Programming Assignment #1

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## Pseudocode:

Print “Matrix Calculator”

List menu options

Print:

1. Addition

2. Subtraction

3. Scalar Multiplication

4. Exit

Prompt user input and store in var

Validate selection with loop

While menu\_option is less than 0 or greater than 4

Print error message and reprompt user

Print “You selected ” + menu\_option

Prompt user for rows and columns of two matrixes, and store in var

Attempt to splice the input into separate integer variables, and throw and error and reprompt if needed

Int rows = 0

Int columns = 0

While rows == 0 and columns == 0

Try:

Try to find the index of the space character

int space\_index = rows\_and\_columns.index(“ ”)

Splice the string into rows and colums

Except ValueError:

No space found or letters entered, reprompt user

Print “Input error”

Print a confirmation message and direct to the first matrix

Print “Matrix 1:

Enter the rows of the first {rows}x{columns} matrix:”

Start a while loop to iterate until all data has been entered

While i is less than rows:

Prompt the user for the nth row of the matrix

Verify user input with a loop

current\_row\_list = []

While matrix1.length() is less than rows:

Try:

Try to split the input at spaces

current\_row\_list = current\_row.split(“ ”)

# Check length of list

if current\_row\_list.length is less than columns

throw(“LengthError”)

else

Check content to ensure they are numbers

for i in current\_row\_list

if type(i) is not int

throw(“ValueError”)

matrix1.append ( current\_row\_list )

Except LengthError:

User didn’t enter enough data, reprompt

Print “Input error”

Except ValueError:

Input other than integer was received, reprompt user

Print “Input error”

# Print a confirmation message and direct to the second matrix

Print “Matrix 2:

Enter the rows of the second {rows}x{columns} matrix:”

Start a while loop to iterate until all data has been entered

Run Calculation on matrixes

Switch mode

Case Addition:

Add two matrixes

Case Subtraction:

Subtract two matrixes

Case Multiply

Multiply matrix by scalar

Output result

Loop program

## Reflection

This project was a great refresher for python, but I while writing the code, I realized there are a lot of syntax and logical differences between Python and C# (my main language). I also struggled with verifying the user’s input and dealing with all the different possible edge cases. In the future, I am glad that I can just reuse the code that I have written, so that should save me a lot of time for the next project. For this project, I decided to use Visual Studio as my IDE, which came with its own set of problems. I had to do a bit of research on how to add NumPy to my Visual Studio Python Environment, but now that I have it added, that shouldn’t be a problem from now on. Additionally, there were some weird files that were preventing me from committing to Git, so I had to add those files to the GitIgnore file. Now that I have my environment properly configured and I have some of that input verification code pre-written, I don’t anticipate the next project taking as long as this one did.