Sudoku for the iPhone and iPad

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May 10, 2010

Abstract

Sudoku is a logic-based, combinatorial number-placement puzzle. The objective is to fill a 9x9 grid with digits so that each column, each row, and each of the nine 3x3 sub-grids that compose the grid (also called "boxes", "blocks", "regions", or "sub-squares") contains all of the digits from 1 to 9. The puzzle setter provides a partially completed grid, which typically has a unique solution. [Wikipedia]. We implemented this game with new features for the iPhone and the iPad platform.

1 Contribution of each team member

Cadrian Chan   Cadrian Worked on the iPad formatting by modifying the existing iPhone interface. The 9x9 grid was enlarged and buttons were re-aligned to take advantage of the wider screen on the iPad and enable better interaction with the user. Next, he implemented the traditional Sudoku puzzle generator; an algorithm that makes different puzzle combinations every time the user click on the new game button. The generator algorithm populates the game grid with random numbers representing a solvable Sudoku.

David Houngninou   David worked on the Jigsaw quadrants, and the attributes of every cells in the Jigsaw grid. Next, he designed the menu screen

and implemented the navigation view controller to browse between the menu screen and the game screens. Finally, he implemented the cells and board classes.

Yu-Ying Liang Yu-Ying worked on the game logic and rules. He associated events to the buttons on the game screen and wrote the algorithm to verify the validity of moves for both the traditional and the jigsaw versions. Next he worked on the interface builder to design the game views for the iPhone version.

Common Tasks We all worked concurrently on the game logic, debugging and testing the application before submission.

2 What are your future plans for this application?

Now that we have more time to spend on improving the Sudoku game, we are planning to add more user friendly features. These features include: an assist mode showing valid inputs for each cell, highlight the row / column of a selected cell, pop-up messages showing the current progress in the game. Next we may include a timer that keeps track of the time of each game session so that the player can beat its own record. Knowing that Sudoku is a long and challenging game, we plan on adding a Save/Load feature for both game modes. With this feature, the player should be able to reload previously saved sessions. To add more interaction to the game we also plan on adding game levels. In Sudoku, the level of difficulty depends on the number of empty cells in the grid. Our new algorithm should be able the populate the grid according the game difficulty. Finally, knowing that both the iPhone and the iPad have online access, we plan on sharing players scores online and update a list of top 5 Sudoku players periodically.

3 What would we do different if you could start all over?

In terms of data structure, we would use a better way to generate and populate the array of cells instead of entering the values manually. We would add some valid numbers in the cells attribute instead of blank buttons. Next, we are planning on adding a Jigsaw puzzle generator.

4 Will this go on the App Store or continue as an independent study?

This application is planned to be submitted to the Apple App Store. We would like to add some sound effects, some animations when the game launches and ends, better graphics, a timer, and the 'Samurai' version of the Sudoku.

Reference: [Wikipedia] http://en.wikipedia.org/wiki/Sudoku