

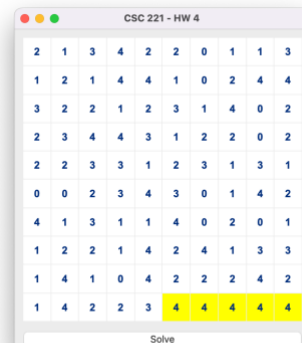
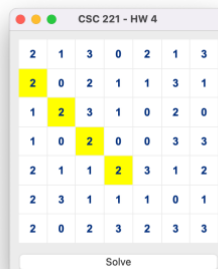
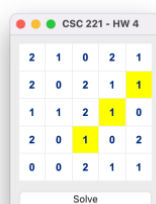
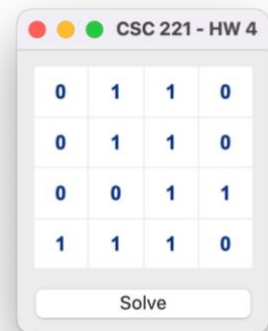
CSC 221: Software Design Lab

FALL 2022

Homework 4 – GUI with PyQt6

Your task is to write a GUI program that finds the longest consecutive equal numbers in a matrix stored in a CSV file. Your program must do the following:

1. Read the matrix of numbers from a CSV file (its filename will be supplied to your program through the command line argument). The number of rows and the number of columns of the matrix are exactly the number of rows and the number of columns in the CSV file, respectively. There will be no header in the CSV file.
2. Use PyQt6 to display the matrix numbers in a grid layout (i.e. [QGridLayout](#) or a combination of [QVBoxLayout](#) and [QHBoxLayout](#)), with a “Solve” button at the bottom that can be clicked by the user (see the expected interface on the right). You should adjust the size of the widget according to the dimension of the matrix.
3. When the user clicks the “Solve” button, your program must identify the longest consecutive cells with the same number in the matrix, and highlight them with a yellow background. Consecutive cells must be either on the same row, on the same column, or aligned diagonally. Expected outputs are:



If there are multiple sequence with the same length, highlighting any of them will work.

4. Your program must run as a standalone script, named as `SDL_HW4_EMPLID_LastName.py` e.g., to run with the `board1.csv` matrix file:

```
python SDL_HW4_EMPLID_LastName.py board1.csv
```

NOTE: there are 4 sample CSV files (corresponding to the 4 sample outputs above) with solution for your evaluation. In the solution, the longest sequence is marked with **-1** (negative one) value.