CSCI 3005 - Spring 2021 - Programming Assignment 2
BabyGrid

While we are all familiar with numeric puzzles such as Sudoku, children would normally get started with smaller, simpler versions involving a reduced set of digits.   Given a file that contains the initial state with clues for a puzzle, you are to implement a backtracking solution that correctly fills the grid with a set of digits, so that each row and column has exactly one occurrence of each digit, as shown below.

AVAILABLE DIGITS: 2, 3, 5

Sample Grid   **Solution**

Your solution should be stored in the *BabyGrid* Java class. Although you have a lot of flexibility in designing other private methods as you work towards a solution, your class is required to implement a depth-first backtracking solution that prunes non-promising paths from the search space, either recursively non-recursively.   Your class is expected to have the following public methods:

- `public BabyGrid(String filename, int N)`: a constructor that initializes an N x N puzzle with the data in the file given as argument. For an N x N grid, the file will contain N+1 lines. The first line will have the N available digits, separated by spaces. Each of the remaining N lines will contain N digits, with each digit representing either a clue or zero (empty cell).

- `public String toString()`: a method to return the solution as a two-dimensional grid in an attractive format of your choice.

- `public String solution()`: a method to return the solution as a String representing the contents of the grid in row-major order, with a single | before and after each row. For the sample puzzle above, the return value would be the string "`|235|523|352|`" with <u>no other formatting</u> (if the puzzle has no solution, this method should return "`NONE`").

The `GridTest.java` class and associated data files have been provided to help you test your solution.   Once you are satisfied that your solution works, submit it to Mimir for more thorough testing.   Please include neither `GridTest.java` nor any data files in your submission.