

# CSC 108

Lists, File I/O

2 - 3 pm, MN2266

# Ice Breaker

- Tell us your name
- Any plans for the reading week?

# List

How would you find the size of the matrix in python?

```
[[1, 2, 3],  
 [3, 4, 5],  
 [6, 7, 8]]
```

 has a size of 3 x 3; rows × columns

Given a list `matrix` find the number of rows and number of columns.

```
num_rows = # fill it
```

```
num_columns = # fill it
```

# Matrix Addition

Write a Python program that performs matrix addition. The program will take two matrices of the same size as an input.

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} + \begin{bmatrix} 7 & 8 & 9 \\ 10 & 11 & 12 \end{bmatrix} = \begin{bmatrix} 1+7 & 2+8 & 3+9 \\ 4+10 & 5+11 & 6+12 \end{bmatrix} = \begin{bmatrix} 8 & 10 & 12 \\ 14 & 16 & 18 \end{bmatrix}$$

```
def matrix_addition(m1: list[list[int]], m2: list[list[int]]) ->  
    list[list[int]]:  
  
    ...
```

## close() method

What is the difference between the following two codes? More specifically, why is it important to close the file like in the first example, and why doesn't second example use close()?

```
file = open("exam_solution", "r")  
  
...  
  
close("exam_solution")  
-----  
with open("exam_solution", "r") as file:  
  
    ...  
  
// Have a look at file_close.py
```

## read matrix

Write a Python program that reads a matrix from a file. Each line contains the matrix entries, with each entry separated by spaces. The function inputs are filename, num\_rows, num\_cols

```
def read_matrix(filename: str, num_rows: int, num_cols: int) ->  
    list[list[int]]:  
    ...
```

# file I/O modes

What is the difference between append mode ('a') and write mode ('w') when opening a file in Python?

```
with open("example.txt", "w") as file:  
    file.write("This is write mode.\n")
```

-----

```
with open("example.txt", "a") as file:  
    file.write("This is write mode.\n")  
  
// Have a look at file_write_append.py
```

# Halloween Question

```
def record_candies(records: list[list[str]]) -> None:
```

```
    """ Update the candies received by trick-or-treaters contained in the list
    <records>, where each element is a 3-element list containing a
    trick-or-treater's first name, last name, and the number of candies
    they received.
```

```
    The function updates the candies in 'candies.txt' by either adding
    new trick-or-treaters or incrementing the candy count of existing ones.
```

```
    """
```