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**EE333 Programmette 1 - Fall 2011**

**Task - Random Capacitor Selection**

Your task for P1 is to build a simple model of a bag of capacitors. The bag has a very large number of capacitors. There are 4 values of capacitors in the bag which has been shaken until the capacitors are randomly mixed in the bag. There are four capacitor values .01uF, .047uF, .1uF and .47uF. There are twice as many .047uF capacitors as each other value. Someone reaches in and pulls out a capacitor. Your model should supply a method pickC() which returns a the value of the capacitor randomly chosen from the bag. You may assume that there are so many capacitors that removing a capacitor does not change the distribution of capacitors in the bag significantly.

Your model should also have a getCount(selector) method that lets you know how many times a particular value has been returned. Internally, the model should be maintaining the necessary counters. selector can either be the capacitance value or an index into an array.

The model should also have a getAverageSupplied() method which returns a float value representing the average value of the capacitors returned.

Your model should have a reset() method to zero the counts on all capacitor returned counters.

You should create CapacitorBag.java that contains your model and TestBag.java which exercises the model.

Hint: In Java, the math functions are placed in a Math class in the java.lang package. You may wish to use the Math.random() method to generate your random numbers.

Hint: A five element array (zero-based) can be created and initialized in Java by

int myArray[] = {0, 0, 0, 0, 0 };

Once you have the array, you can manipulate it similar to C. We will discuss more details on arrays (and how they differ from C) later in the course.

**Obey Java Documentation Style**

Use the specified [documentation standard for Java source code](http://www-ece.eng.uab.edu/DGreen/java_ex/JavaDocStyle.html).

**Delivery**

You shall produce source code that complies with the documentation standards. Your program MUST show your name and BlazerID near the top of the listing and display out your name and BlazerID at the start of the test run. Produce a folder named blazerid-p1 containing all files (at least .java and .class files). Zip this folder into a file called blazerid-p1.zip and submit it using the assignment tool of Blackboard Learn by class time of the due date (or if you attend class and sign the class roll for the day, you can automatically have an extension to 11:59pm of the same day.).

The programmette will be graded by this [rubric](http://www-ece.eng.uab.edu/DGreen/ee333/ProgrammetteGrading.png).

Last modified: 24 August 2011

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