RandomQueue Report

Queue Implementation

We have based our RandomQueue on the ResizingArrayQueue example from the book. Our implementation differs on the fact that we don't keep track of our first and last elements. We can do this, because our dequeue method does not need to return and remove the last element in the queue, due to its non-deterministic nature. Instead, we choose a uniformly random item from the queue, save it in a variable, move the first item in the queue to the random items place, and set the first items index to null – thus, we return and remove a random item in the queue.

Iterator Implementation

Our Iterator implementation also strongly resemble the one in the ResizingArrayQueue example from the book. To be able to have N amount of iterators, all having a random order, we have implemented a randomize method, which randomizes the order of the iterators copy of the queue. The randomize method gets called every time a new iterator is instantiated.