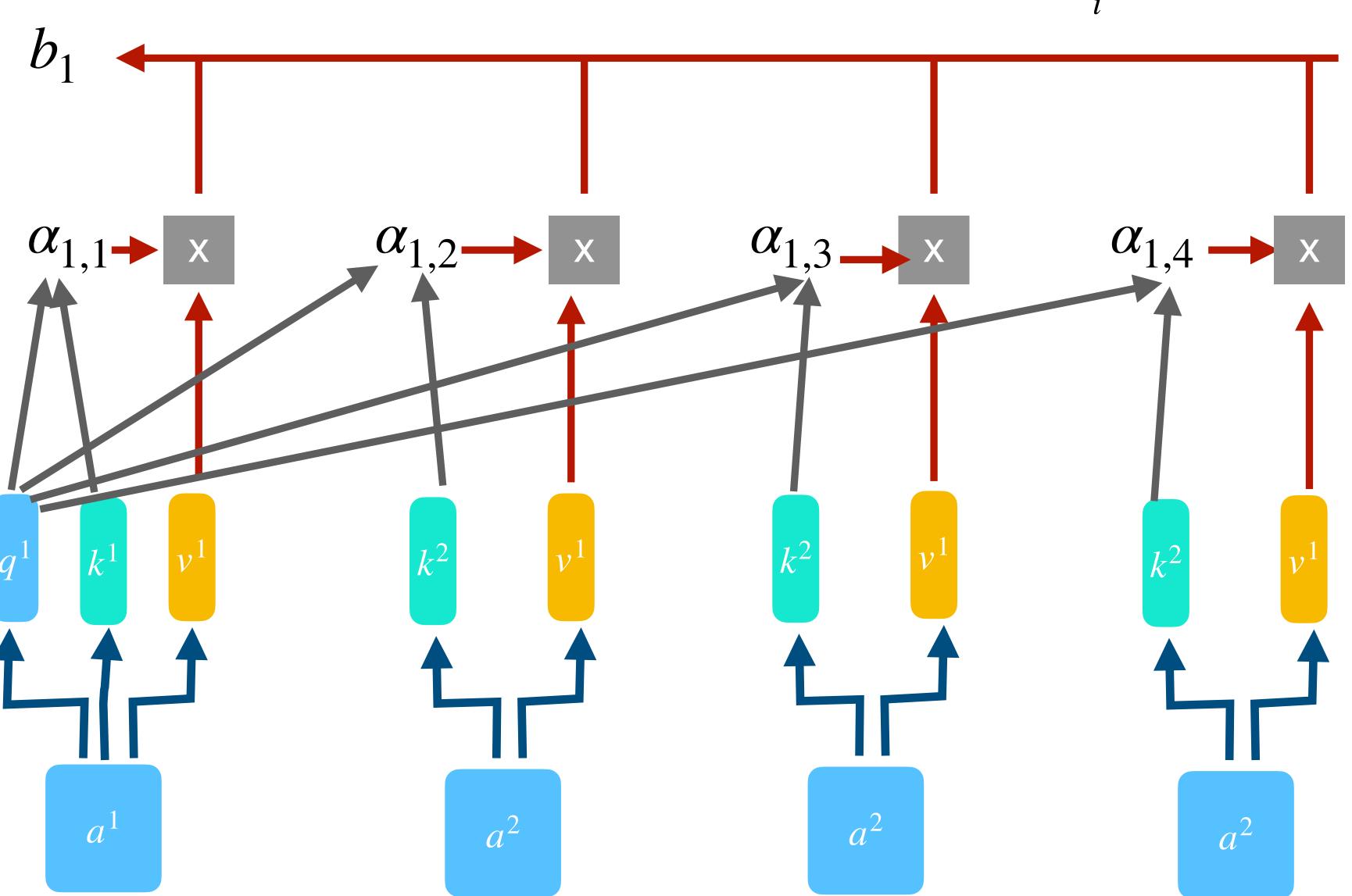
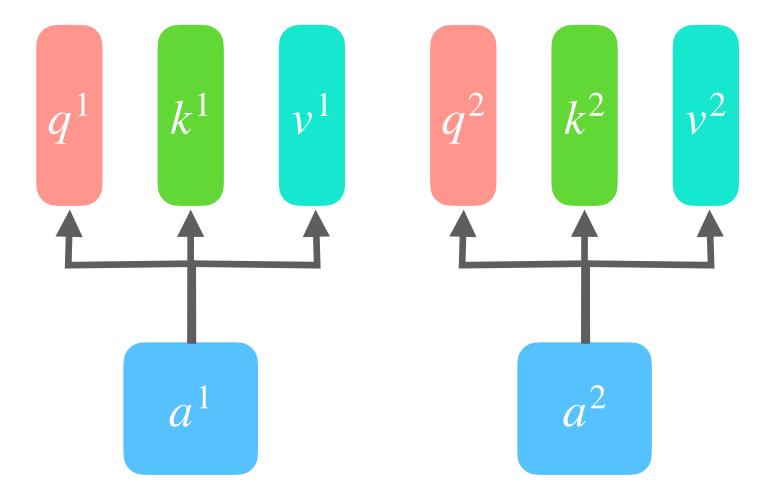
## **Attention**

$$b_1 = \sum_i a_{1,i}' v^i$$



## **Attention**



$$q^i = a^i W^q$$

$$q^{i} = a^{i}W^{q} \qquad q^{1}q^{2}q^{3}q^{4} = W^{q} \qquad a^{1}a^{2}a^{3}a^{4}$$

$$k^i = a^i W^k$$

$$k^{i} = a^{i}W^{k}$$
  $k^{1}k^{2}k^{3}k^{4} = W^{k}a^{1}a^{2}a^{3}a^{4}$ 

$$W^k \quad a^1 a^2 a^3 a^4$$

$$v^i = a^i W^v$$

$$v^1 \begin{vmatrix} v^2 \end{vmatrix} v^3 \begin{vmatrix} v^4 \end{vmatrix}$$

$$W^{v}$$

$$\left|a^{1}\right|a^{2}\left|a^{3}\right|a^{4}$$