2012

Assignment 2
INFO241

This course is designed to provide students with a complete introduction to the database concept, relational database model and application development. Topics include DBMS, database query language, normalisation, database design methodology, programming and database application development, database administration, and other emerging topics.

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1/1/2012

INFO 241
Assignment 2

You will develop a junior 4X4 SUDOKU database system for a game company. The following requirements and business rules are to be implemented:

(a) Only 4x4 Sudoku puzzles can be stored in the database and new puzzles can be added as and when required. Check out the rules if you don't know how to play http://mypuzzle.org/sudoku/kid.html.

(b) Two type of users. Admin user is allowed to add new puzzle and other user is allowed to play the puzzle.

(c) Each puzzle is recorded as a row in the database table with a unique ID code (use SP1, SP2 ….etc).

(d) There are two types of puzzle. The challenging puzzle provides only one clue for each of the four boxes. The easy puzzle provides two clues for each of the four boxes.

(e) The solution of a puzzle is recorded in a field as a 16 digits code in the database table.

(f) There is no limit to the number of puzzles a user can play.

(g) Each puzzle has only one unique solution.

(h) Every submitted puzzle's solution from a player will be recorded with a unique ID number (use PY1, PY2….etc) and is date and time stamped. The puzzle solution is recorded as a 16 digits code format (left to right and top to bottom) in a single field. The email of the player is also captured at this stage.

(i) After a player submitted a puzzle solution, a ranking form displays the email and the time taken to complete the puzzle provided the solution submitted was correct.

(j) You must implement a validation check on the length of the solution code in the database table such that it must be <u>exactly</u> 16 digits and must not contain other characters.

(k) You must provide all the necessary check and feedback if user's interaction is incorrect.

In addition to implementing the above requirements, you will need to submit the follows:

1. Design the ERD for the Sudoku puzzle database system that meets all the requirements. Use ONLY VISIO crow's feet notation with full relationship diagram documentation. The design should be in 3NF. <10 marks>

2. Write the script to generate the database, tables (with all the necessary constraints), relations, and insert 10 rows of data for each table. <10 marks>

3. Create a "Menu form" for a user to choose what he wants to do. Select "Admin" will launch the "Add Puzzle". Select "Player" will launch the "Select Puzzle" from. <10 marks>

4. Design a way such that "Admin" users must be authenticated first before launching the "add new puzzle" form. <10 marks, bonus/optional>

5. Create an "Add Puzzle" form to add a new puzzle (you can use either non coding table adapter method or ADO coding techniques). <20 marks>

6. Create a "SelectPuzzle" form to select a puzzle. The content of the second combobox depends on the value selected from the first combobox. Clicking The "play" button will launch the "Play" form. <20 marks>

7. Create a "Play" form to display and play a selected puzzle (Requirement: need to capture parameter from the previous form). The timer in the "play" form will start automatically once the form is launched. Clicking the submit button will launch the "Ranking" form and store all the necessary data in the database. For this form use only ADO coding technique to insert data into database. <20 marks>

8. Create a "Ranking" form to show users' email and time taken to complete a puzzle. The shortest time to complete a correct puzzle will appear first (Requirement: need to use SQL queries). No need to show incorrect solution. <10 marks>

9. All the forms should be able to activate and display on the screen simultaneously when selected. <10 marks>

10. Organize a DOC file to document the SQL/DDL/DML script, ERD, table adapter, C# code and forms for each question. Label the question number clearly. <10 marks>

11. Q & A during presentation and demo in lab. <10 marks>

Submission:
Zip the entire visual studio folder and documentation and upload to BB by 18/6 11am and submit a printed copy of the DOC file in BOX241. We will mark assignment 2 in the Lab during your scheduled presentation time.
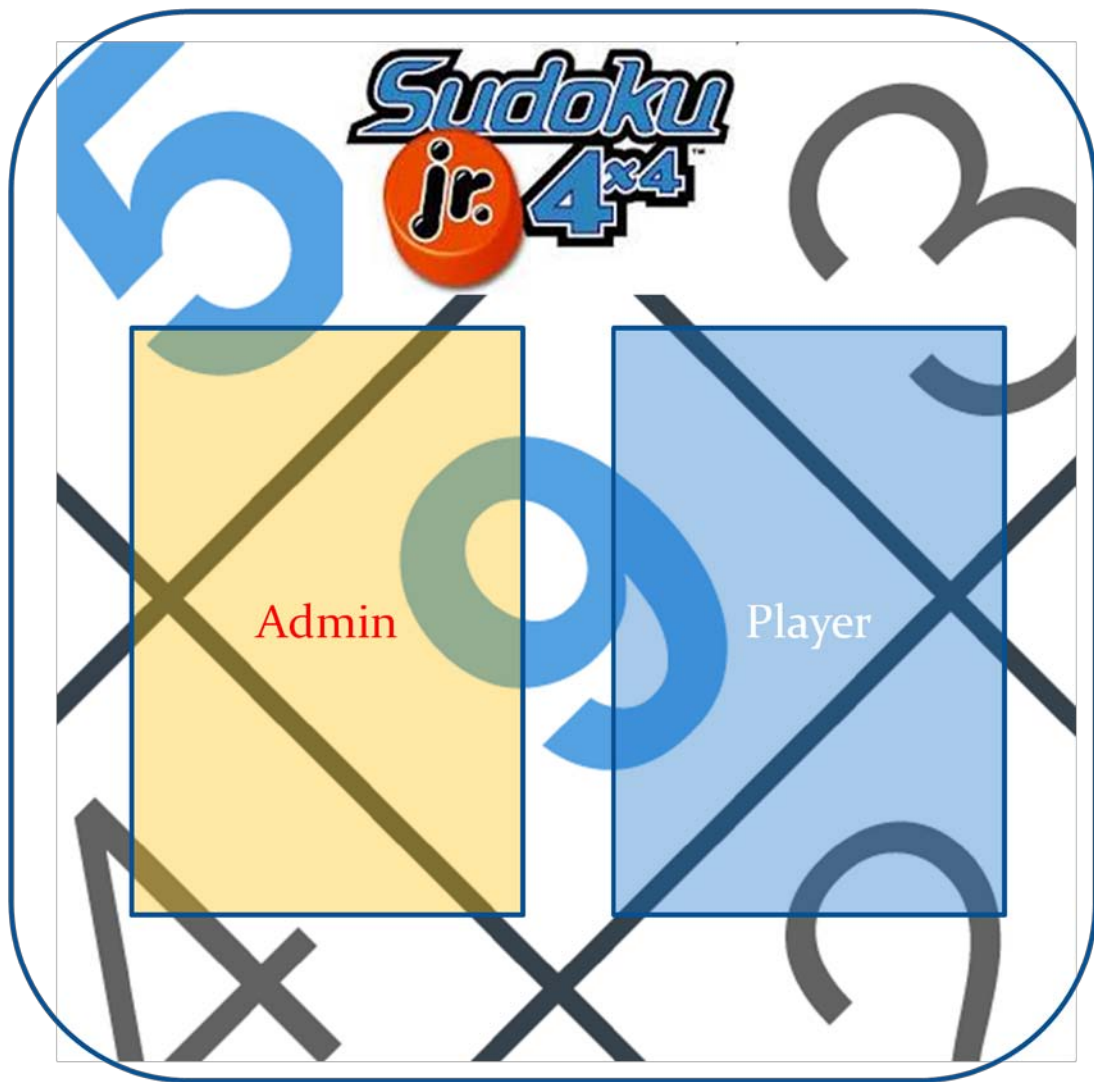
Figure 1 Menu Form
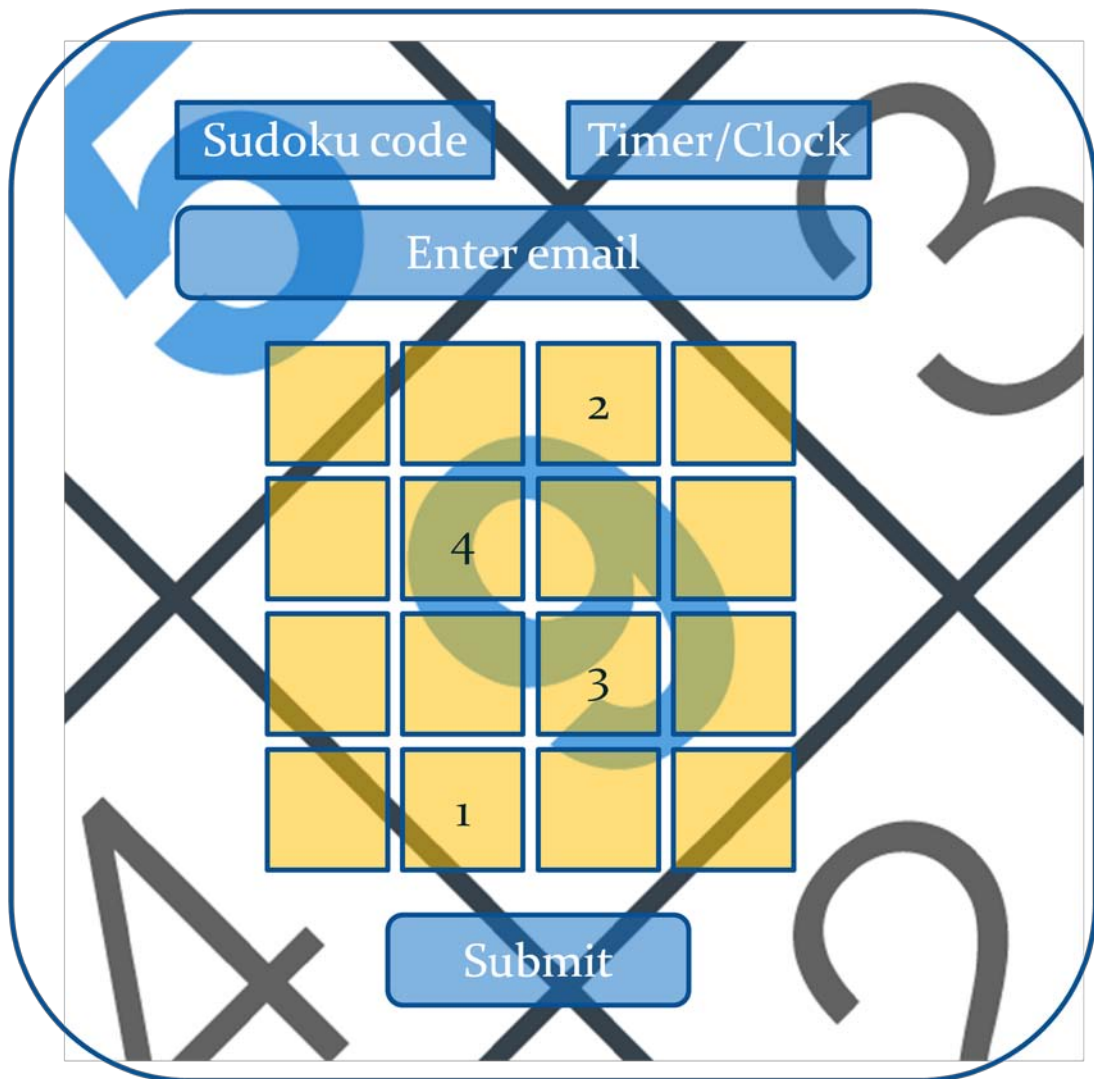
Figure 2 Add a new puzzle

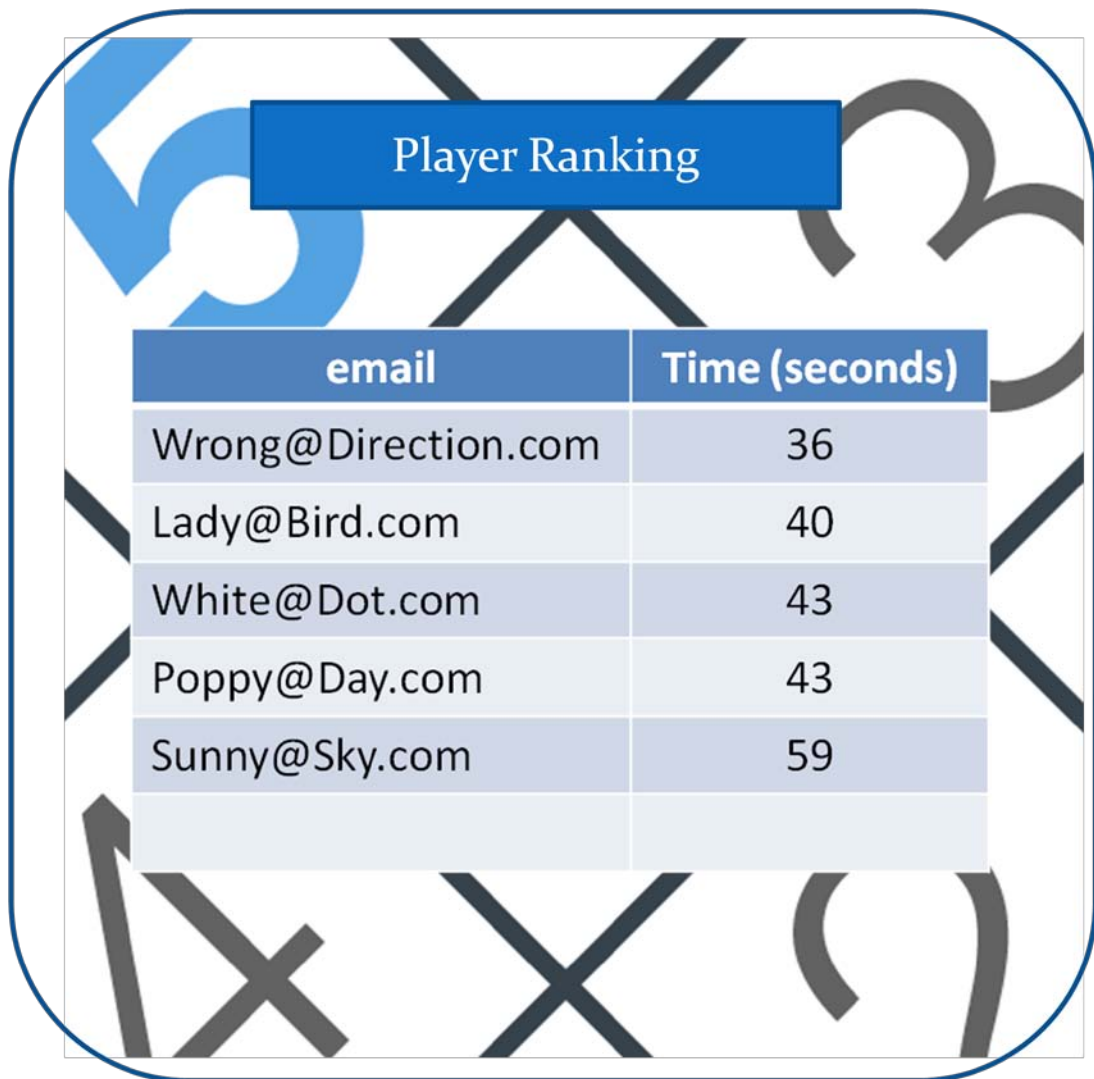Figure 3 Select a Puzzle

Figure 4 Ready to play form

Figure 5 "Ranking" form displays the shortest completion time and correct posting first