MODULE 1: INTRODUCTION TO PROGRAMMING IN C#

FURTHER EXERCISES

Tutorial 4

1. Change the program in core exercise 2.1 of this tutorial to count the occurrences of each letter in the alphabet for the given text and display the results in a ListView box.
2. Create a program to generate a 'Magic Square' of order NxN where N is an odd number between 3 and 11. An example of a 3x3 magic square is shown below:

8	1	6
3	5	7
4	9	2

   Each row, column and main diagonal adds up to the same amount (in this case 15).

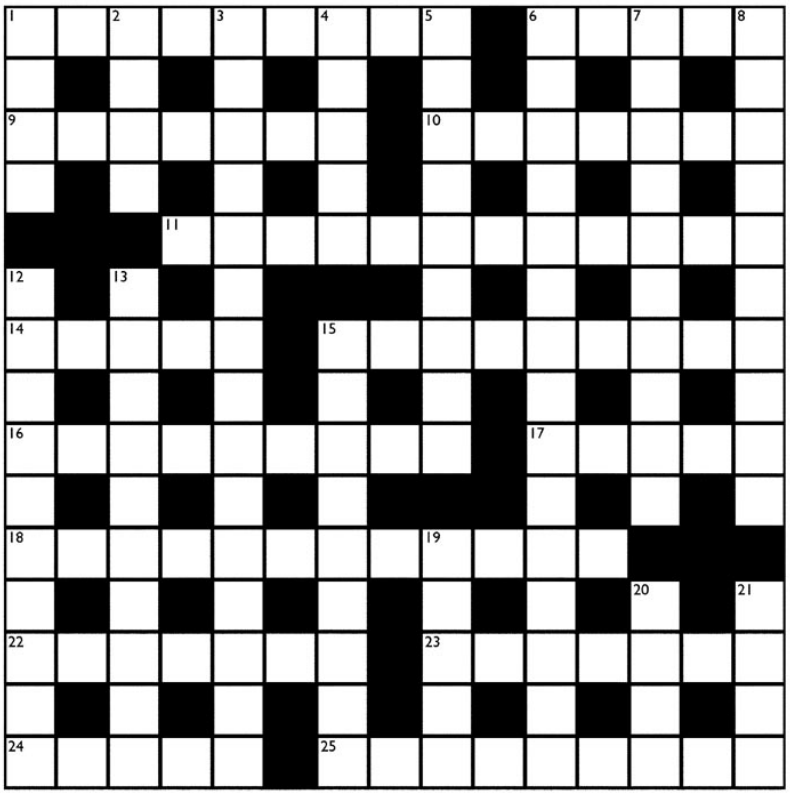
   The user should input the size of the square (N) and the program will generate the result according to the following rules:

   Imagine a rolled-up grid in which the top is connected to the bottom, but also the right-hand side flows over to the left-hand side. Then start off by placing a 1 in the middle of the first row. Subsequent numbers are placed according to:

   Attempt to move diagonally upwards to the right, reappearing in the bottom row or left-hand column if necessary. Place the next number in this square unless it is already filled, in which case drop down one row from the current position and place the number in the current column position.

3. Crossword Numbering Program

Most newspapers contain a daily crossword which usually feature a 15 x 15 grid such as:



By examining the above grid, write a program that will define a grid pattern in some way (e.g. 0 represents a black square and 1 represents a white square) and then number the squares accordingly. You may require a second array for the clue numbers.