121 Discussion #10 11/8/07
Announcements:
Program 5 up, due next Friday (11/16)
Next OWL assignment up.
TA Office hours: (in LGRT 213): M 12:30 - 2:30; Tu 1-5; W 3-5; Th 10-11, 2:45-3:45; F 12:30 - 4:30

Inheritance -> the topic of the week: basics, Object class
Here are two classes, Infant and WeightedInfant:
public class Infant{
    private String name;
    private int age; // in months
    public Infant(String who, int months){
        name = who;
        age = months;
    }
    public String getName(){return name;}
    public int getAge(){return age;}
    public void anotherMonth(){age = age + 1;}
    public String toString(){return(name + " " + age);}
}

public class WeightedInfant extends Infant{
    private double weight;
    public WeightedInfant(String who, int months, double wt){
        super(who,months);
        weight = wt; }
    public double getWeight(){return weight;}
    public String toString()
    {return (super.toString() + " " + weight);}
}

Make a KidDriver class: 1) make a WeightedInfant object – jill/4 months/ 13.4 lbs
2) print her age; 3) print her weight; 4) make her one month older; 5) Print out all of her information
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Modeling:
1) make a Dog class (name,age); extend to a ShowDog class (showdog: yes or no?)
2) make a Tool class (name, weight); extend to a PowerTool class (amps - double)
3) make a Road class (start, finish, distance), include a toString method; extend to a MinorRoad class (is it paved, or not) also: add a toString method
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The Random class – where is it? Write a one class application that prints random ints between 0 and 9, inclusive, in a column until their sum tops 100. How about between 5 and 10..
Here’s the shuffle method from ch 9:

```java
public void shuffle(int[] nums)
    int swapPos, temp;
    for (int i = nums.length-1; i > 0; i--) {
        swapPos = nextInt(i+1); // pick pos:0 -> i(i possible)
        temp = nums[swapPos]; // swap vals at i, swapPos
        nums[swapPos] = nums[i];
        nums[i] = temp;
    }
}
```

How does the swap work? How would you re-write it to shuffle an array of booleans? An array of chars?

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Extend Random to form a Coin class. Create a main that uses Coin to flip a coin 100 times, report number of heads that come up. Hint: write the main first!!

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The anagram problem – On website!

what are, what aren’t

pear / reap (yes)
bored / robbed (no)
dormitory / Dirty Room! (yes)
Clint Eastwood / Old west Action! (yes)

Two algorithms (also others!):

Algorithm Idea #1: make a scoreboard for the letters a to z. Every time you encounter a letter in the first String, up its count by 1; Every time you encounter a letter in the second String, lower its count by 1. Accept if the scoreboard ends up as all 0s;

(note: c’s position in the array is: (‘c’ – ‘a’))

Algorithm Idea #2: convert strings to arrays. March down first String. When you encounter a letter, look for it in the second String. If you find it, blank it out; if you don’t find it - not anagrams. When you’re all done, you’ve got anagrams if the second array contains no letters.

(Note: this is a work-alone assignment. You may consult with others on design, etc., but you must submit your own work! Do not - repeat do not - submit the same solution as another student!).