13016209 Object-Oriented Concepts and Programming

Lab 6

Start your program with your information using the following format:

/*

ID:

Name:

Lab No:

Question No:

Date:

*/

1. Write a C++ program to that has a menu that allows a user to choose to do the matrix addition and matrix multiplication. You need to create a Matrix class that allows a user to create a matrix of his/her choice by allowing the user to enter the dimension of the matrix at runtime. The matrix must have at least the following functions:

   setMatrixDimension(int numRows, int numCols);
   This function is used to create a matrix based on the dimension that a user specified.

   void setMatrixByIndex(int rowIndex, int colIndex, int value);
   Set the value of the specific element of the matrix.

   int getMatrixByIndex(int rowIndex, int colIndex);
   Get the value of the specific element of the matrix.

   int getRows();
   Get the number of rows of the matrix.

   Int getCols();
   Get the number of columns of the matrix.

   Matrix addMatrix (Matrix matrix);
   Add this matrix with the one that is passed as parameter and return the result matrix. This function should check whether that the two matrices can be added or not, if not the matrix of size zero will be returned.

   Matrix multiplyMatrix (Matrix matrix);
   Multiply this matrix with the one that is passed as parameter and return the result matrix. This function should check whether that the two matrices can be multiplied or not, if not the matrix of size zero will be returned.

The examples output of the program are as follows:

```
The program to do the matrix addition or multiplication
This program will ask you the information of Matrix A and B and show the result in Matrix C
1.Matrix Addition
2.Matrix Multiplication
0.Exit
Your choice: 1
Enter rows and cols for Matrix A separated By space 2 2
Enter rows and cols for Matrix B separated By space 2 2
A[1][1] 1
A[1][2] 2
A[2][1] 3
A[2][2] 4
B[1][1] 5
B[1][2] 6
B[2][1] 7
B[2][2] 8
A[1][1] 1 A[1][2] 2
A[2][1] 3 A[2][2] 4
----------
B[1][1] 5 B[1][2] 6
B[2][1] 7 B[2][2] 8
----------
C[1][1] 6 C[1][2] 8
C[2][1] 10 C[2][2] 12
----------
The program to do the matrix addition or multiplication
This program will ask you the information of Matrix A and B and show the result in Matrix C
```

1.Matrix Addition

2.Matrix Multiplication

0.Exit

Your choice: 2

Enter rows and cols for Matrix A separated By space 2 3

Enter rows and cols for Matrix B separated By space 3 2

A[1][1] 5

A[1][2] 6

A[1][3] 7

A[2][1] 4

A[2][2] 8

A[2][3] 9

B[1][1] 6

B[1][2] 4

B[2][1] 5

B[2][2] 7

B[3][1] 1

B[3][2] 1

A[1][1] 5 A[1][2] 6 A[1][3] 7

A[2][1] 4 A[2][2] 8 A[2][3] 9

B[1][1] 6 B[1][2] 4

B[2][1] 5 B[2][2] 7

B[3][1] 1 B[3][2] 1

C[1][1] 67 C[1][2] 69

C[2][1] 73 C[2][2] 81

The program to do the matrix addition or multiplication

This program will ask you the information of Matrix A and B and show the result in Matrix C

1.Matrix Addition

2.Matrix Multiplication

0.Exit

Your choice: 0

Good bye