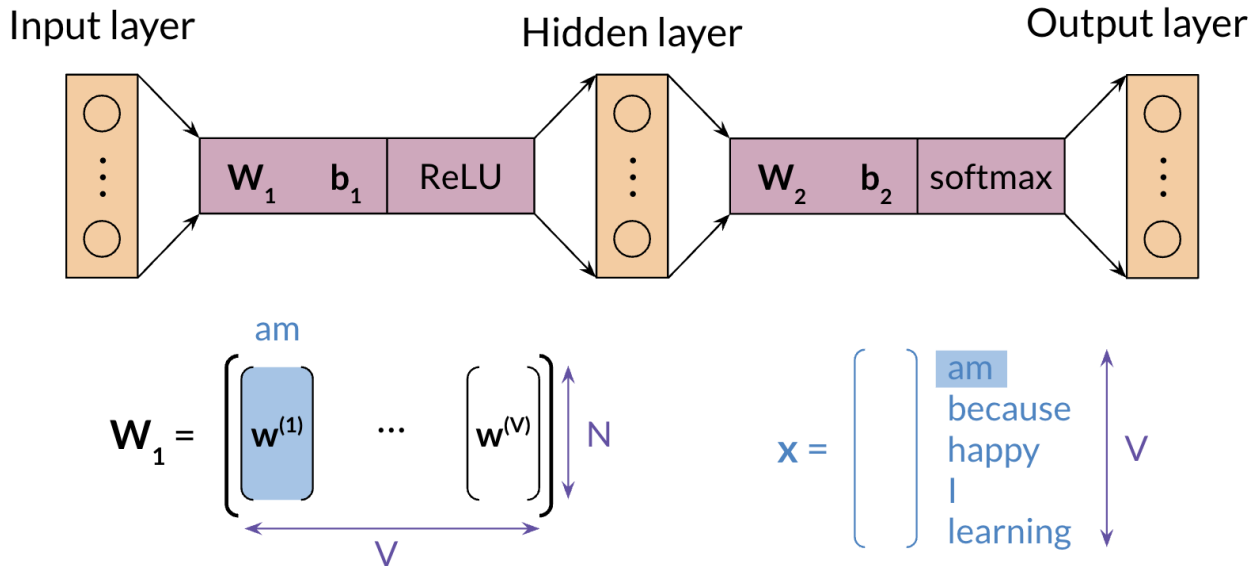


# Extracting Word Embedding Vectors

There are two options to extract word embeddings after training the continuous bag of words model. You can use  $w_1$  as follows:



If you were to use  $w_1$ , each column will correspond to the embeddings of a specific word. You can also use  $w_2$  as follows:

$$W_2 = \begin{bmatrix} w^{(1)} \\ \vdots \\ w^{(V)} \end{bmatrix} \quad \begin{matrix} \text{am} \\ \vdots \\ \end{matrix} \quad \begin{matrix} V \\ N \end{matrix}$$

$$x = \begin{bmatrix} \text{am} \\ \text{because} \\ \text{happy} \\ \text{I} \\ \text{learning} \end{bmatrix} \quad \begin{matrix} V \\ V \end{matrix}$$

The final option is to take an average of both matrices as follows:

$$W_3 = 0.5 (W_1 + W_2^T) = \begin{bmatrix} w_3^{(1)} & \dots & w_3^{(V)} \end{bmatrix} \quad \begin{matrix} N \\ V \end{matrix}$$