How to Play Ted's Sudoku

The One Rule: Fill in all blank cells making sure that each row, column and 3x3 block contains the numbers 1 through 9.

Creating a Puzzle: You can create a puzzle by opening the **File** menu and
- Creat a New puzzle (specifying difficulty),
- Open a previously stored puzzle,
- Dub a puzzle by entering cell values.

When dubbing, click the verify button when you finish entering cell values. This will make sure that the puzzle you have created is a valid puzzle (has a unique solution).

Saving puzzles: To save an unfinished puzzle, open the File menu and select Save or Save As.

When you begin play, the "given" cell values are colored black. After that, the numbers you enter are colored blue. (You cannot change the given values.)

Setting Cell Values: To set the value of a cell (either when dubbing or when playing a game), click a value button, then click on the cell that is to be set to that value. To clear a cell value, click the unlabeled button, and then click on the cell to be cleared. You can also set the value of a cell by moving the mouse cursor to that cell and pressing a number (0-9) key on your keyboard. (Pressing "0" clears that cell.)

Printing Puzzles: You can print the current puzzle by opening the File menu and clicking on Print Screen. You can also print a page of four new puzzles by opening the File menu and clicking on "Print 4 new puzzles" (specifying their difficulty).

Solving Puzzles

List the Candidates: It's impossible to get very far without carefully maintaining a list of possible values (candidates) for each blank cell.

If you are working on a paper puzzle, systematically analyze each blank cell. Start with the assumption it can have any digit (or value) between 1 and 9, and then eliminate (remove) all values which have already been assigned to other cells in its respective row, column and 3x3 block. There are several ways to keep track of the candidates. One way is simply to write them into the empty cells in a size small enough to fit 9 possible values.

Doing this by hand is laborious and prone to error, and often detracts from the fun of solving these puzzles. Fortunately, Ted's Sudoku program can do this for you, while leaving you with the fun of applying logic to solve each puzzle. **To view the candidates**, open the Assists menu and select Show Candidates.

Sometimes it is helpful to highlight cells in which a particular candidate is found. This can be done by opening the Assists menu and selecting Highlight a candidate.

If the candidates are showing and the auto update check box is checked, the candidates for all cells are automatically recalculated each time you set a cell value.

Eliminate Candidates: Study the current candidates to see if you can recognize a pattern. (They are described in the following section.) Once a pattern has been identified, remove any candidates in other cells as required by the pattern. Repeat until the puzzle is solved. The patterns are listed in order of increasing difficulty of recognition. Only progress to more difficult patterns when simpler ones neither reveal new values nor exclude candidates from blank cells.

When the candidates are visible, you can remove one by checking the check box labeled "remove cand.", clicking the appropriate value button, then clicking on the cell with the candidate to be removed.

Click the Verify button at any time during play to see if errors have been made.

Other Aids: In the Assists menu, you can Undo your previous move(s), see errors (Show Errors), ask for a clue (Show Clue) which will identify the next pattern for you, or if you give up, you can Show the solution to the puzzle.

Pattern Recognition

Single Position: This is the easiest technique to apply by eye - and the one that most people use first when completing paper Sudoku puzzles.

Choose a row, column or block, and then go through each of the numbers that hasn't already been placed. Because of other placements, the positions where you could place that number will be limited. Often there will be several places that are valid, but if you're lucky, there will only be one. If you've narrowed it down to only one valid place where you can put the number... you can fill that number in, since it can't go anywhere else!

Naked Singles: Any cells which have only one candidate can safely be assigned that value.

Whenever a value is assigned to a cell, that value can be removed as a candidate from all other cells sharing the same row, column and block.

Hidden Singles: Very frequently, there is only one candidate for a given row, column or block, but it is hidden among other candidates.

Locked Candidates: Sometimes a candidate within a block is restricted to one row or column. Since one of these cells must contain that specific candidate, the candidate can safely be removed from the remaining cells in that row or column outside of the block.

Sometimes a candidate within a row or column is restricted to one block. Since one of these cells must contain that specific candidate, the candidate can safely be removed from the remaining cells in the block.

Naked Pairs: If two cells in a group (row, column or block) contain an identical pair of candidates and only those two candidates, then no other cells in that group can contain those values. They can safely be removed from other cells in the group.

Hidden Pairs: If two cells in a group contain a pair of candidates (hidden amongst other candidates) that are not found in any other cells in that group, then other candidates in those two cells can be removed safely.

Naked Triples & Naked Quads: The same principle that applies to Naked Pairs applies to Naked Triples & Naked Quads.

A Naked Triple occurs when three cells in a group contain no candidates other that the same three candidates. The cells which make up a Naked Triple don't have to contain every candidate of the triple. If these candidates are found in other cells in the group they can be removed.

A Naked Quad occurs when four cells in a group contain no candidates other that the same four candidates.

Hidden Triples: If three candidates are restricted to three cells in a given group, then all other candidates in those three cells can be removed.

Hidden triples are generally extremely hard to spot but fortunately they're rarely required to solve a puzzle.

Hidden Quads: If four candidates are restricted to four cells in a given group, then all other candidates in those four cells can be removed.

Hidden Quads are very rare, which is fortunate since they're almost impossible to spot even when you know they're there.

X-Wing: For every Sudoku, a value can exist only once in each row, column and block. If a value has only 2 possible locations in a given row (i.e. it has a candidate in only 2 cells in that row), then it must be assigned to one of these 2 cells. Given a particular puzzle that has two rows where a given candidate 'C' is restricted to exactly the same two columns (and no more than 2 columns), and since

- candidate C must be assigned once in each of these two rows, and
- no column can contain more than one of candidate C,

then candidate C must be assigned exactly once in each of these two columns within these two rows. Therefore, it's not possible for any other cells in these two columns to contain candidate C. This same logic applies when a puzzle that has two columns where candidate C is restricted to exactly the same two rows.

Swordfish: The swordfish pattern is a variation on the "X-Wing" pattern above.

Formal definition: Given a particular puzzle that has 3 rows where a given candidate C is restricted to two of a set of 3 columns, and since:

- Candidate C must be assigned once in each of these three rows
- No column can contain more than one of candidate C,

then candidate C must be assigned exactly once in each of these three columns within these three rows. Therefore, it's not possible for any other cells in these three columns to contain candidate C. This same logic applies when considering candidates in columns.

BUG+1: A Bivalue Universal Grave (BUG) is any puzzle in which all the unsolved cells have two candidates, and if a candidate exists in a row, column, or block, it shows up exactly twice. BUGs have either 0 or 2 solutions. A BUG+1 is a BUG that has exactly one poly-valued cell left. If the puzzle is known to have a unique solution, then that cell must have a candidate removed.