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NACA.161 Programming Fundamentals II
In-class Exercise #11 – Two-dimensional Arrays

Objectives

To use the following constructs in a program:

- Two-dimensional array

Exercise 1 – Grid sums (5 points)

1. Download the file `GridPractice.zip` from myCourses; it unzips to a file named `GridPractice.java`. There are no other classes; all code will be in the main method.

2. After the user enters the size, the program creates a 2-dimensional array (named grid) with the number of rows and columns equal to that size. To avoid typing a great deal of input, the program stores a random number between 0..99 into each position in grid.

3. Write the code to print the contents of the grid as shown in the Sample Output. To have the columns align, you will need to use the printf command.

When the program works correctly, have the instructor or TA check the code and initialize.

_____ **Have instructor sign here when Exercise 1 works correctly.**

Exercise 2 – Row and Column Sums (3 points)

4. Write the code to calculate and print the sum of each row and each column as shown in the Sample Output.

_____ **Have instructor sign here when Exercise 2 works correctly.**

Exercise 3 – Diagonal Sums (2 points)

5. Write the code to calculate and print the sum of the two diagonals. Assuming that the size is 3: one diagonal starts in the upper left corner ([0][0]) and ends in the lower right corner ([2][2]); the other diagonal starts in the upper right corner ([0][2]) and ends in the lower left corner ([2][0]).

_____ **Have instructor sign here when Exercise 3 works correctly.**

Sample Output #1

```
Enter size of grid: 2

Random values assigned to 2 by 2 grid
     71   77
     53   43

Row    Sum
----------
   0    148
   1    96

Col    Sum
----------
   0    124
   1    120

Diagonal from upper left to lower right is 114

Diagonal from upper right to lower left is 130
```

Sample Output #2

```
Enter size of grid: 3

Random values assigned to 2 by 2 grid
      9   31   3
     98   46   83
     44   65   32

Row    Sum
----------
   0    43
   1    227
   2    141

Col    Sum
----------
   0    151
   1    142
   2    118

Diagonal from upper left to lower right is 87

Diagonal from upper right to lower left is 93
```

When you complete all of the steps successfully and answer all of the questions, contact the TA or your instructor to check if your program(s) executes correctly and to review your code. We will initial the line below.

_____Successful execution of code

If you do not finish the program during the class period, contact your instructor or teaching assistant to initial below so that you can complete it before the next class period.

_____Code not completed during lab time

You may then have the TA or your instructor verify your work at the start of work period in the next class. If you do not have a signature, then you can not receive any points for this assignment.