Input: a NxN matrix, or 2x2 matrix

Format should be similar to how these tables are represented, with some changes

Ex.

|  |  |
| --- | --- |
| 2,1 | 0,0 |
| 0,0 | 1,2 |

This is how the following matrix would be represented if drawn on a board, the format for this is:

2,1 : 0,0

0,0 : 1,2

These should also be inputted in a text file.

Output: Dependent on the function ran

Program should also consist of a menu where users can input their matrices to be tested by filename, then can run any of the following functions as many times as they want. Program could also have a GUI but this is not essential.

Functions to perform:

* Find Pure Nash
  + Program should be able to locate pure Nash equilibria in any NxN matrix
    - Return the Nash equilibria and the associated payoffs for the players to be printed, make the print into a user friendly format
    - If there are not any pure Nash equilibria, return a message
* Find Mixed Nash
  + Program must be able to find p and q values for a given 2x2 matrix
    - Return the p and q values and print them in a readable format the user
    - If matrix is not 2x2, output that the given instance does not meet the requirements
* Find dominant strategies
  + Given a NxN matrix find the strictly dominant strategies for the given matrix
    - Return the row or column indices of the strictly dominant strategies to be printed for the user with a user-friendly and readable format
    - If there are no strictly dominant strategies, return a message
* Find dominated strategies
  + Given a NxN matrix find the strictly dominated strategies for the given matrix, generally will coincide with the dominant strategies function
    - Return the row or column indices of the strictly dominated strategies to be printed for the user with a similar format to the dominant strategies function, consisting of the row or column of the dominant or dominated strategies.
    - If there are no strictly dominated strategies, return a message