Homework 5

EE 363 (Fall 2018)

Department of Electrical and Computer Engineering
Clarkson University

Instructions

Please read the instructions carefully before submitting your work.

Note: There are 2 questions in this homework for a total of 50 points.

Note: Solve all problems and upload your answers to Moodle. Whenever you write solutions on paper, you need to scan all documents and upload the files to Moodle.

Note: `user` stands for your login ID on Polaris (`polaris.clarkson.edu`). This should be the exact same as your CU ID.

Note: Make sure any code you write works on Polaris before uploading your files. You will likely lose many points if your code doesn't compile.

Note: Do not upload any executable or intermediate files as answers to problems, unless specifically asked to do so.

1. [20 points] Write a class `UtilMethodGenerics` that contains a single standalone (i.e. static) function called `exchange` that has the following properties:

   - this function can be used to interchange the values of two user-specified locations of an array of *any reference type*
   - it should take three arguments in this order (from left to right): the array, the index of the first location, and the index of the second location
   - it doesn't return any value

   Use the client in `TestExchange` to test the behavior of your method; see `sample1.txt` for the output of executing `TestExchange` with a correct implementation of `exchange`.

   Now write another client, `TestExchange2`, that creates an array of type `java.lang.Float` of length at least 8 and uses `exchange` to swap the elements at the third and the last locations of this array.

   In `p1README.txt`, explain how to run your program on Polaris.

   Deliverable: Upload `UtilMethodGenerics.java`, `TestExchange2.java`, and `p1README.txt` to Moodle.

2. [30 points] Add iterator functionality to the `IntSet` type provided.

   Make sure it works with `drv1.java`. The output of this driver with a correct iterator implementation is shown below:

```
[921, -100, 11, 0] {size: 4} (rep invariant check: true)
[IntSet.remove: nothing to remove as 3 is not in the set.]
[IntSet.remove: nothing to remove as 77 is not in the set.]
[921, -100, 11, 0, 100] {size: 5} (rep invariant check: true)


Testing IntSet's iterator:
921 -100 11 0 100

Testing foreach loop with IntSets:
921 -100 11 0 100
```

   Next, write your own driver in `file2.java` that creates an `IntSet` with 12 elements, and then prints them using traditional iterator traversal as well as using the foreach loop.

   In `p2README.txt`, explain how to run your program on Polaris. Package (your) `IntSet.java`, `file2.java`, and `p2README.txt` along with all other files needed to run your code in a JAR file called `userHW5p2.jar`. (Note: `user` is your CU ID.)

   Deliverable: Upload `userHW5p2.jar` to Moodle.

End