

```

1 import numpy as np
2
3 # weights
4 w = np.array([1, 1]) # Weighst for AND and OR gate
5 wNOT = -1
6
7 # biases
8 bNOT = 0.5
9 bAND = -1.5
10 bOR = -0.5
11
12 def unitStep_activation(v):
13     if v >= 0:
14         return 1
15     else:
16         return 0
17
18 def dot_activation(x, w, b):
19     v = np.dot(w, x) + b
20     y = unitStep_activation(v)
21     return y
22
23 def NOT_logic(x):
24     return dot_activation(x, wNOT, bNOT)
25
26 def AND_logic(x):
27     return dot_activation(x, w, bAND)
28
29 def OR_logic(x):
30     return dot_activation(x, w, bOR)
31
32 # XOR Logic Function
33 def XOR_logic(x):
34     y1 = AND_logic(x)
35     y2 = OR_logic(x)
36     y3 = NOT_logic(y1)
37     final_x = np.array([y2, y3])
38     finalOutput = AND_logic(final_x)
39     return finalOutput
40
41 # testing the Perceptron Model
42 test = np.array([[0, 0], [0, 1], [1, 0], [1, 1]])
43 for i in test:
44     print("XOR({}, {}) = {}".format(i[0], i[1], XOR_logic(i)))
45

```

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→ XOR(0, 0) = 0
   XOR(0, 1) = 1
   XOR(1, 0) = 1
   XOR(1, 1) = 0

```