Title: Sudoku solution algorithm design and web visualization

Category: Advanced programming and webpage design

Description:

Sudoku is a world-famous logic-based, combinatorial number-placement puzzle. The objective is to fill a 9×9 grid with digits so that each column, each row, and each of the nine 3×3 subgrids that compose the grid contains all the digits from 1 to 9.

In the first phase of the independent study, the student will use python for advanced programming for the unique solution given the specific settings. The advanced programming intends to polish his programming habits and ability: Different modules/libraries will be applied; various algorithms will also be applied to improve the performance (speed and accuracy) of the project.

The second phase of the study will be the web implement of the project. The final output will be an interactive interface for human player to play with. The minimum expected function will include: Users can select and input their own result on any empty cell; At any point of the progress, users can check whether they are right so far and choose to give up the puzzle as well as seeing the complete solution of the puzzle. The student will learn how to import the python project to a webpage and other basic knowledge on web design and implementation.

The deliverables of the project will include the following: the programming scripts from the first phase, the interactive webpage from the second phase and the written summary describing and concluding the whole project. The summary could be a report, a poster or even a presentation which will be decided during the study.