

Script started on 2021-02-09 20:22:12-0600

l_lados@ares:~\$ cat MatrixLab.info

/*****

```
*
*
*   NAME:   Leia Lados           CLASS:   CSC121-W01
*
*
*   Assignment: Lab P-3.36 Java      Level:   3
*
*
*   Description:
*
*
*   P - 3.36: LinkedList class and Main driver programs.
*
*           Matrix class that adds and multiplies arbitrary
*           2D arrays of integers.
*
*           Thank you.
*
*****/
```

l_lados@ares:~\$ cat Matrix.java

import java.util.Scanner;

public class Matrix {

private int[][] first;
private int rows, cols;

public Matrix(int[][] arr) {
 this.first = arr;
 rows = first.length;
 cols = first[0].length;
}

public Matrix(int rows, int cols) {

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    this.first = new int[rows][cols];  
    this.rows = rows;  
    this.cols = cols;  
  
}  
  
public int getRows() {  
    return rows;  
}  
  
public int getCols() {  
    return cols;  
}  
  
public int[][] getArray(){  
    return first;  
}  
  
public Matrix add(Matrix mat) {  
  
    if(mat.getRows() != this.getRows() || mat.getCols() != this.getCols())  
        return null;  
  
    int[][] addedMatrix = new int[mat.getRows()][mat.getCols()];  
    for(int i = 0; i < mat.getRows(); i++) {  
        for(int j = 0; j < mat.getCols(); j++) {  
            addedMatrix[i][j] = this.first[i][j] + mat.getArray()[i][j];  
        }  
    }  
    return new Matrix(addedMatrix);  
}  
  
public Matrix multiply(Matrix mat) {  
    if(this.getCols() != mat.getRows() ) {  
        return null;  
    }  
  
    int[][] multipliedMatrix = new int[this.getRows()][mat.getCols()];  
    for(int i = 0; i < this.getRows(); i++) {  
        for(int k = 0; k < mat.getCols(); k++) {  
            for(int m = 0; m < mat.getRows(); m++) {  
                multipliedMatrix[i][k] += (this.first[i][m]  
                    * mat.getArray()[m][k]);  
            }  
        }  
    }  
    return new Matrix(multipliedMatrix);  
}  
  
public void getInput() {  
    Scanner in = new Scanner(System.in);  
    System.out.println("Enter the values you would like to have in your  
  
    for(int i = 0; i < this.getRows(); i++) {
```

```

        for(int j = 0; j < this.getCols(); j++) {
            first[i][j] = in.nextInt();
        }
    }

    public String toString() {
        String buildString = "";
        for(int i = 0; i < first.length; i++) {
            buildString += "{ ";
            for(int j = 0; j < first[0].length; j++) {
                buildString += first[i][j] + " ";
            }
            buildString += "}";
            buildString += "\n";
        }
        return buildString;
    }
}

l_ludios@ares:~$ javac Matrix.java
l_ludios@ares:~$ cat MatrixMain.java
import java.util.Scanner;

// Main method
public class MatrixMain {
    public static void main(String args[]) {

        Scanner in = new Scanner(System.in);

        System.out.println("Make your first matrix!");
        System.out.print("Rows: ");
        int rows = in.nextInt();

        System.out.print("Columns: ");
        int cols = in.nextInt();

        Matrix first = new Matrix (rows, cols);

        first.getInput();

        System.out.println("Make another Matrix to Add/Multiply!");

        System.out.print("Rows: ");
        int rowsTwo = in.nextInt();

        System.out.print("Columns: ");
        int colsTwo = in.nextInt();

        Matrix second = new Matrix (rowsTwo, colsTwo);

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        second.getInput();

        boolean done = false;
        while(!done) {
            System.out.println("Actions: 1) Add Matrices \n\t 2)" +
                "Multiply Matrices (Please Enter 1 or 2)");
            int choice = in.nextInt();

            if(choice == 1) {
                Matrix status = first.add(second);

                if(status == null) {
                    System.out.println("You can't add these matrices");
                }
                else{
                    System.out.println("\n" + status);
                }

                System.out.println("Would you like to perform another operation?");
                String goAgain = in.next();

                if(goAgain.equalsIgnoreCase("Y")){
                    done = false;
                }
                else {
                    done = true;
                }
            }
            else if(choice == 2) {
                Matrix status = first.multiply(second);

                if(status == null) {
                    System.out.println("You can't multiply these matrices");
                }
                else{
                    System.out.println("\n" + status);
                }

                System.out.println("Would you like to perform another operation?");
                String goAgain = in.next();

                if(goAgain.equalsIgnoreCase("Y")){
                    done = false;
                }
                else {
                    done = true;
                }
            }
            else{
                System.out.println("You entered an invalid choice. Please try again.");

                System.out.println("Would you like to perform a different operation?");
                String goAgain = in.next();
            }
        }
    }
}

```

```

        if(goAgain.equalsIgnoreCase("Y")){
            done = false;
        }
        else {
            done = true;
        }
    }
}

```

```

}

```

```

}
}

```

```

l_ludios@ares:~$ javac MatrixMain.java

```

```

l_ludios@ares:~$ java MatrixMain

```

```

Make your first matrix!

```

```

Rows: 3

```

```

Columns: 3

```

```

Enter the values you would like to have in your matrix:

```

```

1

```

```

2

```

```

3

```

```

4

```

```

5

```

```

6

```

```

7

```

```

8

```

```

9

```

```

Make another Matrix to Add/Multiply!

```

```

Rows: 3

```

```

Columns: 2

```

```

Enter the values you would like to have in your matrix:

```

```

1

```

```

2

```

```

3

```

```

4

```

```

5

```

```

6

```

```

Actions: 1) Add Matrices

```

```

        2)Multiply Matrices (Please Enter 1 or 2)

```

```

1

```

```

You can't add these matrices.

```

```

Would you like to perform another operation? (Y/N)

```

```

Y

```

```

Actions: 1) Add Matrices

```

```

        2)Multiply Matrices (Please Enter 1 or 2)

```

```

2

```

```

{ 22 28 }

```

```

{ 49 64 }

```

```

{ 76 100 }

```

```

Would you like to perform another operation? (Y/N)

```

```

N

```

```

l_ludios@ares:~$ exit

```

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exit

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Script done on 2021-02-09 20:23:34-0600

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