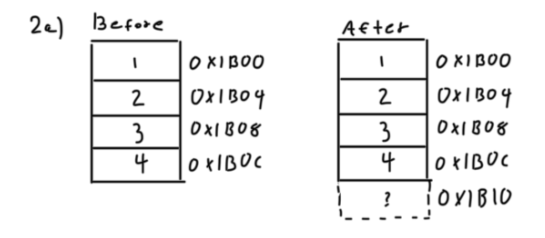
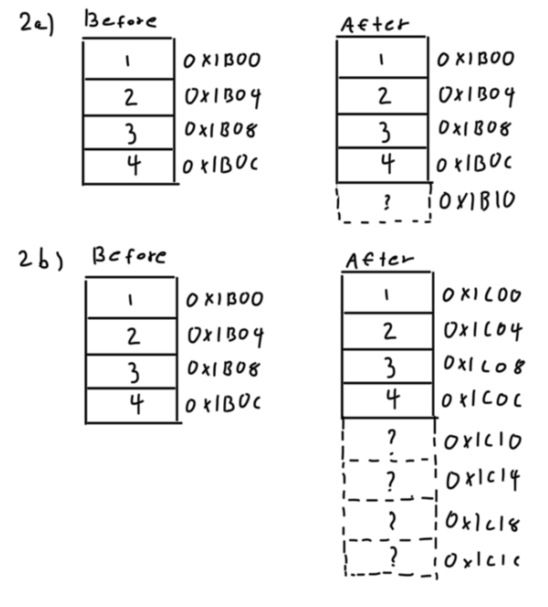
1. Array size is the number of elements that contain data in the array while capacity is the total number of elements available in the array.

2. When an array needs to grow beyond its capacity, it must be a dynamic array to allocate more memory for the new data.

a. If space in the memory after the end of the array is available, then the memory allocated to the array will be expanded without any data movement.



b. If another variable occupies space in the memory after the end of the array, then the memory allocated to the array will need to be relocated somewhere else to expand the memory. This is done at O(n) as each element must be copied to the new array.



3. One technique that is used to amortize the cost of array expansion is doubling the capacity for the newly allocated array. This strategy ensures that a sufficient amount of memory is allocated for insertions by amortizing constant-time insertion operations.