

$$\begin{bmatrix}
 \begin{array}{c}
 X \\
 \begin{array}{|c|}
 \hline x_1 \\
 \hline x_2 \\
 \hline x_3 \\
 \hline x_4 \\
 \hline \vdots \\
 \hline x_N \\
 \hline
 \end{array} \\
 N \times d
 \end{array}
 \end{bmatrix}
 \times
 \begin{bmatrix}
 \begin{array}{|c|}
 \hline W^Q \\
 \hline
 \end{array} \\
 d \times d_k
 \end{array}
 =
 \begin{bmatrix}
 \begin{array}{c}
 Q \\
 \begin{array}{|c|}
 \hline q_1 \\
 \hline q_2 \\
 \hline q_3 \\
 \hline q_4 \\
 \hline \vdots \\
 \hline q_N \\
 \hline
 \end{array} \\
 N \times d_k
 \end{array}
 \end{bmatrix}$$

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 \begin{array}{c}
 X \\
 \begin{array}{|c|}
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 =
 \begin{bmatrix}
 \begin{array}{c}
 K \\
 \begin{array}{|c|}
 \hline k_1 \\
 \hline k_2 \\
 \hline k_3 \\
 \hline k_4 \\
 \hline \vdots \\
 \hline k_N \\
 \hline
 \end{array} \\
 N \times d_k
 \end{array}
 \end{bmatrix}$$