

## Quiz #1D

Name:

**READ THE QUESTIONS CAREFULLY!!! DO NOT WASTE TIME DOING MORE THAN IS ASKED FOR. DO NOT IMPLEMENT METHODS UNLESS SPECIFICALLY REQUESTED. YOU DO NOT NEED TO COMMENT THE CODE.**

1. Write an **interface** `cop3530.Set` with the public methods below. (This is a different interface than what you wrote for program 1, but the principles are identical.) **Set** is the name of the interface that stores **Objects** (NOT pairs) that has the following functionality:
  - Three accessors: **contains** returns true if a specified object is found in the set; returns false otherwise. **isEmpty**, tests if the **Set** is empty; and **size** returns the number of elements currently stored in the **Set** container.
  - Two mutators: One makes the **Set** empty; the other (**add**) inserts a new item.
2. Provide a class `cop3530.SortedArraySet` that implements the **Set** interface. Represent the **SortedArray** internally as a (sorted) `Object[]`, a **size** data member, and a **Comparator**. After listing the data fields, you may use `...` to indicate the rest of the body of this class, except for the following which must be implemented:
  - (a) Implement a zero parameter constructor; your implementation may assume the existence of a one-parameter constructor that takes a **Comparator** as a parameter. Make sure you provide the class declaration for the default comparator that you will need.
  - (b) Implement **add**. **Make sure you have array doubling code. Also, make sure to return false if the item is already present.**