Welcome to the Daily SuDoku!

Today's SuDoku is shown on the right. Click the grid to download a printable version of the puzzle. Visit the archive for previous daily puzzles and solutions. Play online, print a Sudoku, solve and get hints using the new improved Draw/Play function.

But how do I do it?

The object is to insert the numbers in the boxes to satisfy only one condition: each row, column and 3x3 box must contain the digits 1 through 9 exactly once. What could be simpler?

The rules of the new Monster Sudokus are exactly the same, but more numbers and letters are needed.
Christmas tree Sudoku

Daily SuDoku

Daily Seasonal Sudoku: Fri 23-Dec-2005

Instructions


Christmas tree Sudoku: Fri 23-Dec-2005 very hard
Demo: Basic Sudoku (*su1*)

Basic model *su1* computes solution to given Sudoku.
Demo: Find other solutions ($su_1 \rightarrow su_2$)

- Is the solution unique?
- If not, how many solutions exist?
- Edits for $su_1 \rightarrow su_2$:
  - Implement binary cuts to exclude known solution
  - Use GDXdiff to inspect differences between solutions
  - Use loop to find and store solutions
**Demo: Infeasible Sudoku (su1 → su3)**

- What should we do with an infeasible Sudoku?
  - Not enough to just report the infeasibility
  - Here, repair the data to make the model feasible
- Edits for going from su1 → su3
  - Use random generation to get bogus data
  - Remove X.fx for fixed cells
  - Add binary variable UNDO (relaxes fixed cells)
  - Add equation fix using the UNDO variables
  - Add new objective function: Minimize sum over all UNDOs
  - Write short report
Samurai Sudoku

Top Notch Free Samurai #33
(Easy)

Access key:

To access the premium Samurais, you will need to enter an access key in the box above. The same key will also let you access our Shogun, Shapo, and Windoku puzzles and use both the samurai and standard boards as many times as you like.

To obtain an access key:
Click the "Buy now" button below to use secure PayPal pages to purchase an access key. Each key costs £2.00 and is valid for 14 days. The key will be sent to you by email. We will only use your email address to administer the service, and will not pass your details to any third party.

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Demo: Mapping data (map1)

- We solve the Samurai as 5 basic puzzles, with linking constraints for the overlapping cells.
- Requires mapping 21x21 Samurai puzzle into 5 separate 9x9 puzzles.
Demo: Samurai model (su3 → su4)

- Add puzzle index $p$ to all variables/equations
- Add linking constraints
- Use random data to test
- Fix undo variables initially to 0
  - If the model is feasible, it will solve quickly
  - If infeasible, we unfix undo and resolve
Demo: Excel in charge (samurai_vb)

- Existing Samurai model with Excel GUI
- Look at data communication between model and GUI
Demo: Samurai data input (su4 → su5)

- Prepare our Samurai model *su4* to plug in to spreadsheet
- Import 21x21 data from GUI (via GDX)
- Use mappings from map1 to map 21x21 → 5x9x9
- Export 21x21 solution to GDX
**Demo:** Clean up (su5 → su6)

- Create text file for display in GUI

```
Solver: CPLEX
equations: 1945 variables: 3646
model status: 1 OPTIMAL
solver status: 1 NORMAL COMPLETION
iterations: 0 solve time: 0.08
```
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