Homework #2

Assigned: 2/9/25
Due: 2/16/25 by 5 PM

This assignment will continue with multi-object Java programs by asking you to design more Class's. For this programming problem, submit each .java file to the Homework #2 link on Brightspace (and remember to ensure the .java files are included **and not .class files!**), along with a link to your repository. There are three .java files expected (one for each class, defined below). You must also submit a Github repository link as well, which you can include in the submission comments.

Write a program intended to track an arboretum:

- **Tree:**
  - Contains three instance variables for **ID number**, **age,** and **species name**
  - Implements a parameterized constructor that will create a **Tree** object, and sets the aforementioned variables

- **Grove:**
  - Contains two instance variables for an Array of **Tree**'s (size 16), and a **grove name.** You may use an ArrayList of **Tree**'s if you wish, but are not required to.
  - Implements a parameterized constructor that takes (and sets) a single parameter for the name of the grove
  - Implements a method that will *plant* a **Tree** object in the first available spot. The method should take a **Tree** object as a parameter, and return an int identifying the spot where the tree is planted. If no spots are open, return -1.
  - Implements a method that will *remove* a **Tree** object from a given spot. The method should take an int as a parameter, and remove and return the **Tree** object at that location in the array.
  - Implement a ToString() method that will print a single int representing the number of **Tree**'s in the array

- **GroveTester:**
  - Implement a **main()** function that will carry out the following instructions:
    - Instantiate a **grove** object named *Grove 1*
    - *Print* the **grove** object named *Grove 1*
    - Instantiate six **Tree** objects of species *Spruce* and age 37, and add them to *Grove 1*
    - *Print* the **grove** object named *Grove 1*
    - Remove the **Tree**'s from *Grove 1* at index 3 and 5.
    - *Print* the **grove** object named *Grove 1*
    - Instantiate one **Tree** object of species *Maple* and age 13, and add it to *Grove 1*
    - *Print* the **grove** object named *Grove 1*

Expected Output:

```
0
6
4
5
```

Note: A **grove**'s *name* and a variable name that contains it **are two different things!** You should store the grove name as a string.

When you're ready to submit your work, package your **.java files** (and not .class files) in a zip file using the following naming convention:

lastname-firstname-cos225-hw02.zip

Submit this .zip file containing each of the above .java files, along with a Github repository link, to the Brightspace link for Homework #2.