Exercise 2

1. Explain the difference between an array size and capacity.

   Array size is the number of positions that are available to store elements while capacity refers to memory allocated to the array.

2. What happen when an array needs to grow beyond its current capacity? Explain and produce a diagram showing the memory layout before and after expansion

1. First, consider the case where there is space in memory after the end of the array.

   The array will add the next element at the end of the array since it has the capacity to accommodate more elements.

2. Then, consider the case where the memory after the end of the array is occupied by another variable. What happens in that case?

   The capacity of the array will be expanded by creating a bigger array, copy the elements from the original array into the bigger array and destroy the original array.

3. Discuss one or more techniques real-world array implementations use to amortize the cost of array expansion.