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Lab #1

Step 1: Running data through the network (forward Propagation)

Part 1: Moving from the Input layer to the hidden layer
With our model from our lecture, we first got the sum of all the Inputs into nodes b_1 and b_2 using this equation $\longrightarrow$ $net b_1 \sum_{i=1}^{n} (a_i w_i) + bias$

- $netB_1 = (0.15 * 0.10) + (0.35 * 0.12) + (1 * 0.80) = 0.857$
- $netB_2 = (0.15 * 0.20) + (0.35 * 0.17) + (1 * 0.25) = 0.3395$

Part 2: Moving from the hidden layer to the output layer
We now move the values from the hidden layer to the output layer by applying the activation function to our net Input values

$$\left(\text{activation function} = f(x) = \frac{1}{1 + e^{-x}}\right)$$

$$f(net b1) = \frac{1}{1 + 2.71828^{-0.857}} = \frac{1}{1.424433719} = 0.7020$$

$$f(net b2) = \frac{1}{1 + 2.71828^{-0.3395}} = \frac{1}{1.71212646} = 0.5841$$

- now that we have B1 and B2 calculated, we can now move to C1 and C2 by following the same steps we did previously (using both the summation operator/activation function)

- $net c_1 = (0.7020 * 0.05) + (0.5841 * 0.33) + (1 * 0.15) = 0.3779$
- $net c_2 = (0.702 * 0.40) + (0.5841 * 0.07) + (1 * 0.70) = 1.0217$