, 2, name="A_add")
    b = tf.multiply(a, 3, name="A_mul")
```

In [4]:
```
with tf.name_scope("B"):
    c = tf.add(4, 5, name="B_add")
    d = tf.multiply(c, 6, name="B_mul")
```

In [5]:
```
e = tf.add(b, d, name="Output")
```

In [6]:
```
writer = tf.summary.FileWriter('./logs', graph=tf.get_default_graph())
```

In [7]:
```
writer.close()
```

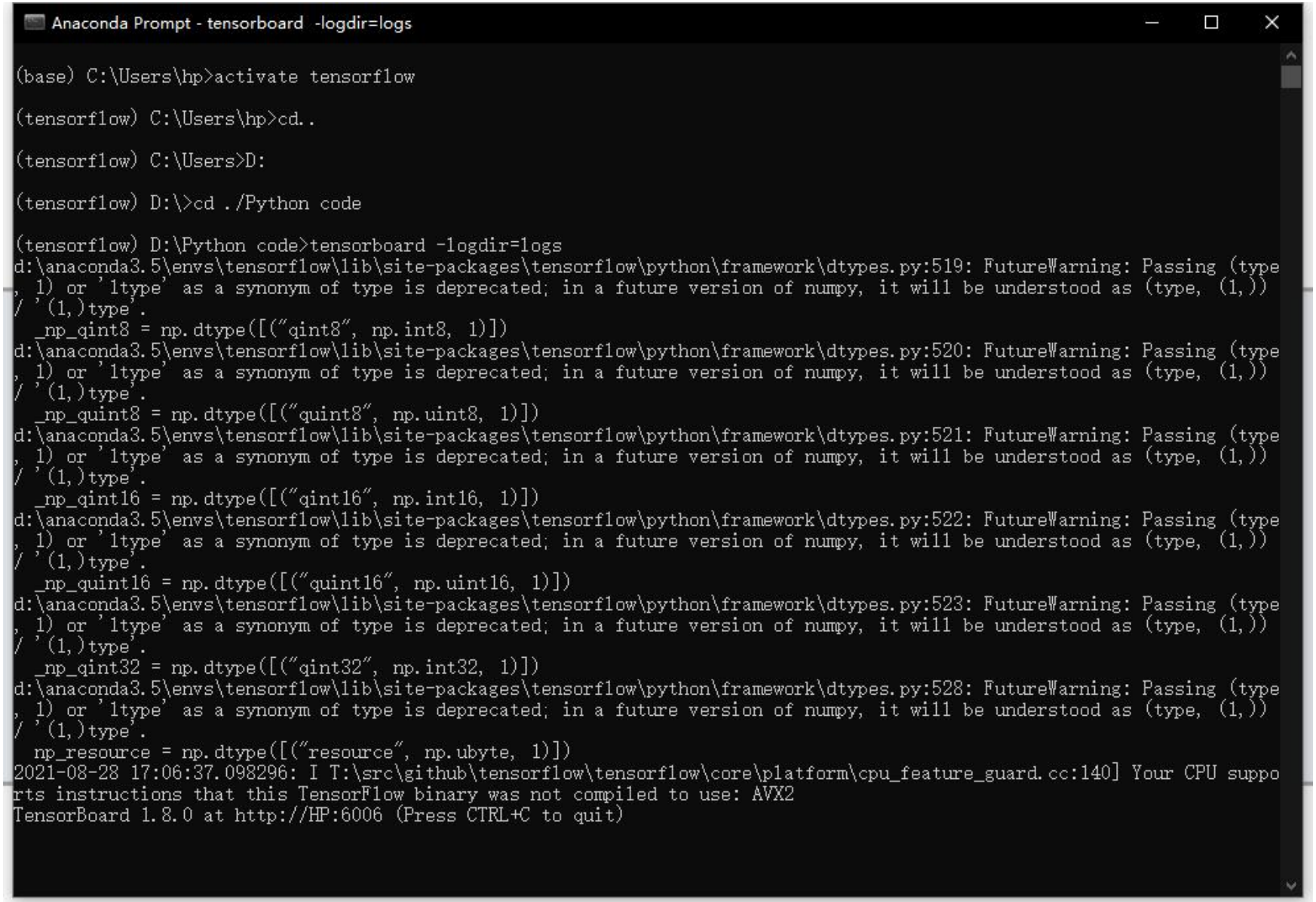
In [8]:
```
sess = tf.Session()
```

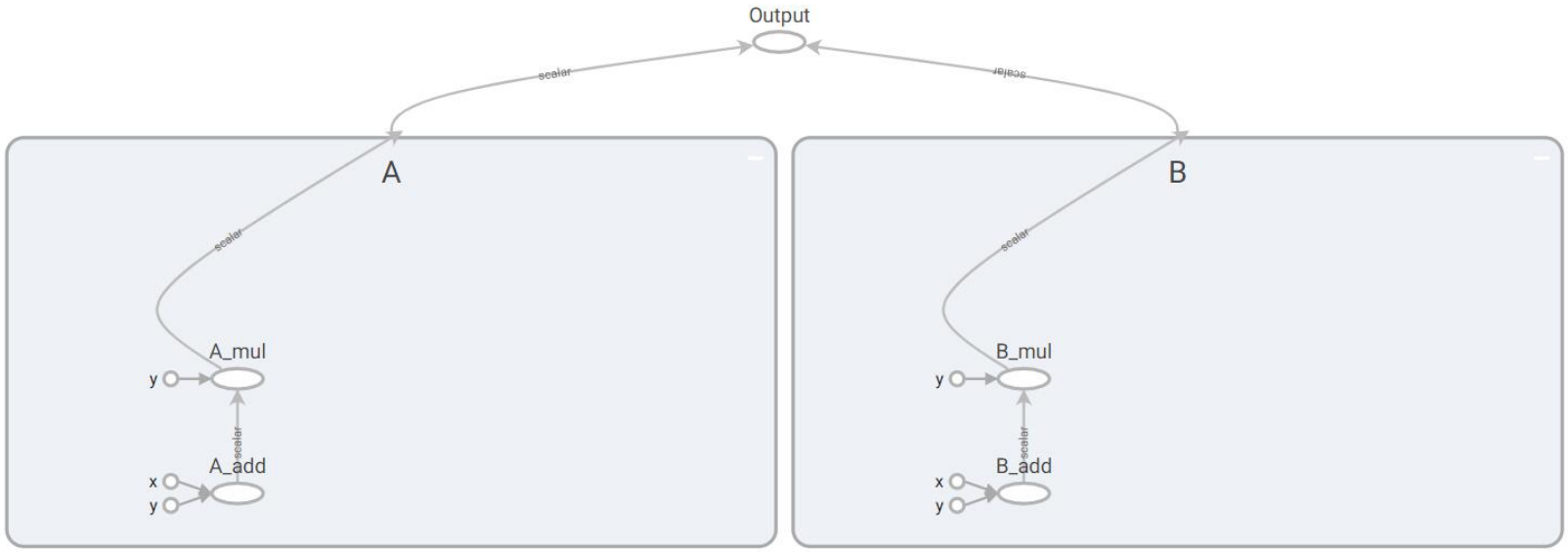
In [9]:
```
sess.run([a, b, c, d, e])
```

Out[9]: [3, 9, 9, 54, 63]

In [11]:
```
sess.close()
```

打开Anaconda Prompt
(base) C:\Users\hp>activate tensorflow
(tensorflow) C:\Users\hp>cd..
(tensorflow) C:\Users>D:
(tensorflow) D:>cd ./Python code
(tensorflow) D:\Python code>tensorboard --logdir=logs
在浏览器输入http://HP:6006 (http://HP:6006) 或者http://localhost:6006 (http://localhost:6006) 即可看到对应的数据流图。


Anaconda Prompt - tensorboard -logdir=logs
(base) C:\Users\hp>activate tensorflow
(tensorflow) C:\Users\hp>cd..
(tensorflow) C:\Users>D:
(tensorflow) D:\>cd ./Python code
(tensorflow) D:\Python code>tensorboard -logdir=logs
d:\anaconda3.5\envs\tensorflow\lib\site-packages\tensorflow\python\framework\dtypes.py:519: FutureWarning: Passing (type
, 1) or '1type' as a synonym of type is deprecated; in a future version of numpy, it will be understood as (type, (1,))
/ '(1,)type'.
_np_qint8 = np.dtype([("qint8", np.int8, 1)])
d:\anaconda3.5\envs\tensorflow\lib\site-packages\tensorflow\python\framework\dtypes.py:520: FutureWarning: Passing (type
, 1) or '1type' as a synonym of type is deprecated; in a future version of numpy, it will be understood as (type, (1,))
/ '(1,)type'.
_np_quint8 = np.dtype([("quint8", np.uint8, 1)])
d:\anaconda3.5\envs\tensorflow\lib\site-packages\tensorflow\python\framework\dtypes.py:521: FutureWarning: Passing (type
, 1) or '1type' as a synonym of type is deprecated; in a future version of numpy, it will be understood as (type, (1,))
/ '(1,)type'.
_np_qint16 = np.dtype([("qint16", np.int16, 1)])
d:\anaconda3.5\envs\tensorflow\lib\site-packages\tensorflow\python\framework\dtypes.py:522: FutureWarning: Passing (type
, 1) or '1type' as a synonym of type is deprecated; in a future version of numpy, it will be understood as (type, (1,))
/ '(1,)type'.
_np_quint16 = np.dtype([("quint16", np.uint16, 1)])
d:\anaconda3.5\envs\tensorflow\lib\site-packages\tensorflow\python\framework\dtypes.py:523: FutureWarning: Passing (type
, 1) or '1type' as a synonym of type is deprecated; in a future version of numpy, it will be understood as (type, (1,))
/ '(1,)type'.
_np_qint32 = np.dtype([("qint32", np.int32, 1)])
d:\anaconda3.5\envs\tensorflow\lib\site-packages\tensorflow\python\framework\dtypes.py:528: FutureWarning: Passing (type
, 1) or '1type' as a synonym of type is deprecated; in a future version of numpy, it will be understood as (type, (1,))
/ '(1,)type'.
np_resource = np.dtype([("resource", np.ubyte, 1)])
2021-08-28 17:06:37.098296: I T:\src\github\tensorflow\tensorflow\core\platform\cpu_feature_guard.cc:140] Your CPU suppo
rts instructions that this TensorFlow binary was not compiled to use: AVX2
TensorBoard 1.8.0 at http://HP:6006 (Press CTRL+C to quit)



In [12]:
```
# 在每个名称作用域内，可看到已经添加到该数据流图中的各个Op，也可将名称作用域嵌入在其他名称作用域内
```

In [13]:
```
reset
```

```
Once deleted, variables cannot be recovered. Proceed (y/[n])? y
```

In [1]:
```
import tensorflow as tf
```

In [2]:
```
graph = tf.Graph()
```

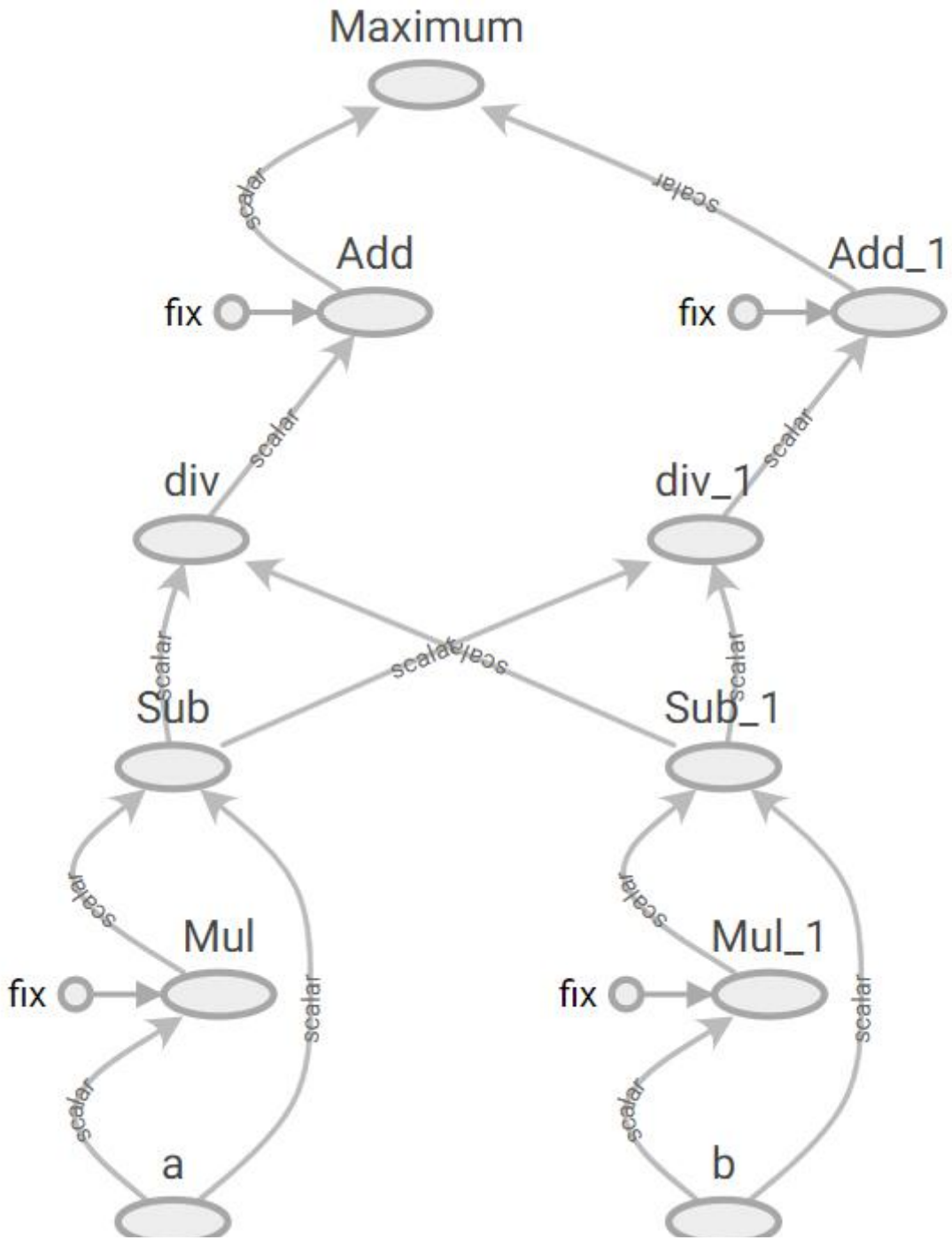
In [3]:
```
with graph.as_default():
    in1 = tf.placeholder(tf.float32, shape=[], name="a")
    in2 = tf.placeholder(tf.float32, shape=[], name="b")
    const = tf.constant(3, dtype=tf.float32, name="fix")
```

In [4]:
```
with tf.name_scope("Transformation"):
    with tf.name_scope("A"):
        A_mul = tf.multiply(in1, const)
        A_out = tf.subtract(A_mul, in1)
    with tf.name_scope("B"):
        B_mul = tf.multiply(in2, const)
        B_out = tf.subtract(B_mul, in2)
    with tf.name_scope("C"):
        C_div = tf.div(A_out, B_out)
        C_out = tf.add(C_div, const)
    with tf.name_scope("D"):
        D_div = tf.div(B_out, A_out)
        D_out = tf.add(D_div, const)
        out = tf.maximum(C_out, D_out)
```

In [5]:
```
writer = tf.summary.FileWriter('./logs/2', graph=graph)
```

In [6]:
```
writer.close()
```

打开Anaconda Prompt
(base) C:\Users\hp>activate tensorflow
(tensorflow) C:\Users\hp>cd..
(tensorflow) C:\Users>D:
(tensorflow) D:>cd ./Python code
(tensorflow) D:\Python code>tensorboard --logdir=./logs/2
在浏览器输入http://HP:6006 (http://HP:6006) 或者http://localhost:6006 (http://localhost:6006) 即可看到对应的数据流图。


Maximum
Add
Add_1
fix
fix
div
div_1
Sub
Sub_1
Mul
Mul_1
fix
fix
a
b
scalar

不知道为啥没显示作用域的名称(Transformation, A, B, C, D)及范围。