Homework Assignment #4 - Neural Networks
Due Wednesday, March 16

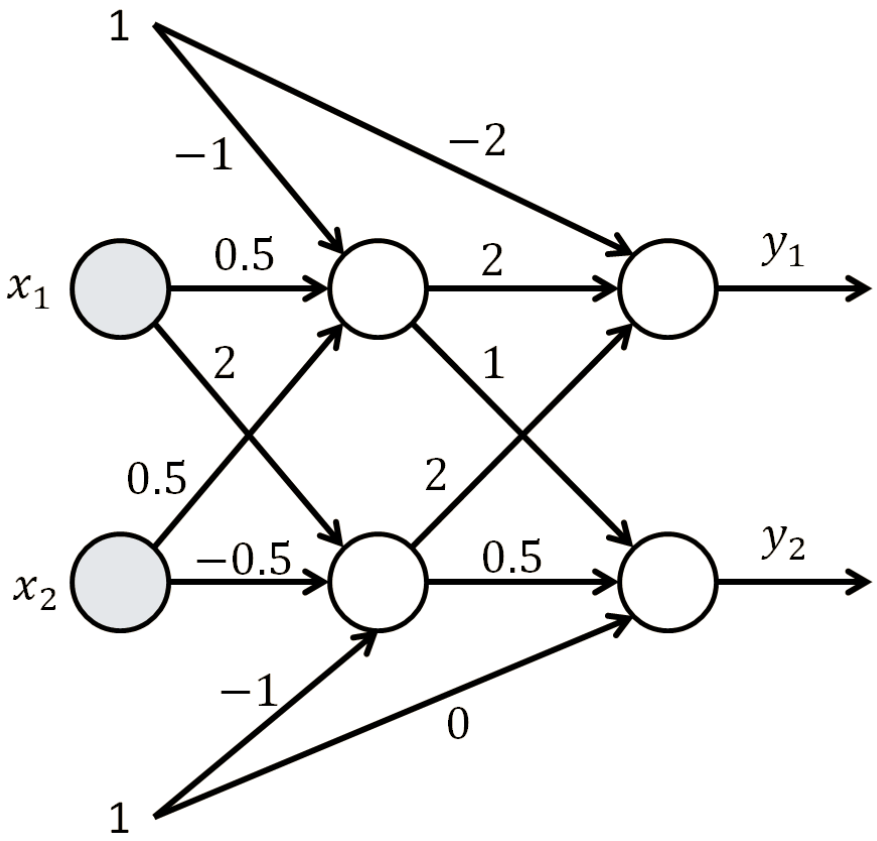
Note : No submission will be accepted after 11:00 AM CST, March 18. This is INCLUDING the LATE DAY.

Written Homework

This assignment includes only the following two written questions. Although we will not require you to TeX your assignment, the easier it is for us to read, the more partial credit you may receive.

Question 1

Given the nueral network below, calculate and show the weight changes that would be made by one step of the online version of backpropogation for the training instance **x** = {1,0}, **y** = {0,1}. Assume that the hidden and output units use sigmoid functions, the network is being trained to minimize squared error, and the learning rate is 0.1. Ignore momentum for this problem. Edges from the constant 1 on the top and bottom indicate bias parameters.



Question 2

Present a neural network that represents the logical function $y = (x_1 \wedge x_2) \vee (x_3 \wedge x_4)$. Show

the network topology, weights, and any biases. You should assume that the hidden and output units again use sigmoid output functions, and an output activation of 0.5 or greater represents a *true* prediction for y.

Submitting Your Assignment

You should turn in your printed or a scanned copy of your handwritten assignment in the course moodle .