**University of Michigan – Dearborn**

**CIS 150 – Computer Science 1**

**Lab# 9**

Quan Le

[lmmquan@umich.edu](mailto:lmmquan@umich.edu)

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# Question 1

## Test Cases

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test # | Valid / Invalid Data | Description of test | Input Value | Actual Output | Test Pass / Fail |
| 1 | Valid | Using the example values in the array  Input V = 8 | int box[ROWS][COLS] = { {11,8,0,-4}, {74,5,13,42}, {29,-7,45,4}, {100,23,-3,61} };  V = 8 | Sum: 401  Average: 25.0625  Found 8 | Pass |
| 2 | Valid | Using the example values in the array  Input V = 9 | int box[ROWS][COLS] = { {11,8,0,-4}, {74,5,13,42}, {29,-7,45,4}, {100,23,-3,61} };  V = 8 | Sum: 401  Average: 25.0625  Not found 9 | Pass |
| 3 | Valid | Changing the values in the array  Input V = 0 | int box[ROWS][COLS] = { {6,5,0,-2}, {7,51,123,42}, {129,-47,455,14}, {10,23,-23,6} };  V = 0 | Sum: 799  Average: 49.9375  Found 0 | Pass |
| 4 | Valid | Changing the values in the array  Input V = -100 | int box[ROWS][COLS] = { {6,5,0,-2}, {7,51,123,42}, {129,-47,455,14}, {10,23,-23,6} };  V = -100 | Sum: 799  Average: 49.9375  Not found 0 | Pass |

## Source Code

The source code for this question has been uploaded to Canvas as lab9q1.cpp.

## Screenshots

Test Case #1

A black screen with white text

Description automatically generated

Test Case #2

A black screen with text

Description automatically generated

Test Case #3

A black screen with colorful text

Description automatically generated

Test Case #4

A black screen with white text

Description automatically generated

# Question 2

## Test Cases

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test # | Valid / Invalid Data | Description of test | Input Value | Actual Output | Test Pass / Fail |
| 1 | Valid | Input file name = student\_lab9.txt  Output file name = stats\_lab9.txt | 2 John Doe 80  3 Jane Doe 90  5 Claude Shannon 99 | Claude Shannon has the max grade which is: 99  John Doe has the min grade which is: 80  The class average is: 89.6667  The number of students processed is: 3 | Pass |
| 2 | Valid | Input file name = student\_lab9.txt  Output file name = stats\_lab9.txt | 2 John Ben 80  3 Hannah Doe 20  5 Claude Ethan 100 | Claude Ethan has the max grade which is: 100  Hannah Doe has the min grade which is: 20  The class average is: 66.6667  The number of students processed is: 3 | Pass |
| 3 | Valid | Input file name = student\_lab9.txt  Output file name = stats\_lab9.txt | 2 John Ben 80  3 Hannah Doe 20  5 Claude Ethan 100  1 Mike Durrant 8  4 Chris Kyle 90 | Claude Ethan has the max grade which is: 100  Mike Durrant has the min grade which is: 8  The class average is: 59.6  The number of students processed is: 5 | Pass |
| 4 | Valid | Input file name = students\_lab9.txt  Output file name = stats\_lab9.txt | Error file name | Cannot open file students\_lab9.txt | Pass |

## Source Code

The source code for this question has been uploaded to Canvas as lab9q2.cpp.

## Screenshot

Test Case #1

A black screen with white text

Description automatically generated

Test Case #2

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Description automatically generated

Test Case #3

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Description automatically generated

Test Case #4

A black screen with white text

Description automatically generated