CS 2003 Fundamentals of Algorithms and Computer Applications

Project 1: Implementing the Set Class using a List class

Implement the functionalities of the Set Class, as given below, in Java by using a private data member of type *ListReferenceBased<E>*. The code for testing your Set implementation, `SetTest.java`, as well as the modified ListReferenceBased class and related files can be copied from the `~class_sandip/2003/ListReferenceBased` directory on linux.ens.utulsa.edu. You should first define an interface, *SetInterface*, for the following Set ADT operations in the file `SetInterface.java` and then implement that interface in `Set.java`

Constructors: a default constructor, a constructor that takes a single argument of type E and initializing the set to contain that object, and a copy constructor,

setSize: a method that returns the number of elements in the set as an int value,

print: a method that prints out the contents of the set,

insert: a method that takes an element of type E and inserts it into the set,

arrayInsert: a method that takes an array of elements of type E and inserts them into the set,

union: a method that takes a Set as an argument and returns a new Set that is the union of the current set and the argument,

intersection: a method that takes a Set as an argument and returns a new Set that is the intersection of the current set and the argument,

difference: a method that takes a Set as an argument and returns a new Set that is the difference of the current set and the argument,

in: a method that takes an element of type E and returns a boolean value depending on whether the given E is contained in the current set or not.

You are required to provide comments in javadoc format for each method and the class variables.

Submit, via Harvey, an electronic copy of the updated *Set.java* file.