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Subject: DSA

Matrix Multiplication

Task#1: Demonstrate matrix multiplication in java.

Code:

```
import java.util.Arrays;
public class Task8_MatrixMult {
    private static int[][] matrixMultiplication(int[][]
arr1, int[][] arr2) {
        if (arr1[0].length == arr2.length) {
            int[][] Mul = new
int[arr1.length][arr2[0].length];
            for (int i = 0; i < Mul.length; i++)
                for (int j = 0; j < Mul[i].length; j++) {
                    int sum = 0;
                    for (int k = 0; k < Mul[i].length;
k++) {
                        sum += arr1[i][k] * arr2[k][j];
                    }
                    Mul[i][j] = sum;
                }
            return Mul;
        }
        throw new IllegalArgumentException("Multiplication
not possible");
    }

    public static void main(String[] args) {
        int[][] array1 = { { 0, 3 }, { 1, 1 } };
        int[][] array2 = { { 2, 1 }, { 3, 2 } };

        int[][] Multipli = matrixMultiplication(array1,
array2);
        System.out.println("Array#1: ");
        for (int i = 0; i < Multipli.length; i++)

    System.out.println(Arrays.toString(array1[i]));
```

```
            System.out.println("Array#2: ");
            for (int i = 0; i < Multipli.length; i++)

        System.out.println(Arrays.toString(array2[i]));

            System.out.println("Multiplication: ");
            for (int i = 0; i < Multipli.length; i++)

        System.out.println(Arrays.toString(Multipli[i]));
        }
}
```

Output: