**2 Inputs**

#NOT Gate

import numpy as np

def activation(f):

if f==0.5:

return 1

else:

return 0

def neuron(x,w,b):

r=np.dot(x,w)+b

return activation(r)

def NOTgate(x):

w=np.array([1])

b=0.5

return neuron(x,w,b)

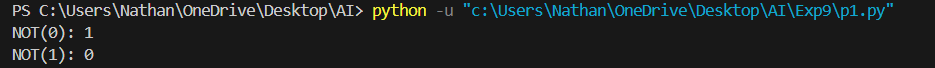
example1=np.array([0])

example2=np.array([1])

print("NOT(0,0)",NOTgate(example1))

print("NOT(0,1)",NOTgate(example2))

OUTPUT:



#OR Gate

import numpy as np

def activation(f):

if f>0.5:

return 1

else:

return 0

def neuron(x,w,b):

r=np.dot(x,w)+b

return activation(r)

def ORgate(x):

w=np.array([1,1])

b=0.5

return neuron(x,w,b)

example1=np.array([0,0])

example2=np.array([0,1])

example3=np.array([1,0])

example4=np.array([1,1])

print("OR(0,0)",ORgate(example1))

print("OR(0,1)",ORgate(example2))

print("OR(1,0)",ORgate(example3))

print("OR(1,1)",ORgate(example4))

OUTPUT:

A black screen with blue and yellow text

AI-generated content may be incorrect.

#AND Gate

import numpy as np

def activation(f):

if f<2.5:

return 0

else:

return 1

def neuron(x,w,b):

r=np.dot(x,w)+b

return activation(r)

def ANDgate(x):

w=np.array([1,1])

b=0.5

return neuron(x,w,b)

example1=np.array([0,0])

example2=np.array([0,1])

example3=np.array([1,0])

example4=np.array([1,1])

print("AND(0,0)",ANDgate(example1))

print("AND(0,1)",ANDgate(example2))

print("AND(1,0)",ANDgate(example3))

print("AND(1,1)",ANDgate(example4))

OUTPUT:  
A black screen with blue and yellow text

AI-generated content may be incorrect.

#NOR Gate

import numpy as np

def activation(f):

if f>0.5:

return 0

else:

return 1

def neuron(x,w,b):

r=np.dot(x,w)+b

return activation(r)

def NORgate(x):

w=np.array([1,1])

b=0.5

return neuron(x,w,b)

example1=np.array([0,0])

example2=np.array([0,1])

example3=np.array([1,0])

example4=np.array([1,1])

print("NOR(0,0)",NORgate(example1))

print("NOR(0,1)",NORgate(example2))

print("NOR(1,0)",NORgate(example3))

print("NOR(1,1)",NORgate(example4))

OUTPUT:

A black screen with text

AI-generated content may be incorrect.

#NAND Gate

import numpy as np

def activation(f):

if f>1.5:

return 0

else:

return 1

def neuron(x,w,b):

r=np.dot(x,w)+b

return activation(r)

def NANDgate(x):

w=np.array([1,1])

b=0.5

return neuron(x,w,b)

example1=np.array([0,0])

example2=np.array([0,1])

example3=np.array([1,0])

example4=np.array([1,1])

print("NAND(0,0)",NANDgate(example1))

print("NAND(0,1)",NANDgate(example2))

print("NAND(1,0)",NANDgate(example3))

print("NAND(1,1)",NANDgate(example4))

OUTPUT:

A black screen with colorful text

AI-generated content may be incorrect.

#XOR Gate

import numpy as np

def activation(f):

if f>=0:

return 1

else:

return 0

def neuron1(x,w1,b1):

r1=np.dot(x,w1)+b1

return activation(r1)

def neuron2(x,w2,b2):

r2=np.dot(x,w2)+b2

return activation(r2)

def neuron3(r1,r2,w3,b3):

inputs=np.array([r1,r2])

r3=np.dot(inputs,w3)+b3

return activation(r3)

def XORgate(x):

w1=np.array([-1,-1])

b1=1.5

r1=neuron1(x,w1,b1)

w2=np.array([-1,-1])

b2=0.5

r2=neuron2(x,w2,b2)

w3=np.array([1,-1])

b3=-0.5

r3= neuron3(r1,r2,w3,b3)

return r3

example1=np.array([0,0])

example2=np.array([0,1])

example3=np.array([1,0])

example4=np.array([1,1])

print("XOR(0,0)",XORgate(example1))

print("XOR(0,1)",XORgate(example2))

print("XOR(1,0)",XORgate(example3))

print("XOR(1,1)",XORgate(example4))

OUTPUT:  
A black screen with yellow text

AI-generated content may be incorrect.

**3 Inputs**

#3 Input OR Gate

import numpy as np

def activation(f):

if f>0.5:

return 1

else:

return 0

def neuron(x,w,b):

r=np.dot(x,w)+b

return activation(r)

def ORgate(x):

w=np.array([1,1,1])

b=0.5

return neuron(x,w,b)

example1=np.array([0,0,0])

example2=np.array([0,0,1])

example3=np.array([0,1,0])

example4=np.array([0,1,1])

example5=np.array([1,0,0])

example6=np.array([1,0,1])

example7=np.array([1,1,0])

example8=np.array([1,1,1])

print("OR(0,0,0)",ORgate(example1))

print("OR(0,0,1)",ORgate(example2))

print("OR(0,1,0)",ORgate(example3))

print("OR(0,1,1)",ORgate(example4))

print("OR(1,0,0)",ORgate(example5))

print("OR(1,0,1)",ORgate(example6))

print("OR(1,1,0)",ORgate(example7))

print("OR(1,1,1)",ORgate(example8))

OUTPUT:

A black screen with colorful text

AI-generated content may be incorrect.

#3 Input AND Gate

import numpy as np

def activation(f):

if f>=3.5:

return 1

else:

return 0

def neuron(x,w,b):

r=np.dot(x,w)+b

return activation(r)

def ANDgate(x):

w=np.array([1,1,1])

b=0.5

return neuron(x,w,b)

example1=np.array([0,0,0])

example2=np.array([0,0,1])

example3=np.array([0,1,0])

example4=np.array([0,1,1])

example5=np.array([1,0,0])

example6=np.array([1,0,1])

example7=np.array([1,1,0])

example8=np.array([1,1,1])

print("AND(0,0,0)",ANDgate(example1))

print("AND(0,0,1)",ANDgate(example2))

print("AND(0,1,0)",ANDgate(example3))

print("AND(0,1,1)",ANDgate(example4))

print("AND(1,0,0)",ANDgate(example5))

print("AND(1,0,1)",ANDgate(example6))

print("AND(1,1,0)",ANDgate(example7))

print("AND(1,1,1)",ANDgate(example8))

OUTPUT:

A black screen with colorful text

AI-generated content may be incorrect.

#3 Input NOR Gate

import numpy as np

def activation(f):

if f>=1.5:

return 0

else:

return 1

def neuron(x,w,b):

r=np.dot(x,w)+b

return activation(r)

def NORgate(x):

w=np.array([1,1,1])

b=0.5

return neuron(x,w,b)

example1=np.array([0,0,0])

example2=np.array([0,0,1])

example3=np.array([0,1,0])

example4=np.array([0,1,1])

example5=np.array([1,0,0])

example6=np.array([1,0,1])

example7=np.array([1,1,0])

example8=np.array([1,1,1])

print("NOR(0,0,0)",NORgate(example1))

print("NOR(0,0,1)",NORgate(example2))

print("NOR(0,1,0)",NORgate(example3))

print("NOR(0,1,1)",NORgate(example4))

print("NOR(1,0,0)",NORgate(example5))

print("NOR(1,0,1)",NORgate(example6))

print("NOR(1,1,0)",NORgate(example7))

print("NOR(1,1,1)",NORgate(example8))

OUTPUT:  
A black screen with text

AI-generated content may be incorrect.

#3 Input NAND Gate

import numpy as np

def activation(f):

if f>=3.5:

return 0

else:

return 1

def neuron(x,w,b):

r=np.dot(x,w)+b

return activation(r)

def NANDgate(x):

w=np.array([1,1,1])

b=0.5

return neuron(x,w,b)

example1=np.array([0,0,0])

example2=np.array([0,0,1])

example3=np.array([0,1,0])

example4=np.array([0,1,1])

example5=np.array([1,0,0])

example6=np.array([1,0,1])

example7=np.array([1,1,0])

example8=np.array([1,1,1])

print("NAND(0,0,0)",NANDgate(example1))

print("NAND(0,0,1)",NANDgate(example2))

print("NAND(0,1,0)",NANDgate(example3))

print("NAND(0,1,1)",NANDgate(example4))

print("NAND(1,0,0)",NANDgate(example5))

print("NAND(1,0,1)",NANDgate(example6))

print("NAND(1,1,0)",NANDgate(example7))

print("NAND(1,1,1)",NANDgate(example8))

OUTPUT:

A screen shot of a computer

AI-generated content may be incorrect.