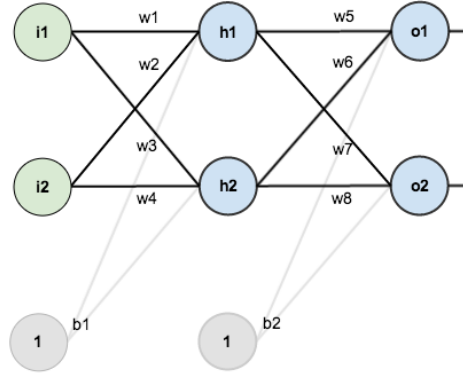


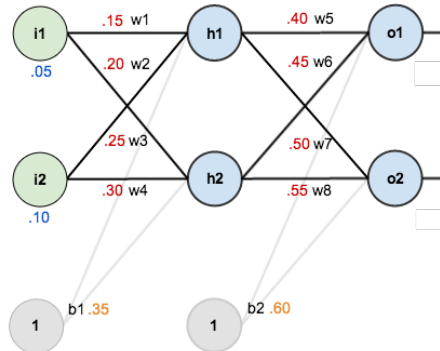
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Homework 6

Consider this network architecture:



1. What is the feature dimension p ?
2. Imagine we initialize as in this figure:



The two biases in the first level are equal to one another ($.35$) here, and the two biases in the second level are equal to one another ($.60$) here. If we input 0.05 in input 1 and 0.10 in input 2, and then do a forward pass, what will outputs 1 and 2 be? Assume logistic activations.

3. Assume the training labels are $.01$ and $.99$ for o_1 and o_2 , respectively. What is the squared error of the output of the forward pass?
4. What is df/dw_k for $k = 1, \dots, 8$?
5. Give an expression for the update of each w_k in terms of a step size τ .