Assignment Requirements for mean and standard deviation program

Personal Software Process for Engineers

# Program Requirements

For a series of real numbers, calculate the

* mean
* standard deviation
* range
* median
* quartiles
* interquartile range
* skew

Your program must read the *n* real numbers from the keyboard, a file, etc.

Use a linked list to hold the *n* numbers for the calculations.

Thoroughly test the program. At least three of the tests should use the data in the three columns of the table below (Table D5, page 753).

|  |  |  |
| --- | --- | --- |
| Object LOC | New and Changed LOC | Development Hours |
| 160 | 186 | 15.0 |
| 591 | 699 | 69.9 |
| 114 | 132 | 6.5 |
| 229 | 272 | 22.4 |
| 230 | 291 | 28.4 |
| 270 | 331 | 65.9 |
| 128 | 199 | 19.4 |
| 1657 | 1890 | 198.7 |
| 624 | 788 | 38.8 |
| 1503 | 1601 | 138.2 |

The expected results are

|  |  |  |  |
| --- | --- | --- | --- |
| Mean | 550.6 | 638.9 | 60.32 |
| Standard Deviation | 572.03 | 625.63 | 62.26 |

## Mean and Standard Deviation

The **mean** is the average of the *n* numbers.

The **standard deviation** is calculated as follows.



*  is the symbol for standard deviation.
*  is the symbol for summation.
* *i* is an index to the *n* numbers.
* *Xavg* is the average value of the *n* numbers.

Document Markings

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