Machine Learning

Ex: 06 Hebbnet

Name: Athithraja. R

Reg.no: 2022503702

1)

Code:

```
#this function used to convert 0 to -1

def convert_0(x):
for i in range(len(x)):
if x[i]==0:
x[i]=-1
return(x)

def modify_w(w,x,y):
return(w+(x*y))

#Gate Inputs and Output
x1=[0,0,1,1]
x2=[0,1,0,1]
y=[1,0,0,0]

#And [0,0,0,1]
#OR [0,1,1,1]
#Nand [1,1,1,0]
#Nor [1,0,0,0]

print("x1: "+str(x1))
```

```
print("x2: "+str(x2))
print("y: "+str(y))

#convert 0 to -1
x1=convert_0(x1)
x2=convert_0(x2)
y=convert_0(y)

#initial weights
w1=0
w2=0
wb=0

#b values
b=[1,1,1,1]

for i in range(4):
x=x1[i]
yi=y[i]
w1=modify_w(w1,x,yi)

x=x2[i]
w2=modify_w(w2,x,yi)

bi=b[i]
wb=modify_w(wb,bi,wb)

print("w1= "+str(w1))
print("w2= "+str(w2))
print("wb= "+str(wb))

th=0 #throushhold
```

```
# for AND gate th=0
# for OR gate th=-1
# for NAND gate th=-1
# for NOR gate th=0


yout=[] #initialize yout..


#f(x)
for i in range(4):
fx= (x1[i]*w1)+(x2[i]*w2)+(b[i]*wb)
print(fx)
if fx>th:
yout.append(1)
else:
yout.append(0)


print("yout: "+str(yout))
```

Output:

```
x1: [0, 0, 1, 1]
x2: [0, 1, 0, 1]
y: [1, 0, 0, 0]
w1= -2
w2= -2
wb= 0
4
0
0
-4
yout: [1, 0, 0, 0]
```