CS225 Homework 4

Sampling an Array

For this assignment you will present three requirements and two test cases per requirement for a computer program described below.

Deliverables: One MS Word, PDF, or equivalent file that contains three requirements and two test cases per requirement. File naming convention (required!): *yourusername*HW3.docx (or appropriate file extension for your format).

Only electronic documents submitted via Canvas are acceptable. Do not submit a hard copy of your assignment. Do not email your assignment to the course instructor or grader. Important: Late assignments will not be graded.

Problem Description: One way to get a quick estimate of the average value of a large array is to calculate the average of only some of the values. The smaller set of values is usually called a *sample*, and the act of getting the smaller set of values is often called *sampling* the array. For this assignment, assume the estimate of a set of n numbers is obtained by averaging the first s values, where s represents the size of the sample. For example, if the data set contains 100 integers (n = 100), and the size of the sample is 7 (s = 7), then the estimated average is the average of the first 7 integers.

Consider a computer program that has already been written to obtain an estimate of the average of a set of integers using a sample of those integers. The program asks the user to input the size of the data set and the size of the sample. Allowable values are from 0 to n, inclusive, for both inputs. The program then obtains the estimated average using the sample as described in the previous paragraph.

Write three requirements for this program. For each requirement, create two test cases.

Rubric: Per grading rubric below.

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| **Deliverable** | **Points** | **Awarded** |
| Introductory Text | 5 |  |
| Requirement 1 | 4 |  |
| Requirement 1 Test Cases | 6 |  |
| Requirement 2 | 4 |  |
| Requirement 2 Test Cases | 6 |  |
| Requirement 3 | 4 |  |
| Requirement 3 Test Cases | 6 |  |
| Totals | 35 |  |