

```
package com.simpli;

import java.util.Scanner;

public class MatrixMultiplication {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter the number of rows for matrix A: ");
        int rowsA = scanner.nextInt();

        System.out.print("Enter the number of columns for matrix A: ");
        int colsA = scanner.nextInt();

        System.out.print("Enter the number of rows for matrix B: ");
        int rowsB = scanner.nextInt();

        System.out.print("Enter the number of columns for matrix B: ");
        int colsB = scanner.nextInt();

        if (colsA != rowsB) {
            System.out.println("Invalid matrix dimensions. Cannot perform multiplication.");
            return;
        }

        int[][] matrixA = new int[rowsA][colsA];
        int[][] matrixB = new int[rowsB][colsB];

        System.out.println("Enter the elements of matrix A:");
        for (int i = 0; i < rowsA; i++) {
            for (int j = 0; j < colsA; j++) {
                matrixA[i][j] = scanner.nextInt();
            }
        }
    }
}
```

```
}
```

```
System.out.println("Enter the elements of matrix B:");
```

```
for (int i = 0; i < rowsB; i++) {
```

```
    for (int j = 0; j < colsB; j++) {
```

```
        matrixB[i][j] = scanner.nextInt();
```

```
    }
```

```
}
```

```
int[][] resultMatrix = multiplyMatrices(matrixA, matrixB);
```

```
System.out.println("Resultant matrix after multiplication:");
```

```
printMatrix(resultMatrix);
```

```
}
```

```
public static int[][] multiplyMatrices(int[][] matrixA, int[][] matrixB) {
```

```
    int rowsA = matrixA.length;
```

```
    int colsA = matrixA[0].length;
```

```
    int colsB = matrixB[0].length;
```

```
    int[][] resultMatrix = new int[rowsA][colsB];
```

```
    for (int i = 0; i < rowsA; i++) {
```

```
        for (int j = 0; j < colsB; j++) {
```

```
            for (int k = 0; k < colsA; k++) {
```

```
                resultMatrix[i][j] += matrixA[i][k] * matrixB[k][j];
```

```
            }
```

```
        }
```

```
    }
```

```
    return resultMatrix;
```

```
}
```

```

public static void printMatrix(int[][] matrix) {

    int rows = matrix.length;

    int cols = matrix[0].length;

    for (int i = 0; i < rows; i++) {

        for (int j = 0; j < cols; j++) {

            System.out.print(matrix[i][j] + " ");

        }

        System.out.println();

    }

}

```

