

Project 1 pseudocode - Olivia Bach

~~6x4~~ ~~6x4~~ ~~6x4~~ Only ~~6x6~~ $\underline{r} \times \underline{c} \times \underline{c} \times r$

must be different matrices + columns = rows

or rows = rows columns = columns

Part 1: ~~Addition~~ Create Matrices

- Import functions from CS2060 for user input

↳ also look here for how to write table

- Initialize matrices → starting variable plus incrementing ++

{ for (int i = 0 → rows)

{ for (int j = 0 → columns)

matrix[i][j] = starting

Repeat for all matrices

↓ increase starting by incrementing same for printing into matrix

- Make struct for matrix? (2D array, rows, columns?)

• Print names in between

- File pointers + paths initialized

→ fprintf instead of printf to print values to each file

Part 2: ~~Addition~~ Addition

do { ask users for which matrix if (not valid) { repeat }

while { valid = false }

do { ask for second matrix if

while { valid = false }

← false

if (input 1 = mat 1) { read in mat 1 into matrix } ↓ repeat x 6

↳ use same double for loop

if (rows = rows && columns = columns) { // two steps more

for — rows

for — columns

fprintf(matrix 1[i][j] + matrix 2[i][j])

Part 3: Multiplication

same do { while } as addition

if (input1. ~~rows~~ columns == input2. rows) {

then they can be multiplied }

read in matrix 1 and matrix 2 if they can be multiplied

use same for loops from before →

2×4 4×2
rows for $\begin{matrix} X & X & X & X \end{matrix}$ $\begin{matrix} X & X \\ X & X \\ X & X \\ X & X \end{matrix}$ add rows multiply row
columns for $\begin{matrix} X & X & X & X \end{matrix}$ to column
rows for ? and add
multiply + add
to a total?
resulting will be a 2×2 repeat
this for all ↓

for { for { to print resulting matrix into a file

Part 4: Vectors + Dot product

create vectors $v = \begin{bmatrix} -1 \\ -2 \end{bmatrix}$ → matlab

plot(all vectors)

dot product → $\text{index}[1] \cdot \text{index}[1] + \text{index}[2] \cdot \text{index}[2]$ multiplied

Part 5: Vectors + Add + Subtract

same for subtraction $\text{index}[1]$
 $v + s \rightarrow \text{index}[1] + \text{index}[1] \rightarrow$ place into new vector

Part 6: Transpose

$\begin{bmatrix} 1 \\ 2 \end{bmatrix} 2 \times 1 \rightarrow 1 \times 2$ matrices from part 1
 $\begin{bmatrix} 1 & 2 \end{bmatrix}$

use indexes to swap around the variables

for { rows → starting matrix

for { columns → starting matrix

for { columns → new matrix

for { rows → new matrix

$\text{newMat}[k][l] = \text{oldMat}[i][j]$

print to file