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Task 1:

Training and testing on pendigits dataset, with 2 layers, 10 training rounds -> **classification accuracy=0.8659**

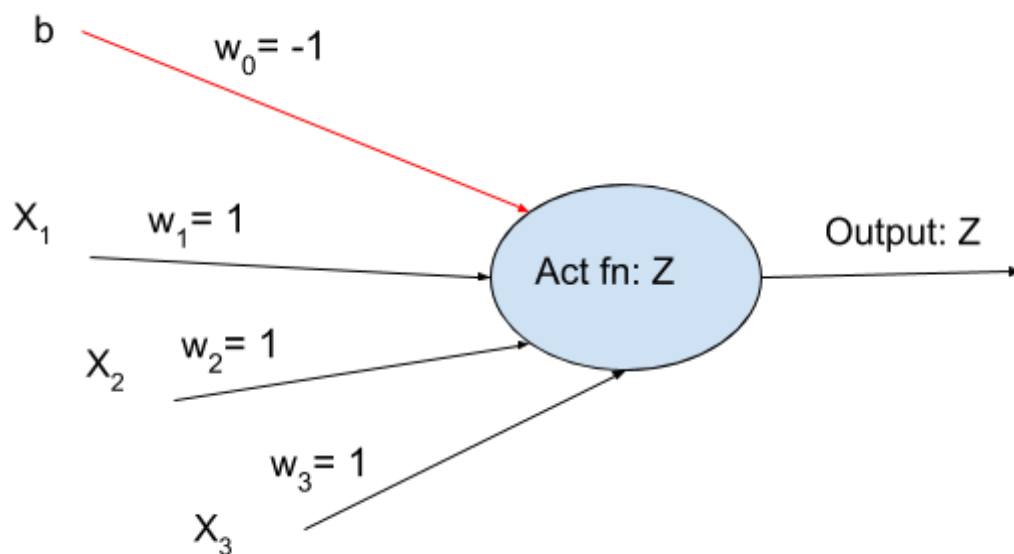
Training and testing on pendigits dataset, with 3 layers, 20 units per hidden layer, 20 training rounds -> **classification accuracy=0.9191**

Task 1b:

Command-> `python3 neural_network.py pendigits_training.txt pendigits_test.txt 3 20 50`

classification accuracy=0.9237

Task 2:



$$Z = h(wT.x)$$

X_1	X_2	X_3	Output
1	1	1	1
1	1	0	1
1	0	1	1
0	1	1	1
1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	0

Task 3:

$X \Rightarrow Y$ truth table is easier.

X	Y	output
0	0	1
0	1	1
1	0	0
1	1	1

