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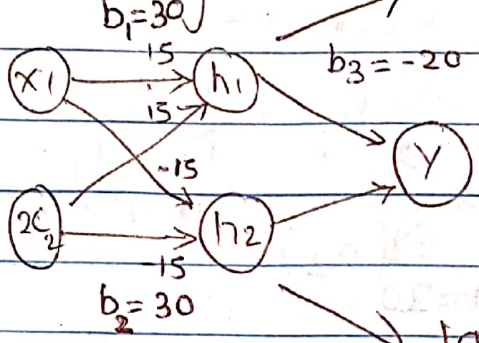
perceptron using XOR. → logical OR



desired O/P.

x_1	x_2	Y
-1	-1	-1
-1	1	1
1	-1	1
1	1	-1

if value $\leq 0 = -1$ value $\geq 0 = 1$

h_1 $b_1 = 30$

	h_1 O/P
15(-1) + 15(-1) + 30 = 0 ≈	-1
15(-1) + 15(1) + 30 = 30 ≈	1
15(1) + 15(-1) + 30 = 30 ≈	1
15(1) + 15(1) + 30 = 60 ≈	1

h_2 $b_2 = 30$

	h_2 O/P
-15(-1) + (-15)(-1) + 30 = 60 ≈	1
-15(-1) + (-15)(1) + 30 = 30 ≈	1
-15(1) + (-15)(-1) + 30 = 30 ≈	1
-15(1) + (-15)(1) + 30 = 0 ≈	-1

Y

		O/P
15(-1)	15(-1) + 15(1) - 20 = -30 ≈	-1
15(+1)	15(1) + 15(1) - 20 = 10 ≈	1
15(+1)	15(1) + 15(1) - 20 = 10 ≈	1
15(+1)	15(1) + 15(-1) - 20 = -20 ≈	-1

The solution for this problem can be solved only using multilayer perceptron.
There can be any number of hidden layers.
The architecture used here is designed specifically for the XOR problem.
This architecture is more complex than classic perceptron and is capable of achieving non linear separation. Thus the right set of weight values, it can provide the necessary separation to accurately classify the XOR inputs.

Hence neural network solved for the point (-1, -1) (-1, 1) (1, -1) (1, 1) can be solved using neural network using XOR.