# CPT 187—OBJECT-ORIENTED LOGIC & DESIGN

Spring-Program #5

Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



*#5*

**PROGRAM DESCRIPTION**

Time to get some valuable practice with data files and arrays! The primary purpose of this program will be to get some experience working with a one-dimensional array that is part of a Java class. You’ll load data from a file into an array, and then process the array data. The data file (program5.dat—you should have found it zipped up with this Doc) will contain an unspecified number of records, with each record being just one field: one integer. We’ll keep the problem reasonable by limiting the file to a maximum of 100 records. Your program must not make any assumptions about the size of the file. The file could be empty or could have as many as 100 integers, but that’s the most it will have. (Note: the file I have provided is not the one that I will use to grade your program. But it is a good one to work with. Feel free to make up your own test file to make sure your program works correctly. In fact, you should test with a file containing a small number of integers so that you can actually calculate the values yourself.)

**SPECIFIC DIRECTIONS**

Develop a class named **IntegerArray** that will be used to contain a list of integers for you to analyze. The class needs to contain the following methods to manage the array.

IntegerArray The constructor

loadArray Load the array from the file. This method should accept the name of the file as a parameter.

displayArray Display (in the Console window) only the initialized elements, the elements that contain the

values loaded by the *loadArray* method.

calcAverage Compute and return the average (a double) of the numbers in the array. Do not display the average inside the method itself. Do that in main.

countBelowAvg Count the number of elements below the average and return that count. DO NOT write code to recompute the average inside this method, and don’t display the count there either. Display the count in main just as for *calcAverage*.

You can simply make all methods public and call them from the main method. Note: the average of a set of numbers is a statistic commonly termed the “arithmetic mean”. As a statistic, it needs to be computed and reported accurately (i.e. an integer will not do).

Pass the name of the file (program5.dat) from the *main* method. Keep in mind that the file I will test your program on will be different, though! I will change the filename myself before running your program. You should try different combinations of data to make sure your program has no bugs.

## As always, be sure that you have named the project, package, and .Java files correctly. See the Coding Standards handout for the required names.

**TURN IN**

A complete Class Description and a zipped copy of the project directory.