The Concept of Stride

Stride s for an N-dimentional array helps to map its multi-dimensional index to a single dimensional index in memory. For an N-dimentional array with shape $(d_1, d_2, \dots, d_N)$, stride is defined for each dimension.

Computation of Stride

The stride of a tensor is computed based on its shape. We calculate the stride in reverse order, from the last dimension to the first. For the last dimension (the innermost), the stride is always 1. As we move to outer dimensions, we multiply the current stride by the size of the current dimension.

Given an array shape $(d_1, d_2, \dots, d_N)$, the stride s for each dimension is calculated as:

$$
\begin{aligned}
s_N &= 1 \\
s_{N-1} &= s_N \times d_N \\
s_{N-2} &= s_{N-1} \times d_{N-1} \\
&\vdots \\
s_1 &= s_2 \times d_2
\end{aligned}
$$