Perceptron Learning Worksheet

Algorithm:

1. Initialize starting weights randomly
2. Do until you want to stop (*typically when accuracy is good enough or weights stop changing*):
    a. for each training example (x, y):
        i. use NN to get prediction of h(x)
        ii. if h(x) differs from y, update all weights:
        iii. w[i] = w[i] + (y – h(x)) * x[i]
    b. compute accuracy over entire training data = (# predicted correctly)/(# of training examples)

Training data

x1	**x2**	**y**
0	0	0
0	1	0
1	0	0
1	1	1

Epoch	Starting weights			Example				Weighted sum	Predict h(x)	Error y – h(x)	Updated weights		
	w0	w1	w2	x0 (bias)	x1	x2	y				w0	w1	w2
1	1	2	3	1	0	0	0						
1				1	0	1	0						
1				1	1	0	0						
1				1	1	1	1						
2				1	0	0	0						
2				1	0	1	0						
2				1	1	0	0						
2				1	1	1	1						
3				1	0	0	0						
3				1	0	1	0						
3				1	1	0	0						
3				1	1	1	1						