Name: Jakob West

Class: CS 2300-001 (M/W 12:15 PM – 1:30 PM)

Due: Friday, September 22, 2023 @ 11:59 PM

Assignment: Pseudocode - Programming Assignment #1

**Part 1 - Generating 4 Matrices:**

Number columns = first name (Jakob), number rows = last name (West) Mat1 & Mat2

Mat 1:

* Columns first, rows second
* Output 🡪

1 5 9 13 17

2 6 10 14 18

3 7 11 15 19

4 8 12 16 20

Mat 2:

* Rows first, columns second
* Output 🡪

2 5 8 11 14

17 20 23 26 29

32 35 38 41 44

47 50 53 56 59

Mat 3:

* Given matrix
* Columns first, rows second
* Output 🡪

10 6 2 -2

8 4 0 -4

Mat 4:

* Given matrix
* Rows first, columns second
* Output 🡪

-6.0 -4.5

-3.0 -1.5

0.0 1.5

3.0 4.5

**Part 2 - Adding Matrices:**

* Use double for loop for add matrices function
* Check user input for mat1 and mat2
* Fill matrix A and B
* Add matrices (A + B or B + A)

**Part 3 – Multiplying Matrices:**

* Use triple for loop for multiply matrices function
* Check for user input mat3 and mat4
* Fill matrix C and D
* Multiply matrix C \* D
* Multiply Matrix D \* C

**Part 4 – Adding & multiplying matrices using numpy library**

* Import numpy
* Fill matrices A, B, C, D
* Add matrices A and B using numpy functions
* Multiply matrices C and D using numpy functions
* Multiply matrices D and C using numpy functions

**Part 5: - Finding all possible dot products and outputting to files**

* Initialize matrices: r,s,u,v,w
* Use single loop for 2x1 dot product function
* Prompt user for which matrices to perform dot product
* Cases: rs, ru, rv, rw, su, sv, sw, uv, uw, vw (10)
* Output to respective files

**Part 6 - Transposing matrices from Part 1**

* Use double for loop for transposing matrices function
* Create: mat1, mat2, mat3, and mat4 matrices
* Transpose by calling function: mat1, mat2, mat3, mat4

**Part 7 - Finding the Dot Product & Transposing matrices using libraries**

* Import numpy
* Initialize matrices: r,s,u,v,w
* Fill matrices A, B, C, and D using numpy
* Calculate dot product for the 10 following cases using numpy functions🡪

rs, ru, rv, rw, su, sv, sw, uv, uw, vw (10)

* Transpose matrices: mat1, mat2, mat3, mat4, r, s, u, v, w using numpy functions