**SOFT COMPUTING PRACTICAL**

**NAME: ANSHIKA JAIN**

**ENROLLMENT NO: 170364**

**BATCH: C1**

**OBJECTIVE:** Write a program to implement MADALINE Neural Network using Python language.

**CODE:**

import numpy as np

x = np.array([[1, 1], [1, -1], [-1, 1], [-1, -1]])  
t = np.array([[1], [1], [1], [-1]])  
w = np.array([[0], [0]])  
b = 0  
theta = float(input("enter new theta"))  
alpha = float(input("enter new alpha"))  
yin = np.zeros(shape=(4, 1))  
y = np.zeros(shape=(4, 1))  
i = 0  
found = 0  
while (found == 0):  
 yin = x[i][0] \* w[0] + x[i][1] \* w[1]  
 yin = yin + b  
 if (yin > theta):  
 y[i] = 1  
 elif (yin <= theta and yin >= -theta):  
 y[i] = 0  
 else:  
 y[i] = -1  
 if (y[i] == t[i]):  
 print("NO UPDATION REQUIRED")  
 print(y[i])  
 if (i < 3):  
 i = i + 1  
 else:  
 i = 0  
 else:  
 print("MODEL IS NOT TRAINED")  
 print("The value of output is")  
 print(y)  
  
 w[0] = w[0] + alpha \* x[i][0] \* t[i]  
 w[1] = w[1] + alpha \* x[i][1] \* t[i]  
 b = b + alpha \* t[i]  
 if (i < 3):  
 i = i + 1  
 else:  
 i = 0  
 if (y == t).all():  
 found = 1  
print("The final weight matrix is ")  
print(w)  
print("The final output is:")  
print(y)

**OUTPUT SNAPSHOT:**

