



To solve a Sudoku

The rule to solve a Sudoku is quite simple. We have a 9x9 grid. This grid is divided into 9 blocks of 3x3 fields. There some numbers are already given and the empty fields shall be filled by numbers in the way that finally in each row and each column the numbers 1 to 9 occur exactly once and additionally in each block there may occur 1 to 9 exactly once.

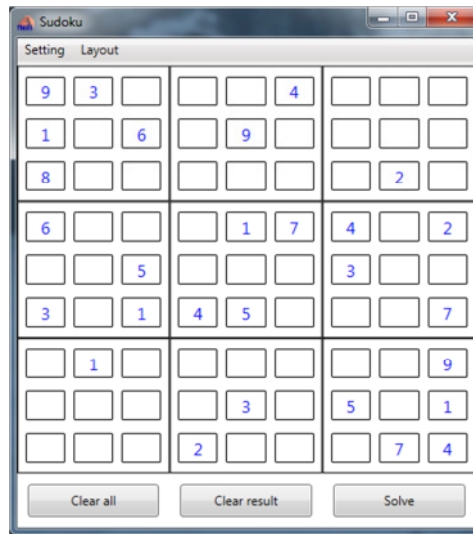


If we would intend to solve this Sudoku and start with the 3. element in the 1. row (the field with the "?"), To find out which number is to be put into this element the numbers in the red, green and blue squares must be checked. In all 3 squares the numbers 1 to 9 may occur exactly once. In all 3 squares the numbers 1, 3, 4, 5, 6, 8 and 9 are already there so in this field only the numbers 2 or 7 could be inserted. Now the question is which one should I insert? To answer this, all the other elements must be considered to. That makes things a bit more complex of course ☺

The Sudoku solver can solve this task quite easily.

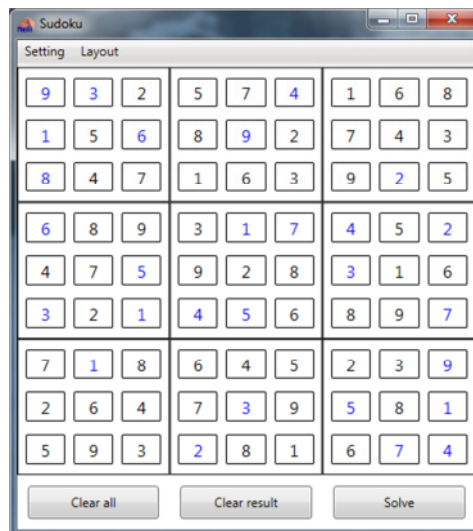
Standard form Sudoku

When the Sudoku solver is started, it is set up to solve a standard form Sudoku like:



There are usually some numbers pre-set in a Sudoku. These numbers can be entered manually and they are displayed in a blue colour.

Pressing the button <Solve> solves the Sudoku:



To start again the computed numbers (the black ones) can be cleared by pressing <Clear result>. Pressing <Clear all> clears the computed as well as the pre-set numbers.

If the Sudoku solver has been switched to free form, to switch back to standard form, select the menu Layout/Set standard.

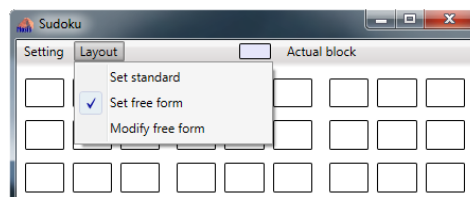


Free form Sudoku

To solve a free form Sudoku like

		9		2	7			
		2	4		6	8	7	5
	1		8					2
7	8						5	4
2					8		9	
8	5	7	1		4	2		
			2	3		4		

Is a bit more complicate as this free form must be set up first. Therefore the Sudoku Solver must be switched into the mode to define this form by selecting the menu Layout/Set free form.



Switching the solver into the free form definition mode hides the border around each 3 x 3 block and displays a small rectangle with the colour of the actual to be defined block in the menu bar. Here I have to apologise to all the people whit limited colour vision. I could not find a better solution to distinguish the blocks than using different colours. Sorry for that.

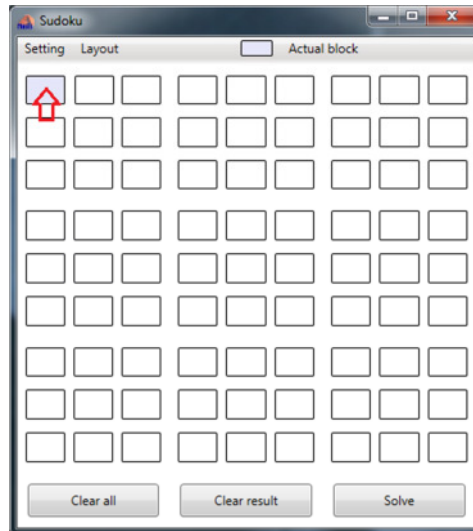
The free form Sudoku as displayed above should finally look like



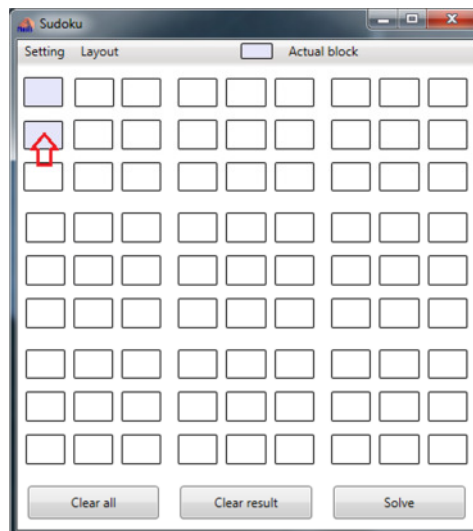


In the Sudoku Solver.

To set up this free form in the free form definition mode one can add a number field to the actual block by clicking into the field by the left mouse button or remove a field from a block by clicking into it by the right mouse button. If started in the left upper corner. Click into the first field by the left mouse button.



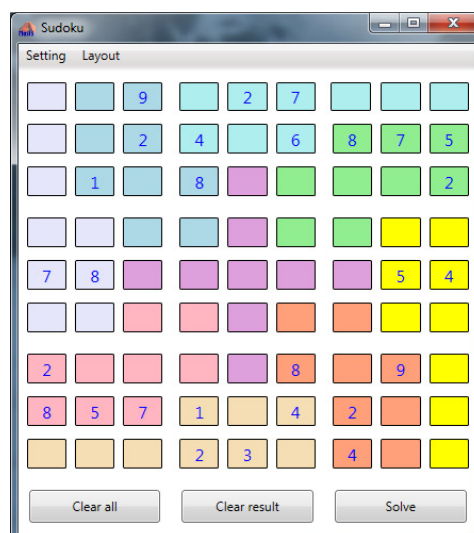
That marks the field in the background colour of the first block. Then click into the next field below to add it to the first block to.



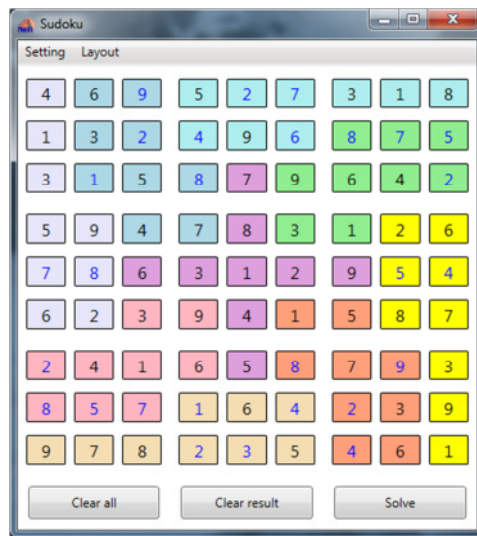
And so on. If 9 fields are added to the first block, the solver automatically switches to the second block and this one can be defined. If this one is filled with 9 fields it switches to the next block and so on. If 8 blocks are filled, the last one is filled automatically and the solver should look like this:



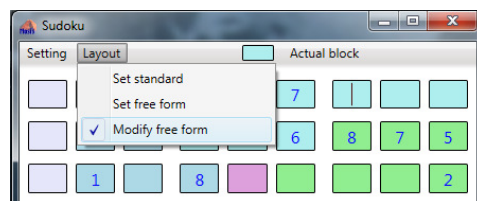
Now the pre-set numbers can be entered.



And the Sudoku can be solved by pressing <Solve>



In case the free form must be modified because possibly some fields were add to the wrong block, this can be done by selecting the menu Layout/Modify free form



In this mode a field can be removed from its block by clicking into it by the right mouse button. To add a field, which is not assigned to a block, first click into a field that belongs to the block the unassigned field should be add by the left mouse button. That sets the selected block as the active block and shows the colour of this block in the menu bar to verify. Then click into the field to add by the left mouse button. That adds the field to the actual block, if this block contains less than 9 fields. That means before a field can be added to a block, at least one field must have been removed from his block if it was fully defined with 9 fields before.

Save and load a layout

A free form layout can be saved and loaded later on. That can be done in the menu Setting. The layout of the above mentioned free from is saved in the application directory. It has the file name Settings_1.json. If a setting is loaded the Sudoku Solver switches into free form mode automatically. It does not make too much sense to save and load a standard setting and therefore the application always switches into free form mode is a setting is loaded.