

Computer Science for Brothers

Assignment 3

Due April 30th, 2020

Question 1.

Given a 2-dimensional integer array, use a self-defined mapping in order to parse the array into a 1-dimensional array. Since this problem is a little more advanced, and hinges on the idea of a matrix, I will provide an example and visualization of a matrix.

$$\begin{bmatrix} 5 & 7 & 6 \\ 9 & 1 & 3 \\ 2 & 8 & 4 \end{bmatrix}$$

The above is a standard representation of a matrix; it is simple to look at it like an Excel spreadsheet. All it is doing is representing data in the form of rows and columns (in which we can perform fancy operations on in order to extract information). Simply imagine that $[5,7,6]$ is row 1, $[9,1,3]$ is row 2 - $[5,9,2]$ is column 1, and so on. You are to take this matrix and represent it in Java using a 2-dimensional array. You will then create a mapping function in order to turn that 2d array (any 2d array) into a 1-dimensional array.

For this problem, I would recommend utilizing the included matrix in order to have and see concrete numbers.

Question 2.

Given the file *babynames.txt*, find:

1. The average frequency of all male names
2. The average frequency of all female names
3. A list of all names that exist both as a boy and as a girl
4. All names that occur with matching frequency between boy and girl

As this question requires a bit of prior knowledge (something you'd receive in lecture), I'm going to explain a bit about some of the tools you might use. First, you are going to be using the **File** library, **Scanner**, **Arrays**, and the **String** library - specifically the `split()` function.

There are two ways that you can do this (both you can use google to help) - one is to parse all of the data from the text file into the program and work with the data from inside of the program, or to work with each line as it's read in the program.