The George Washington University School of Engineering and Applied Science Department of Computer Science CSci 1112 – Algorithms and Data Structures Spring 2014 Project 1 Due Date: March 18, 2014 Instructor: A. Bellaachia

Description:

In this project, you are to implement a Set ADT in Java using a singly linked list. The data type of the elements of your set should be String type. We assume that all the sets are simple; a set does not contain another set.

Your ADT should include the following operations:

- Insert an element in a set. Make sure all the elements of a set are unique.
- Remove an element of a set.
- Membership: Check whether an element belongs to a set.
- Test whether a set is a subset of another set.
- Compute the cardinality of a set. What is the cardinality of an empty set?
- Intersection of two sets.
- Union of two sets.
- Find the difference of two sets.
- Power Sets: Generate the power set of a given set.
- Cartesian product of two sets.

Deliverables

- 1. All code used for implementing you ADT (linked implementation).
- 2. Specification and implementation of your program.
- 3. Listing of your implemented test plan, and of the output produced by your program. Include at least 12 different test cases, some of which are invalid input.