**cs401 PRACTICE FINAL EXAM PROBLEM #1 RANDOM SENTENCES**

**Problem Statement (Including Input and Output)**

Step 1: Read this file [cat2Exemplars.txt](http://www.cs.pitt.edu/~hoffmant/401/final-practice/RandomSentences/cat2Exemplars.txt) into a Map:

name Fred Bob Mary

verb throws eats chases breaks

article a the this

adj big red small blue

do wagon ball hot-dog

The key is the first word on the line (category) and the value is the **List** of all subsequent words on that line. For example the first line has *name* as the key (category), followed by *Fred Bob Mary* being the (examplars) List of possible names to use in a randomly generated sentence. The second line has *verb* as the key (category) followed by *throws eats chases breaks* as the value (examplars). We will refer to the key as the category and the value as the exemplars (examples) of that category

Step 2: Print the map 20%/40% credit

* for 20% credit just do a simple System.out.println( map )  
  The 20% credit output must look like this:
* C:\Users\tlh\Desktop\RandomSentences>java RandomSentences cat2Exemplars.txt pattern.txt

{article=[a, the, this], verb=[throws, eats, chases, breaks], name=[Fred, Bob, Mary], do=[wagon, ball, hot-dog], adj=[big, red, small, blue]}

* for 40% credit print the map sorted vertically and horizontally  
  The 40% credit output must look like this:
* **Map (sorted alphabetically by Category and by Exemplars)**
* **adj can be replaced by [big, blue, red, small]**
* **article can be replaced by [a, the, this]**
* **do can be replaced by [ball, hot-dog, wagon]**
* **name can be replaced by [Bob, Fred, Mary]**

**verb can be replaced by [breaks, chases, eats, throws]**

Step 3: Generate a Random Sentence from the [pattern.txt](http://www.cs.pitt.edu/~hoffmant/401/final-practice/RandomSentences/pattern.txt) file.

name verb article adj do

Read the words from the above file into a list. Notice that each word in your List is a category word. Now go back through the List and replace each category with a random exemplar of that category using your Map to lookup thay category and retrieve a random member of the examplar set. For instance, replace *name* with Fred, Bob or Mary using a Random number, and replace *verb* with breaks, chases, eats or throws, etc. Do this for each word (category) in your List. When you are finished you will have a real sentence (however silly or random it may appear).

Below is what complete sample run would look like.

**C:\Users\tlh\Desktop\RandomSentences>java RandomSentences cat2Exemplars.txt pattern.txt**

**20% map print:**

**{article=[a, the, this], verb=[throws, eats, chases, breaks], name=[Fred, Bob, Mary], do=[wagon, ball, hot-dog], adj=[big, red, small, blue]}**

**40% map print**

**adj can be replaced with [ big blue red small ]**

**article can be replaced with [ a the this ]**

**do can be replaced with [ ball hot-dog wagon ]**

**name can be replaced with [ Bob Fred Mary ]**

**verb can be replaced with [ breaks chases eats throws ]**

**60% sentence generation**

**Fred breaks the small ball**

I seeded my Random object with the number 17 and only initialized it once at the start of the program

**My Solution:**[**RandomSentences.java**](http://www.cs.pitt.edu/~hoffmant/401/final-practice/RandomSentences/RandomSentences.java)