In [1]:
```
import pandas as pd
import numpy as np
```

In [2]:
```
def linear_regression(x, y):
    x = pd.Series(x)
    y = pd.Series(y)
    if len(x) != len(y):
        raise ValueError('Series data count does not match! X datas must be pa
ired with Y datas!')
    mean_x = np.mean(x)
    mean_y = np.mean(y)

    SS_xy = np.sum(y*x) - np.size(x)*mean_y*mean_x
    SS_xx = np.sum(y*x) - np.size(x)*mean_x*mean_x

    b1 = SS_xy/SS_xx
    b0 = mean_y - b1*mean_x
    y_hat = b0 + b1*x

    y_hat_diff = (y-y_hat)*2
    standard_err = np.sqrt(y_hat_diff.sum() / len(x))

    return (y_hat, b0, b1, y_hat_diff, standard_err)
```

In [ ]: