In [1]:

```python
import numpy as np


def SIGMOID(x):
    return 1 / (1 + np.exp(-x))

alpha = 0.5
x = np.array([0.5, 0.8, 0.2])
w = np.array([0.4, 0.7, 0.8])
d = 1
for i in range(5):
    v = np.sum(x * w)
    y = SIGMOID(v)
    e = d - y
    print(f'error {i+1} : {e:0.6f}')
    print(f'w       : {w}')
    print(f'delta w : {(alpha*e*x)}\n')
    w = w + alpha * e * x
```

```
error 1 : 0.284958
w       : [0.4 0.7 0.8]
delta w : [0.07123947 0.11398316 0.02849579]

error 2 : 0.258744
w       : [0.47123947 0.81398316 0.82849579]
delta w : [0.06468607 0.10349771 0.02587443]

error 3 : 0.236345
w       : [0.53592554 0.91748087 0.85437022]
delta w : [0.05908634 0.09453814 0.02363454]

error 4 : 0.217087
w       : [0.59501188 1.01201901 0.87800475]
delta w : [0.0542718  0.08683489 0.02170872]

error 5 : 0.200421
w       : [0.64928369 1.0988539  0.89971348]
delta w : [0.05010515 0.08016824 0.02004206]
```