PROGRAM 9

Aim: Write a program to implement AND logic functions.

Code:

```
import numpy as np
x=np.array([[1,1],[1,0],[0,1],[0,0]])
t=np.array([[1],[0],[0],[0]])
w=np.array([[0],[0]])
theta=1
yin=np.zeros(shape=(4,1))
y=np.zeros(shape=(4,1))
yin=np.dot(x,w)
i=0
found=0
while(found==0):
        i=0
        yin=np.dot(x,w)
        #print(yin)
        while(i<4):
        if yin[i]>=theta:
                y[i]=1
                i=i+1
         else:
                y[i]=0
                i=i+1
  #print("y",y)
  #print("t",t)
        if (y==t).all():
        print("MODEL IS TRAINED ")
        print("\nOutput : \n",y)
        print("\nweights : ",w,"\n")
        print("theta : ",theta)
        found=1
         else:
         print("MODEL IS NOT TRAINED")
        w=np.zeros(shape=(0,0))
        theta=int(input("Enter New Theta : "))
        for k in range(int(2)):
                w1=int(input("Enter Weight : "))
                w=np.append(w,w1)
```

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OUTPUT:

```
import numpy as np
x=np.array([[1,1],[1,0],[0,1],[0,0]])
t=np.array([[1],[0],[0],[0]])
w=np.array([[0],[0]])
theta=1
yin=np.zeros(shape=(4,1))
y=np.zeros(shape=(4,1))
yin=np.dot(x,w)
i=0
found=0
while(found==0):
    i=0
    yin=np.dot(x,w)
    #print(yin)
    while(i<4):
        if yin[i]>=theta:
            y[i]=1
            i=i+1

        else:
            y[i]=0
            i=i+1
    #print("y",y)
    #print("t",t)
    if (y==t).all():
        print("MODEL IS TRAINED ")
        print("\nOutput : \n",y)
        print("\nweights : ",w,"\n")
        print("theta : ",theta)
        found=1
    else:
        print("MODEL IS NOT TRAINED")
        w=np.zeros(shape=(0,0))
        theta=int(input("Enter New Theta : "))
        for k in range(int(2)):
            w1=int(input("Enter Weight : "))
            w=np.append(w,w1)
```

```
MODEL IS NOT TRAINED

Enter New Theta : 2

Enter Weight : 1

Enter Weight : 1
MODEL IS TRAINED

Output :
 [[1.]
 [0.]
 [0.]
 [0.]]

weights :  [1. 1.]

theta :  2
```