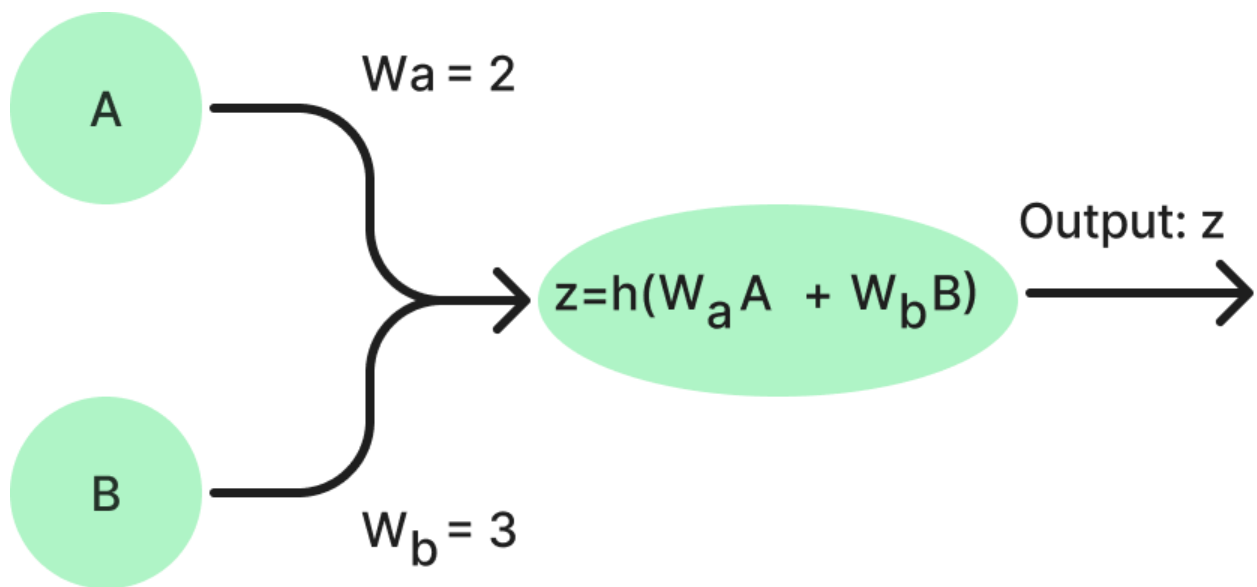


William Sigala

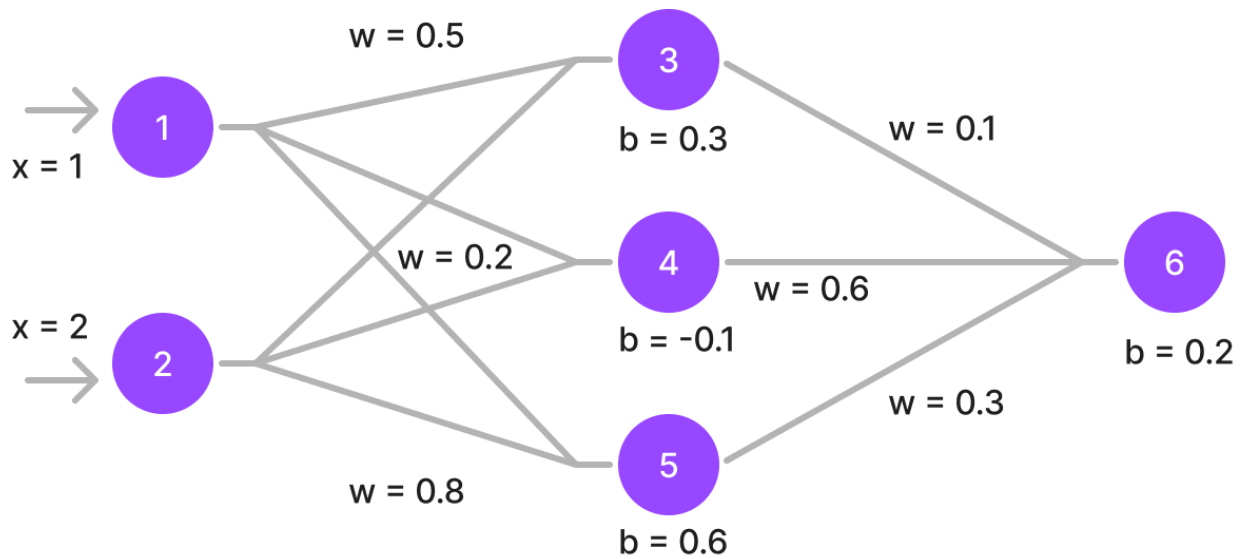
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Question 1:

$$h(x) = \begin{cases} 0 & \text{if } x > 4 \text{ and } x < 4 \\ 1 & \text{if } x = 4 \end{cases}$$



Question 2:



Hidden layer output:

$$[1 * 0.5 + 2 * 0.5 + 0.3, 1 * 0.2 + 2 * 0.2 - 0.1, 0.8 * 1 + 0.8 * 2 + 0.6]^T =$$

$$\text{ReLU}([1.8, 0.5, 3]^T) = [1.8, 0.5, 3]$$

Output layer:

$$[1.8 * 0.1 + 0.5 * 0.6 + 3 * 0.3 + 0.2]^T = 1.58$$

With Every $w = 1$

Hidden layer output:

$$[1 * 1 + 2 * 1 + 0.3, 1 * 1 + 2 * 1 - 0.1, 1 * 1 + 1 * 2 + 0.6]^T =$$

$$\text{ReLU}([3.3, 2.9, 3.6]^T) = [3.3, 2.9, 3.6]^T$$

Output layer:

$$[3.3 * 1 + 2.9 * 1 + 3.6 * 1 + 0.2]^T = 10$$