I think they both will take the same amount of time. When we store the elements in a multidimensional array, the OS still stores it in a sequential (1D) storage. So, my guess would be it still does some computations to get the location of the desired item. When we store the items in a 1D array with some mapping, we again do the same computations to get the desired location. So, it doesn't matter. I would prefer the multi-dimensional approach for cleaner looking code.