

Week 07 (Monday)

There is a handout – please make the copies well in advance.

You might want to try this exercise out yourself, first, although it is not required. The “generic” syntax with arrays can be a little tricky, so I have provided you with my solution to the exercise. Obviously, do not circulate my solution to the students.

You should begin class by reviewing the technique of efficiently adding elements to the end of an array. I already talked about this in lecture. **In aggregate**, both adding/removing are $O(1)$ using this technique, although every once in a while there is an expensive copy operation. Our version works like this:

1. **Start the array at length 10**, but initialize an instance variable "size" to 0. ("size" will keep track of how much data is actually in the array.)
2. As the user adds data to the end of the list, increase the size variable.
3. If the user tries to add data to a full array, re-size the array by doubling the length (create a new, larger array, copy all the data to it, and re-assign the instance variable as a reference to the new, larger array.)
4. As the user removes data from the end of the list, simply decrease the size variable. We do not need to physically replace the data value in the array, and under no circumstances do we "shrink" the array.

If the above is unclear, look at my code.