The hardest sudokus (new thread)

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Re: The hardest sudokus (new thread)

Quote

by **tarek** » Thu Nov 19, 2010 4:04 pm

I will start collating puzzles submitted to this thread after the last database publication later tonight ....

They will be automatically scrutinized over their q1,q2,SdA & Set ratings. For SE rating, I will consider the submitted SE rating (if there is one) ... I will not SE rate puzzles submitted to this thread (other than the ones I already have).

So if you've rated a puzzle that scores ER>11.6 then post it with the SE rating please.

tarek

tarek
Site Admin

Posts: 4759
Joined: 05 January 2006

Re: The hardest sudokus (new thread)

Quote

by **creek** » Thu Nov 19, 2010 5:34 pm

tarek wrote:
So if you've rated a puzzle that scores ER>11.6 then post it with the SE rating please.

That bar seems mighty high. Did you perhaps mean 10.6?

creek
2010 Supporter

Posts: 4754
Joined: 02 November 2005
Location: Southwestern USA

Re:

Quote

by **tarek** » Thu Nov 19, 2010 7:14 pm

creek wrote:
So if you've rated a puzzle that scores ER>11.6 then post it with the SE rating please.

That bar seems mighty high. Did you perhaps mean 10.6?

It is very high, the idea is to limit the number of records in the database.

Previously I wrote:
Suggested database filter:

```
CODE: SELECT ALL
--------------------------------
Entries should have:
ID  >=20000 OR
SE  >=10.0 OR
q1  >=0.000 OR
q2  >=0.000 OR
SdA >=0.0 OR
ER  >=11.6
```

These figures were based on my personal collection.

The ER threshold is as high as other thresholds. If a puzzle fails the ER threshold then it can still make the list by passing ANY of the other thresholds.

The current database records before the update stand at 8E ... I don't recieve any suggestions regarding these filters/thresholds since I originally posted them. The idea was to make sure that the hardest puzzle is in the database. If a puzzle fails all criteria then IMO it can't be the hardest puzzle.

tarek

tarek
Site Admin

Posts: 4759
Joined: 05 January 2006

Hardest Database Update

Quote

by **tarek** » Thu Nov 26, 2010 8:07 pm

The following puzzles have been added to the database as they passed the SE threshold. All other puzzles posted on this thread since the last database was posted didn't pass any of the thresholds.

```
PuzzleFamilyID:0
4.....8.5.3..7.....6.....5.4.7.3.....6...1..4
5.2.....6.43.....9...8.7.....9.5...6..8.3.7.9.
.8...1..2..9...6.53.4.6...2..8.9.....5.7.4...
1.6..2..9..3..8.87.9..4..7..2..5.9.8.6.5.4.3.
5..3..7..8.4..6..7.9..5.4.8.6..2..9.8.3.1.2.6
.4..5..7.8.6.3.....7.9..5.4.8.....2.9.8.6.5.7
```

Here is the latest database with a gif friendly 1st line:

```
.....8.5.3..7.....6.....5.4.7.3.....6...1..4
```

tarek
[EDIT: Lost deleted to avoid order confusion with recent updated form of list]

Last edited by **tarek** on Thu Dec 30, 2010 11:44 am, edited 1 time in total.

tarek
Site Admin

Posts: 4759
Joined: 05 January 2006

Re: The hardest sudokus (new thread)

Quote

by **champagne** » Sat Nov 27, 2010 6:01 am

champagne
2010 Supporter

Posts: 7259
Joined: 01 August 2007
Location: France Brittany

```
CODE: SELECT ALL
--------------------------------
.5...8..
..3.6..7.
..8.5.4.
.3..7...
5.1.....
...6.8..
.6...2..
9.....2.  swampy soil
```

despite a relatively low SE rating

ER=10.8/10.8/10.0

That puzzle is seen by my solver as tough as "Golden Nugget" and "Silver Plate"

But it has no SK loop and no EXOCET pattern.

As a matter of fact, it would be for the time being my toughest puzzle.

champagne

EDIT : I omitted to check the rank 0 logic, it has one, what could lower significantly the final complexity

Re: swampy soil checks

Quote

by **tarek** » Sat Nov 27, 2010 1:10 pm

tarek
Site Admin

Posts: 4759
Joined: 05 January 2006

Hi Champagne,

I've checked that puzzle:

```
CODE: SELECT ALL
--------------------------------
ID clues minimal
q1 0h2e2
q2 0h2e2
SdA 1.0h1
SE 10.8
Singles Backchaser size 2
PAHPTWPTHO Backchaser size 3
```

It scores high on the q2 rating but overall relatively lower than the difficult puzzles that you've mentioned.

tarek

Re: swampy soil checks

Quote

by **champagne** » Sat Nov 27, 2010 3:19 pm

champagne
2010 Supporter

Posts: 7259
Joined: 01 August 2007
Location: France Brittany

tarek wrote:
Hi Champagne,

I've checked that puzzle:

```
CODE: SELECT ALL
--------------------------------
ID clues minimal
q1 0h2e2
q2 0h2e2
SdA 1.0h1
SE 10.8
Singles Backchaser size 2
PAHPTWPTHO Backchaser size 3
```

It scores high on the q2 rating but overall relatively lower than the difficult puzzles that you've mentioned.

tarek

Hi tarek,

It's not new for me that correlation between different rating index is poor for "hardest puzzles".

The rating done by my solver is in line with the set of rule in use in it.

It would be interesting to compare paths, but it would be a boring task. The lowest print size I got (using the rank 0 logic) is still over 400K.

Generally speaking, in that current game, the highest rating given by SE are by far not the hardest seen by my solver.

May the same players will give their own feeling.

champagne

Re: swampy soil checks

Quote

by **tarek** » Sat Nov 27, 2010 7:02 pm

champagne wrote:
It's not new for me that correlation between different rating index is poor for "hardest puzzles".

The rating done by my solver is in line with the set of rule in use in it.

I can understand it when the q1,q2,sdA,and,ER collective over-rates a puzzle (Similar to a sensitive but not specific test) ....

But you are saying that the hardest puzzle can be missed by these tests ? I am interested to see if that turns out to be true ... I still stand by the opinion that the hardest puzzle should be detected by at least one of these tests.

tarek

tarek
Site Admin

Posts: 4759
Joined: 05 January 2006

HS

Quote

by **champagne** » Sun Nov 28, 2010 4:39 am

champagne
2010 Supporter

Posts: 7259
Joined: 01 August 2007
Location: France Brittany

tarek wrote:

champagne wrote:
It's not new for me that correlation between different rating index is poor for "hardest puzzles".

The rating done by my solver is in line with the set of rule in use in it.

I can understand it when the q1,q2,sdA,and,ER collective over-rates a puzzle (Similar to a sensitive but not specific test) ....

But you are saying that the hardest puzzle can be missed by these tests ? I am interested to see if that turns out to be true ... I still stand by the opinion that the hardest puzzle should be detected by at least one of these tests.

tarek

AFAIK None of these solver detect the SK loop, nor an Exocet, nor a rank n logic, some tools to crack easily very hard puzzles.

Even Golden Nugget and Silver Plate are solved thru "relatively easy" path using the Exocet property. (published)

I remain convinced that the final rating should apply the best known technique than can be applied to solve a puzzle.

My statement regarding "swampy soil" is just that

1) using my basic set of rules, (tagging with AHS AAHS), no easy path comes and the path is very complex and boring, the same order of magnitude as for Golden Nugget/ Silver Plate

2) Using all the set of special tools, I make very little progress

3) unless somebody comes with fresh stuff, it is at the end the toughest puzzle I have.

For sure, a new tool will come one day and change the relative rating of all these puzzles. The last significant change came from Allan Barker attack of puzzles with, among others, the rank n logic.

Let me take a reverse example with that statement from Mauricio

```
CODE: SELECT ALL
--------------------------------
To solve it, I only need to suppose uniqueness and to use not more than hidden pair.
.-----------------------.-----------------------.-----------------------.
| 1   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
:-----------------------:-----------------------:-----------------------:
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
:-----------------------:-----------------------:-----------------------:
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
'-----------------------'-----------------------'-----------------------'
                                                  ER=11.3/11.3/10.5
```

can you tell me which of your rating index shows that this is an easy puzzle
(my solver sees the symmetry of given)

champagne

dob
2010 Supporter

Posts: 1010
Joined: 18 March 2006

Re: HS

Quote

by **tarek** » Sun Nov 28, 2010 9:16 am

champagne wrote:

```
CODE: SELECT ALL
--------------------------------
To solve it, I only need to suppose uniqueness and to use not more than hidden pair.
.-----------------------.-----------------------.-----------------------.
| 1   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
:-----------------------:-----------------------:-----------------------:
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
:-----------------------:-----------------------:-----------------------:
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
'-----------------------'-----------------------'-----------------------'
                                                  ER=11.3/11.3/10.5
```

My symmetry techniques must be a bit rusty... After basic symmetry and SSTS I get stuck here:

```
CODE: SELECT ALL
--------------------------------
.-----------------------------------------------------------------------.
| 1   .  58  68  .48  45   .   .  36  58   .   .   .   |
| 24  .   .   .   .   .  234 234 .  36  .   .   .   |
| 24  24  .   .   .   .   .  27  .  24  .   .   .   |
:-----------------------------------------------------------------------:
| 48  45  .   .   .   .   .   .   .   .   .   .   .   |
| .   .   .   .   .   .   .   .   .   .   .   .   .   |
| .   .   .   .   .   .   .   .   .   .   .   .   .   |
:-----------------------------------------------------------------------:
| 48  .  27  .   .  267 267 .  .  .  .  .  .   |
| 28  .  .  .  .  .  .  .  .  .  .  .  .   |
| 28  .  .  .  .  .  .  .  .  .  .  .  .   |
'-----------------------------------------------------------------------'
```

What is the next move?

RW

champagne
2010 Supporter

Posts: 7259
Joined: 01 August 2007
Location: France Brittany

Re: HS

Quote

by **champagne** » Sun Nov 28, 2010 10:08 am

champagne
2010 Supporter

Posts: 7259
Joined: 01 August 2007
Location: France Brittany

RW wrote:
My symmetry techniques must be a bit rusty... After basic symmetry and SSTS I get stuck here:

```
CODE: SELECT ALL
--------------------------------
.-----------------------------------------------------------------------.
| 1   .  58  68  .48  45   .   .  36  58   .   .   .   |
| 24  .   .   .   .   .  234 234 .  36  .   .   .   |
| 24  24  .   .   .   .   .  27  .  24  .   .   .   |
:-----------------------------------------------------------------------:
| 48  45  .   .   .   .   .   .   .   .   .   .   .   |
| .   .   .   .   .   .   .   .   .   .   .   .   .   |
| .   .   .   .   .   .   .   .   .   .   .   .   .   |
:-----------------------------------------------------------------------:
| 48  .  27  .   .  267 267 .  .  .  .  .  .   |
| 28  .  .  .  .  .  .  .  .  .  .  .  .   |
| 28  .  .  .  .  .  .  .  .  .  .  .  .   |
'-----------------------------------------------------------------------'
```

What is the next move?

RW

dob
2010 Supporter

Posts: 1010
Joined: 18 March 2006

Re: The hardest sudokus (new thread)

Quote

by **steven** » Sun Nov 28, 2010 8:03 pm

steven
2009

Posts: 1020
Joined: 10 February 2006

Champagne,

because this puzzle has a pattern different to the known hardest, I would be interested, how you classify it (ER is 11.5)

```
CODE: SELECT ALL
--------------------------------
.-----------------------.-----------------------.-----------------------.
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
:-----------------------:-----------------------:-----------------------:
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
:-----------------------:-----------------------:-----------------------:
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
'-----------------------'-----------------------'-----------------------'
```

Re: The hardest sudokus (new thread)

Quote

by **champagne** » Sun Nov 28, 2010 11:46 pm

champagne
2010 Supporter

Posts: 7259
Joined: 01 August 2007
Location: France Brittany

steven wrote:
Champagne,

because this puzzle has a pattern different to the known hardest, I would be interested, how you classify it (ER is 11.5)

```
CODE: SELECT ALL
--------------------------------
.-----------------------.-----------------------.-----------------------.
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
:-----------------------:-----------------------:-----------------------:
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
:-----------------------:-----------------------:-----------------------:
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
| .   .   .  | .   .   .  | .   .   .  |
'-----------------------'-----------------------'-----------------------'
```

I checked your puzzle and I made a run including the former 11.6

0000054007102002500600007110080000000001007000000000000000501407000000000000200700 11.8
0000060000000102300600700000400000000000000000000000000000000000000000000000000000 11.5

My first run is done excluding all special tools (symmetry, SK loop, EXOCET, RE logic)

The 2 puzzles are in the same area
print around 350K
the hardest seen as AAHS size 2 cells
78 nested derived weak links at maximum.

The second one seems slightly harder than the first one.

If you want to compare with the last one I posted, that one gave the following results

print over 600K
necessity to use AAHS over 2 cells
but a maximum of 4 nested derived links;

If we now look for special tools

I think I already noticed that your 11.8 puzzle has something close to an EXOCET (95k4). The second one has an EXOCET (46c1).
None have the SK loop nor a rank0 logic (I did not check for more than 4 floors).

Using the adequate special tool, the print is significantly reduced, but still around 150K.

champagne

creek
2010 Supporter

Posts: 4754
Joined: 02 November 2005
Location: Southwestern USA

Re: The hardest sudokus (new thread)

Quote

by **creek** » Sun Nov 28, 2010 8:30 pm

champagne wrote:
I checked your puzzle and I made a run including the former 11.8

0000054007102002500600007110080000000001007000000000000000501407000000000000200700 11.8
0000060000000102300600700000400000000000000000000000000000000000000000000000000000 11.5

If we now look for special tools

I think I already noticed that your 11.8 puzzle has something close to an EXOCET (95k4). The second one has an EXOCET (46c1).
None have the SK loop nor a rank0 logic (I did not check for more than 4 floors).

Using the adequate special tool, the print is significantly reduced, but still around 150K.

For the ER=11.5 puzzle, what "special tool" was used ... and what were the exclusions?

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