BİL-211 Object Oriented Programming and Design
Assignment - 2
Assigned: July 20, 2014
Due: August 3, 2014 11:59PM
Submission: Compress all the files (.rar, .zip etc.) and send them to myucesan@etu.edu.tr by email with a subject "BIL211 Hw2".
Rules: Late submissions are not allowed. Plagiarism is strictly forbidden, all that take part will be punished according to the regulations of the university.

In this assignment you are going to extend the Collections framework. As you know, Collections is a framework in standard Java library to easily implement new data structures. Add the following data structures to the framework:

- Multiset (`http://en.wikipedia.org/wiki/Multiset`) : A kind of set that can include an element more than once.
  - length() : Returns the total number of occurences of all elements in Multiset.
  - count(E n) : Returns the number of occurrences of an element in Multiset.
  - add(E n, int i) : Adds the specified number of occurrences of the specified element.
  - remove(E n, int i) : Removes the specified number of occurrences of the specified element.
  - setCount(E n, int c) : Sets the occurrence count of the specified element.
- Unrolled linked list (`http://en.wikipedia.org/wiki/Unrolled_linked_list`) : A linked list that can hold more than elements in one node.
  - count() : Returns the total number of elements in Unrolled linked list.
  - countNodes() : Returns the number of nodes in Unrolled linked list.
  - get(int i) : Returns the node at the specified index in Unrolled linked list.
  - add(E n) : Adds the specified element.
  - remove(int n) : Removes the node at the specified index.
- Sparse array (`http://en.wikipedia.org/wiki/Sparse_array`) : An array data structure whose elements are mostly zero. Only non-zero elements are kept for storage efficiency.
  - get(int i) : Returns the element at the specified index in Sparse Array.
  - put(int i, E n) : Sets the value of the specified index as given element.
  - length() : Returns the length of Sparse Array.
  - countElements() : Returns the number of non-null values in Sparse Array.
  - remove(int n) : Removes the element at the specified index.

The classes should both be generic and **thread-safe** which means that any number of threads can work on one instance of them without any problems.