# Assignment: 텐서플로 기초 (김기응 교수님 연구실)

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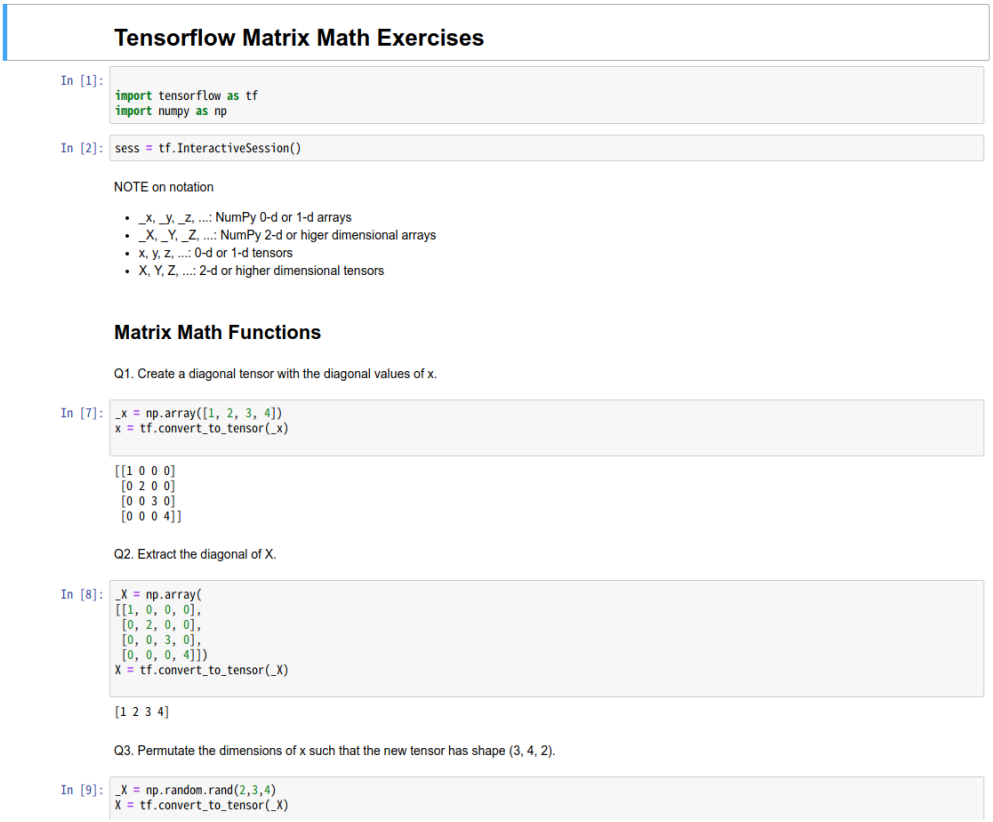
**-과제설명**

exercise.ipynb 노트북 파일을 Jupyter Notebook 으로 열어 각 output 이 나오도록 코드를 추가하세요.



## Tensorflow Matrix Math Exercises

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

In [2]:
```
sess = tf.InteractiveSession()
```

NOTE on notation

- _x, _y, _z, ...: NumPy 0-d or 1-d arrays
- _X, _Y, _Z, ...: NumPy 2-d or higer dimensional arrays
- x, y, z, ...: 0-d or 1-d tensors
- X, Y, Z, ...: 2-d or higher dimensional tensors

### Matrix Math Functions

Q1. Create a diagonal tensor with the diagonal values of x.

In [7]:
```
_x = np.array([1, 2, 3, 4])
x = tf.convert_to_tensor(_x)
```

```
[[1 0 0 0]
 [0 2 0 0]
 [0 0 3 0]
 [0 0 0 4]]
```

Q2. Extract the diagonal of X.

In [8]:
```
_X = np.array(
[[1, 0, 0, 0],
 [0, 2, 0, 0],
 [0, 0, 3, 0],
 [0, 0, 0, 4]])
X = tf.convert_to_tensor(_X)
```

```
[1 2 3 4]
```

Q3. Permutate the dimensions of x such that the new tensor has shape (3, 4, 2).

In [9]:
```
_X = np.random.rand(2,3,4)
X = tf.convert_to_tensor(_X)
```

**-제출물**

완성된 exercise.ipynb 파일을 제출해 주세요.

**-채점**

각 exercise 당 1 점입니다.