ENSF338 Exercise 2

Question 1:

Array Size is the number of elements currently present in the array. For example, if an array has 5 elements, its size is 5. On the other hand, Capacity is the total number of elements the array can hold without needing to resize. It is equal to or greater than the array size. For example, if an array has a capacity of 10, it means it can hold up to 10 elements without resizing.

Question 2:

1. When an array needs to grow beyond its current capacity and there is space available in memory after the end of the array, the array is expanded in place. This means that the existing array is extended into the available space without allocating a new array or copying elements. The capacity and size of the array are updated to reflect the new size, allowing it to grow efficiently without the overhead of reallocating memory.

Question 3:

Real-world array implementations often use a technique called "amortization" to reduce the cost of array expansion. One common approach is to double the array's capacity each time it needs to be resized. This strategy helps to amortize the cost of resizing over multiple insertions and reduces the overall number of resizes needed.