CS 3335 (The C Programming Language) [Fall 2019]

Coding Assignment 3

Due date: 11:00 p.m., Sunday, September 29, 2019

Magic square:

An n × n magic square, where **n is odd** and between 1 and 99, is an arrangement of numbers 1, 2, 3, …, n^2 in such a way that sum of rows, columns, and diagonals are all the same. The scheme to create a magic square is as follows:

Start by placing 1 in the middle of row 0. Place each of the remaining numbers 2, 3, … , n^2, by moving one row up and shifting one column over (right). Any attempt to go outside the bounds of the array should "wrap around" to the opposite side of the array. If a cell is already occupied, put the number directly below the previously stored number.

For example, a magic square with n = 3 and n = 5 look like:

8	1	6
3	5	7
4	9	2

n = 3 (magic value = 15)

17	24	1	8	15
23	5	7	14	16
4	6	13	20	22
10	12	19	21	3
11	18	25	2	9

n = 5 (magic value = 65)

Task:

Write a C-program that allows user to enter a choice of odd positive integer and displays the magic square in a row-column format (similar to above, except the grid lines). Also, indicate the sum value (the magic value) of the square.

You should have a check that if the user enters an invalid choice, the program asks the user to enter a valid number. It should keep checking until the user enters a valid number.

(Caution: *your program should start with asking the user to enter a number. Do not hard-code the input number*.)

Submission instruction: (must be followed if needs to be graded)

Name the files as ***a3lastname.c*** where *lastname* is your last name. At the top, write your name, course (CS3335), and semester-year (Fall 2019) as C-comments (use /*… */). Submit the file through BlazeVIEW submission box associated to the assignment.