```
def activation(out,threshold):
    if out>=threshold:
        return 1
    else:
        return 0



def perceptron(and_input):
    a=[0,0,1,1]
    b=[0,1,0,1]
    y=[0,0,0,1] #actual output
    w=[0.1,0.8]
    threshold=1
    learning_rate=0.5
    i=0
    print("PERCEPTRON TRAINING :")
    while i<4:
        summation = a[i]*w[0] +b[i]*w[1]
        o=activation(summation,threshold)
        print("Input :"+str(a[i])+","+str(b[i]))
        print("Weights : "+str(w[0])+","+str(w[1]))
        print("Summation : "+str(summation)+"threshold :
"+str(threshold))
        print("Actual output :"+str(y[i])+"Predicted Output :"+str(o))
        if(o!=y[i]):
            print("____\nUpdating weights")
            w[0] =w[0]+learning_rate*(y[i]-o)*a[i]
            w[1] =w[1]+learning_rate*(y[i]-o)*b[i]
            print("Updated Weights : "+str(w[0])+","+str(w[1]))
            i=-1
            print("\nWeights Updated Training Again : ")
        i=i+1
    #prediction part
    summation= and_input[0] * w[0] + and_input[1]*w[1]
    return activation(summation,threshold)

and_input =[0,1]
print("AND Gate Output for "+str(and_input) +" : "
+str(perceptron(and_input)))
```

```
PERCEPTRON TRAINING :
Input :0,0
Weights : 0.1,0.8
Summation : 0.0threshold : 1
Actual output :0Predicted Output :0
Input :0,1
Weights : 0.1,0.8
Summation : 0.8threshold : 1
Actual output :0Predicted Output :0
```

```
Input :1,0
Weights : 0.1,0.8
Summation : 0.1threshold : 1
Actual output :0Predicted Output :0
Input :1,1
Weights : 0.1,0.8
Summation : 0.9threshold : 1
Actual output :1Predicted Output :0
____
Updating weights
Updated Weights : 0.6,1.3

Weights Updated Training Again :
Input :0,0
Weights : 0.6,1.3
Summation : 0.0threshold : 1
Actual output :0Predicted Output :0
Input :0,1
Weights : 0.6,1.3
Summation : 1.3threshold : 1
Actual output :0Predicted Output :1
____
Updating weights
Updated Weights : 0.6,0.8

Weights Updated Training Again :
Input :0,0
Weights : 0.6,0.8
Summation : 0.0threshold : 1
Actual output :0Predicted Output :0
Input :0,1
Weights : 0.6,0.8
Summation : 0.8threshold : 1
Actual output :0Predicted Output :0
Input :1,0
Weights : 0.6,0.8
Summation : 0.6threshold : 1
Actual output :0Predicted Output :0
Input :1,1
Weights : 0.6,0.8
Summation : 1.4threshold : 1
Actual output :1Predicted Output :1
AND Gate Output for [0, 1] : 0
```