

Homework #2

Assigned: 2/3/23

Due: 2/10/23 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!**). There are three .java files expected (one for each class, defined below).

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 8), and a **grove name**. You may use an ArrayList of **Tree**'s if you wish
 - 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 One*
 - *Print* the **grove** object named *Grove One*
 - Instantiate seven **Tree** objects of species *Pine* and age 37, and add them to *Grove One*
 - *Print* the **grove** object named *Grove One*
 - Remove the **Tree**'s from *Grove One* at index 3 and 5.
 - *Print* the **grove** object named *Grove One*
 - Instantiate one **Tree** object of species *Spruce* and age 13, and add it to *Grove One*
 - *Print* the **grove** object named *Grove One*

Expected Output:

0
7
5
6

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 to Brightspace link for Homework #2.