

Assignment: Program **p01** finds the median value in a list of integers found in an input file: a sample of such a file can be found in the class directory **~tt/cs2613/i01.dat**. *The list may have more than or fewer than the number of integers in file i01.dat*. The section titled **Input File** illustrates the format of the input file. The section titled **Display and Keyboard Input** shows the dialog where the user instructs program **p01** to name input and output files. The section title **Output File** depicts how the output is formatted.

Median The *median* of a finite list of numbers can be found by arranging all the values from lowest value to highest value and selecting the middle one (e.g., the median of {3, 3, 5, 9, 11} is 5).

When the list contains an even number of values, the median is computed by averaging the two middle values. For example, the median value of the list {3, 4, 6, 7, 9, 10} is the average of 6 and 7 equaling 6.5.

Prohibition: **Use of the C++ Standard Template Library is prohibited in the implementation of this project.**

Program Files: Project 1 consists of files **p01.cpp**, **List01.h**, **List01.cpp**, and **p01make**. Project file names are exactly as given. Failure to employ the foregoing names will result in a score of **zero (0)** for this project

Project files must be stored in the **root directory of your student account**. Failure to store project files in the root directory of your student account will result in a score of **zero (0)** for this project.

File	Description
p01.cpp	File p01.cpp contains functions that process command line arguments and direct the process of reading, sorting, and printing the list.
List01.h	File List01.h defines class <i>List</i> .
List01.cpp	File List01.cpp contains the implementation of member functions in class <i>List</i> .
p01make	File p01make contains instructions that compile and link the files of project 1. File p01 is the executable created by the instructions in file p01make . Instructions in file p01make are executed by the UNIX utility make .

Command Line: Project **1** can be invoked with zero, one, or two program parameters. The first program parameter is the input file name. The second parameter is the output file name. Sample command lines together with corresponding actions by program **p01** are shown below. Boldfaced type indicates data entered at the keyboard by the user.

\$ p01

Enter the input file name: **i01.dat**

Enter the output file name: **o01.dat**

\$ p01 i01.dat

Enter the output file name: **o01.dat**

\$ p01 i01.dat o01.dat

Display and

Keyboard Input:

Sample Input File: 47 5 10 6 -2 3 -5 7 -11 13 -17 19
-23 29 -31 37 41 -43 47 -53 57 -67
-051 5000 33

Note: The list may have more than or fewer than the number of integers in this sample.

**Output File
Specification:**

The median is printed on a separate line. The title, “Median is printed left justified in a field of 10 spaces. An equal sign, “=”, is printed in column 11. The value of the median is printed right justified in a field of 10 spaces. The median is floating-point value and printed in fixed format with two fractional digits.

**Sample Output
File.**

Median = 6.00

(The values shown above were computed for the sample input file on the previous page.)