Department of Computer Science and Engineering
University of Puerto Rico
Mayagüez Campus

CIIC 4020 / ICOM 4035 – Data Structures
Spring 2021 Laboratory
Lab #1 – Bag ADT

Use Eclipse to develop code for the following problems in the Eclipse Java project provided

Inside the project you will have a Bag.java and an ArrayBag.java file. The Bag file is the interface, the ArrayBag is the class implementation of the ADT.

1. Consider a member method for the Bag ADT used to compare two bags and determine whether they are equal (i.e. they have the same elements). Add this method to the Bag interface, then implement it in the ArrayBag class using the following prototype:

   ```
   public boolean equals(Bag<E> b2);
   ```

2. Consider a member method for the Bag ADT called bagAdjuster(). This method receives an integer n as parameter and modifies the target bag such that there is exactly n copies of each element in the bag. Notice that this method is void and modifies the target bag, it does not create a new instance of the target bag. The prototype for the method is:

   ```
   public void bagAdjuster(int n);
   ```

   Hints:

   1. For exercise 1, bags are an unordered collection of things. How can we make it so that we can organize things and we can compare the elements at the same time and in the same order?
      a. Note that the Bag implementation includes a **`toArray()`** method
         i. Think about using the static method **`sort()`** method included in the Arrays class (read Java API for more information)
   2. For exercise 2, this method is a **non-member** method, meaning that we cannot access private fields from the ArrayBag class such as `this.elements` and `this.currentSize`. Try to take advantage of the fact that the Bag has operations like adding, removing or counting elements that the bag has.