CSE 110 - Lab 10

This lab is for practicing the object-oriented programming, and you need to implement a Student Class and implement a simple system to modify and view user information.
Use the following Coding Guidelines:

• When declaring a variable, you usually want to initialize it.

• Use white space to make your program more readable.

• Use comments after the ending brace of classes, methods, and blocks to identify to which block it belongs.

Assignments Documentation:

At the beginning of each programming assignment you must have a comment block with the following information:

```
/*-------------------------------------------------------------------------
// AUTHOR:              (Put your name here)
// FILENAME:          Lab10.java
// SPECIFICATION:    This program is for practicing the object-oriented programming.
// You need to develop the setName() method of Student Class and construct a simple system
// that can manage a student's name and age
// LAB LETTER:    (Put your Lab Letter here)
//-------------------------------------------------------------------------*/
```

Getting Started

Create a class called **Lab10**. Use the same setup for setting up your class and main method as you did for the previous assignments. Be sure to name your file **Lab10.java**.

The instructions of the assignment are as follows:

```
// import all and anything you need
//-->

public class Lab9
{

//Declare the main method
//-->
{
    Scanner in = new Scanner(System.in);

    // Create four 4 x 4 matrices (2D Integer Array) mat_A, mat_B, mat_C and mat_D
    //Hint: Read the values row wise
    //For example: If the input is 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16.
    //Then matrix will be:
    1    2    3    4
    5    6    7    8
    9    10   11    12
    13   14    15   16


    //Declare three 2D arrays with 4 rows and 4 columns an example is shown below
```

```
//int [] [] mat_A = new int [4] [4];

// Similarly create mat_B, mat_C and mat_D
// -->
// -->
// -->

// Read vales into matrix A and B
// Print "Enter values into mat_A:"
// -->

// Display the mat_A
// Print “Matrix A is ”
for(int i = ?   ;   ??   ;   ?){
      for(int j = ?   ;   ??   ;   ?){

            // -->
      }
}

Print "Enter values into mat_B:"
// -->

// Display the mat_B
// Print “Matrix B is ”
// -->
```

Task 1:

```
//Matrix Addition: Add the two matrices mat_A and mat_B and store the new matrix in mat_C
for (int i = ?   ;   ??   ;   ?){
      for (int j = ?   ;   ??   ;   ?){

            // -->
      }
}

// Display the mat_C
// Print “Addition of two matrices: Matrix C is ”
// -->
```

Task 2:

```
// Calculate the sum of elements of matrix C and display the value
// Declare an integer value <sum>
// -->
```

```
    for (int i = ?   ;   ??   ;   ?){
        for (int j = ?   ;   ??   ;   ?){

            // -->
        }
    }

    // Print "Sum of elements of matric C is <sum>"
    // -->
```

Task 3:

```
    //Find transpose of matrix C and store the new matrix in mat_D
    //Hint: The new matrix D will have rows which are columns of the original matric C
    //The transpose of the matrix mentioned in the above example will be:
    1    5    9    13
    2    6    10   14
    3    7    11     15
    4    8     12    16

    for (int i = ?   ;   ??   ;   ?){
        for (int j = ?   ;   ??   ;   ?){
            mat_D [?] [?] = mat_C [?] [?];
            // -->
        }
    }

    // Display the mat_D
    // Print "Transpose of matrix C is: "
    // -->


    }
}
```

Sample Input:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Sample Output:

```
Enter values into mat_A:
1       2       3       4
5       6       7       8
9       10      11      12
13      14      15      16
```

```
Enter values into mat_B:
1       2       3       4
5       6       7       8
9       10      11      12
13      14      15      16

Addition of two matrices: Matrix C is
2       4       6       8
10      12      14      16
18      20      22      24
26      28      30      32
Sum of elements of matrix C is 272

Transpose of matrix C is
2       10      18      26
4       12      20      28
6       14      22      30
8       16      24      32
```