Course Project

On-line Competitive Sudoku

Sudoku is a puzzle that has long been popular in Japan (though it was originally devised in the United States) that is becoming increasingly popular in this country. Several newspapers now publish Sudoku puzzles daily. Various web sites also allow for on-line play. The puzzle consists of a nine-by-nine grid split up in nine three-by-three grids. The goal is to fill in the digits 1 through 9 into the squares of the grid according to the following rules:

- Each row contains each digit exactly once
- Each column contains each digit exactly once
- Each three-by-three box contains each digit exactly once.

The puzzle begins with some squares filled in, and the goal is to complete the puzzle in accordance with the rules above. There is always exactly one solution to the puzzle. Puzzles are rated by difficulty from “very easy” to “hard”.

The course project is to build a competitive on-line Sudoku game. Each user can download a puzzle and try to solve. A tamper-proof clock keeps track of the solving time. When the user submits a correct solution, the system records the solving time (assuming the solution is correct) and the top ten players each week in each difficulty category will receive a prize provided by affiliated companies. A typical prize will be a gift certificate or a coupon. The business plan is to display advertisements for the affiliated companies (for a price).

The software should also be able to provide various types hints to solvers. These can take at least two different forms.

- The software can highlight the next square the user should try to fill in.
- The software can also fill in a number in a square.

If the user makes use of a hint, the software will either automatically downgrade the difficulty of the puzzle or remove it from the competition.

The system should notify prize winners at the end of each week. The system should also be able to display the winners for each week (by screen name and solving time) to any user who chooses to see this information. It should also display screen names and times for the all-time winners in each difficulty category.