

## Practical : 2

import numpy as np

def McCulloch\_pitts\_AND(x1, x2):

    weights = np.array([1, 1]) # Weights for AND function

    threshold = 2 # Activation threshold

    weighted\_sum = x1 \* weights[0] + x2 \* weights[1]

    output = 1 if weighted\_sum >= threshold else 0

    return output

def McCulloch\_pitts\_OR(x1, x2):

    weights = np.array([1, 1]) # Weights for OR function

    threshold = 1 # Activation threshold

    weighted\_sum = x1 \* weights[0] + x2 \* weights[1]

    output = 1 if weighted\_sum >= threshold else 0

    return output

def McCulloch\_pitts\_ANDNOT(x1, x2):

    weights = np.array([1, -1]) # Weights for ANDNOT function

    threshold = 1 # Activation threshold

    weighted\_sum = x1 \* weights[0] + x2 \* weights[1]

    output = 1 if weighted\_sum >= threshold else 0

    return output

print("x1 x2 | AND(x1, x2) | OR(x1, x2) | ANDNOT(x1, x2)")

print("-----")

for x1 in [0, 1]:

    for x2 in [0, 1]:

        print(f" {x1} {x2} |    {McCulloch\_pitts\_AND(x1, x2)}    |    {McCulloch\_pitts\_OR(x1, x2)}    |  
              {McCulloch\_pitts\_ANDNOT(x1, x2)}")

**Output:**

x1 x2 | AND(x1, x2) | OR(x1, x2) | ANDNOT(x1, x2)

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0 0 | 0 | 0 | 0

0 1 | 0 | 1 | 0

1 0 | 0 | 1 | 1

1 1 | 1 | 1 | 0