Program #4b

Assigned date: 10/10
Due Date: 10/24
Concepts: Two-dimensional arrays, Classes and Objects
Point value: **50 points**

Assignment:

Write a program that prompts the user to enter a 3 x 3 matrix of double values and tests whether it is a *positive Markov matrix*.

- An n x n matrix is a positive Markov matrix if the following is true:
    - If each of the elements is positive
    - The sum of the elements in each column is 1

Sample Program running

```
Enter a 3 by 3 matrix row by row
0.15 0.875 0.375
0.55 0.005 0.225
0.30 0.12 0.4
It is a Markov Matrix


Enter a 3 by 3 matrix row by row
-0.2 0.875 0.375
0.75 0.005 0.225
0.45 0.12 0.4
It is not a Markov Matrix
```

Please note the following requirements and how the assignment will be graded:

- The name of the class must be **XXX_Matrix** where XXX is your Kean email id (**1) point**).
- Include a comment at the start of the program with the following (**1 point**):
    - Your name
    - A description of the program
- Include a comment before each method explaining what the methods will do (**3 points**)
- The class will have one instance variable, a 3 x 3 two dimensional array of doubles (the matrix) ***(5 points)***

- The constructor of the class creates the 3 x 3 matrix and fills the matrix with values entered by the user ***(10 points)***

- Include a method which checks whether the matrix is a positive Markov Matrix or not. This method will return true if the matrix is a positive Markov matrix and false if it is not. The method must work correctly for all values entered **(20 points)**

  public boolean isMarkovMatrix()

- A Client program, ***TestMatrix***, with a main method will: **(10 points)**

  - Create an object of type ***XXX_Matrix*** and call the ***isMarkovMatrix()*** method to determine which of the 2 messages below to print:

    It is a Markov Matrix

    It is not a Markov Matrix

Student Name: _____

Requirement	**Points possible**	**Points earned**
Name of class	1	
Comment at start of class	1	
Comment before each method	3	
Instance variable	5	
Constructor	10	
isMarkovMatrix()	20	
Client program, TestMatrix	10	
Total points earned:	50	

15 points will be deducted if the program submitted does not compile.

Suggestions:

1) Submit solution even if all parts do not work. Comment out any code that does not compile
2) Look at class notes and examples and the textbook to get startedLook at examples in the textbook and notes to get started