

Homework 2

100 Points

2D Arrays

[22B_H2A.cpp](#) (find and fix errors: print a table)

[22B_H2B.cpp](#) (find and fix errors: quiz average)

[22B_H2C.cpp](#) **Project: Perfect Square Table** (see next pages)

Grading

| | |
|------------------------|------|
| Program 2A | – 15 |
| Program 2B | – 20 |
| Program 2C | |
| 1. readTable() | – 20 |
| 2. printTable() | – 15 |
| 3. testTable() | – 25 |
| Self Assessment Report | – 5 |

Self Assessment Report: Write a short report, (see `22B_H2Report.doc` form) briefly explaining your code and containing an assesment of your implementation based on the above grading criteria.

Run each program once and save the output at the end of the source file as a comment. Compress the source files, input and output files (if any), and the report, and upload the compressed file: [22B_LastName_FirstName_H2.zip](#)



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CIS 22B
Intermediate Programming Methodologies in C++
Programming Assignments

Project: Perfect Square Table

(Figure 1)

| | | | |
|----|----|----|----|
| 16 | 3 | 2 | 13 |
| 5 | 10 | 11 | 8 |
| 9 | 6 | 7 | 12 |
| 4 | 15 | 14 | 1 |

Figure 1 shows a number square table. A “Perfect Square Table” is a square of positive integers such that the sum of each row, column, and diagonal is the same constant. For example, the square table in Figure 1 is a Perfect Square Table with a constant of 34. Write a program that determines if a square table is a Perfect Square Table. The number of rows in the table is >1 but ≤ 100 . The numbers in the table, all integers, are between 0 and 100^2 .

Input Data: Data about the number of rows and columns in the table are first read from the input file. In our example, the input file appears as follows:

```
4 // This square table has 4 rows and columns
16 3 2 13
5 10 11 8
9 6 7 12
4 15 14 1
```

Output Data: Display the table as shown below if and only if the number of rows ≤ 8 :

```
Square Table Size: 4
-----
|16| 3| 2| 13|
-----
| 5| 10| 11| 8|
-----
| 9| 6| 7| 12|
-----
| 4| 15| 14| 1|
-----
```

Then display a message such as “**This is a Perfect Square Table with a constant of 34!**” or “**This is not a Perfect Square Table**”.

Algorithm – will be discussed in class.