ASSIGNMENT 2

1. Lo Shu Magic Square

The Lo Shu Magic Square is a grid with 3 rows and 3 columns shown in Figure 1. The Lo Shu Magic Square has the following properties:

- The grid contains the numbers 1 through 9 exactly.
- The sum of each row, each column, and each diagonal all add up to the same number. This is shown in Figure 2.

In a program you can simulate a magic square using a two-dimensional array. Write a function that accepts a two-dimensional array as an argument, and determines whether the array is a Lo Shu Magic Square. Test the function in a program.

4	**9**	**2**
3	**5**	**7**
8	**1**	**6**

Figure 1

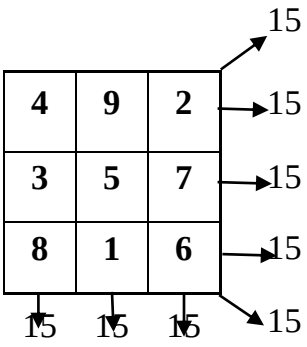

Figure 2

2. Overloaded Hospital

Write a program that computes the charges for a patient's hospital stay and writes the report to a file. First, the program should ask if the patient was admitted as an in-patient or an outpatient. If the patient was an in-patient, the following data should be entered:

- The number of days spent in the hospital
- The daily rate
- Hospital medication charges
- Charges for hospital services (lab tests, etc.)

The program should ask for the following data if the patient was an out-patient:

- Charges for hospital services (lab tests, etc.)
- Hospital medication charges

The program should use two overloaded functions to calculate the total charges. One of the functions should accept arguments for the in-patient data, while the other function accepts arguments for out-patient information. Both functions should return the total charges.

Input Validation: Do not accept negative numbers for any data.