CS 46B
Introduction to Data Structures

Summer Semester 2015

Department of Computer Science
San José State University
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Homework #1

Assigned: Thursday, June 4
Due: Monday, June 8 at 11:59 pm
10 points max

Practice with interfaces

You are provided the following two interfaces:

```java
public interface Comparable
{
    int compareTo(Object otherObject);
}
```

```java
public interface Growable
{
    void increaseBy(double amount);
}
```

Complete the following two implementing classes:

```java
public class Animal implements Comparable
{
    private String name;

    /***  Complete this class. ***/
}
```

```java
public class Employee implements Comparable, Growable
{
    private String name;
    private double salary;

    /***  Complete this class. ***/
}
```

Animal objects are compared by their names alphabetically. **Employee** objects are compared by salaries. Salaries can be increased.

Complete the following **Utility** class that contains a method to find the largest object in an array of objects:

```java
public class Utility
{
    public static Comparable max(Comparable objs[])
    {
        /***  Complete this class. ***/
    }
}
```

A class for testing:

```java
public class Maxima
{
    public static void main(String args[])
    {
        Animal cat = new Animal("cat");
        Animal dog = new Animal("dog");
        Animal pig = new Animal("pig");
        Animal cow = new Animal("cow");

        Employee bob = new Employee("bob", 100000);
        Employee sue = new Employee("sue", 150000);
        Employee ann = new Employee("ann",  50000);
        Employee tom = new Employee("tom",  75000);

        Animal zoo[] = new Animal[] {cat, dog, pig, cow};
        Employee dept[] = new Employee[] {bob, sue, ann, tom};

        Animal maxAnimal = (Animal) Utility.max(zoo);
        System.out.println("The maximum animal is " +
                                maxAnimal.getName());

        Employee maxEmployee = (Employee) Utility.max(dept);
        System.out.println("The maximum employee is " +
                                maxEmployee.getName());

        ann.increaseBy(20000);
        bob.increaseBy(60000);
        maxEmployee = (Employee) Utility.max(dept);
        System.out.println("The maximum employee is " +
                                maxEmployee.getName());
    }
}
```

Homework submission

URL to **Codecheck** for this assignment:
http://codecheck.it/codecheck/files/15060409083s77uby9jo4sowst4ay96aljm

After you get a solution that you're happy with (presumably, one that passes), download the **signed zip file**.

> **Note:** I had problems with the Safari browser on my Mac. Instead of downloading the zip file, Safari "helpfully" expanded the zip file and downloaded a folder of files instead. If that happens to you, try Codecheck with a different browser, such as Firefox.

Log into **Canvas** and go into this course ("SU15 CS-46B Sec 01 – Intro to Data Strc"). Click the **Assignments** link in the left panel. Click the **Homework 1 Final** link. Submit your signed zip file.