

Part1:

Each Matrix will be defined by the length of my first or last name. My first matrix is a 5x5 (Brian, Brian). 2nd matrix is a 5x6 (Brian Phipps). 3rd matrix is a 5x6 as well. Matrices 4,5, and 6 are given dimensions.

Iterating by rows first was very simple; simply two for loops inside of each other.

Iterating by columns first took some thought but I was able to solve the problem. It required me to change the structure of the for loops; The outer loop looked something like (for int i =0; i < matrix[0].length; i++). This command let me iterate by columns first.

Part2: I wrote out the dimensions of each matrix and found that the only matrices that could be added together were 2+3 and 4+5. So I wrote a function that brought in two matrices and added their values together, which then returned a new matrix all of the new values.

I had to google how to write to a file, so my WriteToFile class was given full credit to the author in my code.

Part3: The matrix multiplication took trial and error but I believe I came to a solution. It required many iterators to make sure each row and column was being addressed correctly.

Most of my pseudo code was handwritten so I will attach a photo of my notes in this file.

| j | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| i | 0 | | | | | |
| | 1 | | | | | |
| | 2 | | | | | |
| | 3 | | | | | |
| | 4 | | | | | |

for i = 0
 > > > > >

for i = 0, i < mat.length
 $mat[i][j] = 0$
 $j++$

i = 0

2) matrix addition

1: 5×5

output: $m2 + m3$

2: 5×6

$m4 + m5$

3: 5×6

4: 4×6

5: 4×6

6: 2×4

3) multiply

$m1 \times m2$

ex $m6 \times m5$

$m1 \times m3$

$$\begin{bmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \end{bmatrix}_{2 \times 4} \cdot \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 7 & 8 & 9 & 10 & 11 & 12 \\ 13 & 14 & 15 & 16 & 17 & 18 \\ 15 \end{bmatrix}_{4 \times 6}$$

$m6 \times m4$

$= 2 \times 6$

$m6 \times m5$

4×6

$$\begin{bmatrix} 1+14+39+60 \end{bmatrix}$$