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Operating Systems OL (COMP 3411)


Assignment 3 (Multithreaded programs) ie... (MultiThreadedMatrixMultiplication.java)

****Code is submitted as well****







Output of the program:

```
[dk4comp34114@cs2 ~]$ javac MultiThreadedMatrixMultiplication.java
[dk4comp34114@cs2 ~]$ java MultiThreadedMatrixMultiplication
Enter the number of rows for matrix A: 3
Enter the number of cols for matrix A: 3
Enter the number or rows for matrix B: 3
Enter the number of cols for matrix B: 3
Enter the elements for the matrix A:
Enter the element at row 1, col 1: 1
Enter the element at row 1, col 2: 2
Enter the element at row 1, col 3: 3
Enter the element at row 2, col 1: 4
Enter the element at row 2, col 2: 5
Enter the element at row 2, col 3: 6
Enter the element at row 3, col 1: 7
Enter the element at row 3, col 2: 8
Enter the element at row 3, col 3: 9
Enter the elements for the matrix B:
Enter the element at row 1, col 1: 1
Enter the element at row 1, col 2: 2
Enter the element at row 1, col 3: 3
Enter the element at row 2, col 1: 4
Enter the element at row 2, col 2: 5
Enter the element at row 2, col 3: 6
Enter the element at row 3, col 1: 7
Enter the element at row 3, col 2: 8
Enter the element at row 3, col 3: 9
Answer:
30 36 42
66 81 96
102 126 150
[dk4comp34114@cs2 ~]$
```

Confirming it with an online matrix multiplication resource to ensure correctness of the execution:



matrix multiplication calculator ≡

 NATURAL LANGUAGE
 MATH INPUT
 EXTENDED KEYBOARD
 EXAMPLES
 UPLOAD
 RANDOM

Computational Inputs:

» matrix 1:

» matrix 2:

Also include: [matrix 3](#)

Input

$$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix} \cdot \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$$

Result ☒ Step-by-step solution

$$\begin{pmatrix} 30 & 36 & 42 \\ 66 & 81 & 96 \\ 102 & 126 & 150 \end{pmatrix}$$

Another test case is if the sizes of the matrix do not match and therefore matrix multiplication cannot occur. (For this one I compiled it in my command prompt)

```
C:\Users\felix\Downloads>java MultiThreadedMatrixMultiplication
Enter the number of rows for matrix A: 1
Enter the number of cols for matrix A: 2
Enter the number of rows for matrix B: 3
Enter the number of cols for matrix B: 4
Error: Size mismatch for the inputted matrix dimensions

C:\Users\felix\Downloads>
```

In this case rowA != colB and rowB != colA, therefore it causes the error.