Exercise – Dynamic Arrays

Exercises:

1. You will be implementing your own templated dynamic array class. Your class will need the following functions:
    a. A constructor, destructor, assignment operator and copy constructor
    b. Functions for adding and removing from the end of the array
    c. Functions for adding 1 or more elements from the middle of the array
    d. Functions for removing from the middle of the array. Both ordered and unordered removal
    e. Functions for changing how much space is allocated for the array. If less space is allocated than is used, the extra used data is discarded.
    f. A function for clearing the array.

2. CHALLENGE: Add the following functions:
    a. A function for sorting the array
    b. A function that searches the array for a given element
    c. A function for concatenating two dynamic arrays together
    d. A function for randomly shuffling the array
    e. A function for rotating the array by a given amount
        i. Rotating an array means to shift elements in a direction. Any elements that would fall off the end wrap back around to the start
        ii. EG: rotating the array {1,2,3,4,5,6,7,8,9} by 2 would give {8,9,1,2,3,4,5,6,7} and rotating the array by -4 would give {5,6,7,8,9,1,2,3,4}