

The hardest sudokus (new thread)

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Re: The hardest sudokus (new thread)

City denis\_berthier • Sat Apr 09, 2022 8:07 am

11toOnly wrote:

denis\_berthier wrote:  
1-to-9-only, does PGP-Explainer always produce the same result as standard SE?

Yes. PGPExplainer should produce the same rating as the original (304.777 bytes) SE.  
It also has the same misrating bug as SE, as has been noted before in the Patterns Game threads.  
PGExplainer was created to rate puzzles submitted to the Patterns Game where g.bermin still uses original SE!  
It rates very hard puzzles about 3-4 times faster.

Good, bug included. It's probably gonna become my standard SE rater, with or without uniqueness.

denis\_berthier  
2010 Supporter  
Posts: 5334  
Joined: 19 June 2007  
Location: Paris

11toOnly  
2010 Supporter  
Posts: 5334  
Joined: 19 June 2007  
Location: Paris

Re:

City denis\_berthier • Mon Apr 11, 2022 11:01 am

11toOnly wrote:

See this post: <http://forum.enjoysudoku.com/pgexplainer-a-minimal-sudokuexplainer-in-56-712-bytes-439049-15.html#p310358>

I downloaded PGPExplainer and compiled it (due to strong security reasons, MacOS can't use pre-compiled .jar files, unless signed by an official developer):  
javac -java  
java cvf PGPExplainer.jar \*.class  
But then, when I use any of these command lines:  
java -jar PGPExplainer.jar --input=puzzles.txt --output=output.txt  
java -jar PGPExplainer.jar serate --input=puzzles.txt --output=output.txt  
java -jar PGPExplainer.jar sudoku-serate --input=puzzles.txt --output=output.txt  
I get an error: no principal manifest attribute in PGPExplainer.jar  
which is surprising because the first line output by "jar cvf PGPExplainer.jar \*.class" was:  
manifest added  
Do you have an idea of what's happening?  
BTW, I suggest you add a few lines to your README.md, saying how to compile and archive (.jar) the source code. Anyone with a recent Mac will have to do this.

denis\_berthier  
2010 Supporter  
Posts: 5334  
Joined: 19 June 2007  
Location: Paris

11toOnly  
2010 Supporter  
Posts: 4075  
Joined: 04 April 2018

City 11toOnly • Mon Apr 11, 2022 11:50 am

You can unzip the jar file to find out what the file structure looks like (and copy the MANIFEST.MF file off this).

My directory structure looks a bit like this:

```
CODE: SELECT ALL
PGExplainer
├── class
│   ├── META-INF          <- MANIFEST.MF file in this folder
│   └── sudoku             <- compiled class files in this folder
├── src
│   └── sudoku             <- java source files in this folder
└──
```

MANIFEST.MF
CODE: SELECT ALL
Manifest-Version: 1.0
Main-Class: sudoku.serate
Specification-Title: "Sudoku Explainer with serate entry point"
Specification-Id: "format44"
Specification-Entry-Point:
Specification-Vendor: "Nicolas Juillierat"
Implementation-Version: "2022.4.4"
Name: "SudokuExplainer-serate"
Implementation-Vendor: "11toOnly"

The file is slightly modified from my SukakuExplainer!

Edit: Changed one line to: Main-Class: sudoku.serate  
This means the code entry point don't need specify, this will work: java.exe -jar PGPExplainer.jar --input=puzzle.txt --output=output.txt

Compile
CODE: SELECT ALL
cd PGPExplainer
javac -xcp -g:none -Xlint -d class src\sudoku\\*.java

Build jar
CODE: SELECT ALL
cd PGPExplainer
if exist PGPexplainer.jar del PGPexplainer.jar
cd class
jar.exe -cfm ../PGPExplainer.jar META-INF\MANIFEST.MF \*
cd ..

Untested commands, and I do not have Apple kit to test on!

Last edited by 11toOnly on Mon Apr 11, 2022 1:26 pm, edited 2 times in total.

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Posts: 5334  
Joined: 19 June 2007  
Location: Paris

11toOnly  
2010 Supporter  
Posts: 4075  
Joined: 04 April 2018

Re: Re:

City 11toOnly • Mon Apr 11, 2022 11:59 am

denis\_berthier wrote:

BTW, I suggest you add a few lines to your README.md, saying how to compile and archive (.jar) the source code. Anyone with a recent Mac will have to do this.

The README.md stays as is. The problem is an Apple problem.  
Next someone will want to know how to build it on a Droid!  
If this ever happens, I'll delete the project.

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Posts: 5334  
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Location: Paris

11toOnly  
2010 Supporter  
Posts: 4075  
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Re: The hardest sudokus (new thread)

City mith • Mon Apr 11, 2022 2:53 pm

Denis, regarding your "min-expands" (assuming I understand what you mean), they definitely don't need to be minimal in the usual sense - for example, Loki expands to 29c, and that 29c has exactly one other minimal puzzle which also expands back to the 29c. So that 29c is an absolute min-expand.

It shouldn't be a particularly hard thing to track, and there isn't much concern about a grid being kicked out of min-expand status - as soon as a potential min-expand is minimized, I singles-expand all the minimals and add any new expanded forms immediately. So if any puzzle has been minimized and is still a min-expand, then it will remain so. Once I write a script to compare the solution-minlex strings I can find these as a "pre-publication" step whenever I post an update.

At the moment, the minimizer is still playing catch-up - it has processed about 90% of the now 137k expanded forms. I will likely let the scripts run as they are for another day or two, and then turn off the minimal neighborhood scripts and let the others finish before getting a next update ready. (I'm also processing hendrik's new batch - very small number that were in the database with low skfr, otherwise new.)

mith  
2010 Supporter  
Posts: 952  
Joined: 14 July 2020

Re: The hardest sudokus (new thread)

City mith • Mon Apr 11, 2022 3:07 pm

Other status updates:

The "transform" script is very fast and basically always current. The "depth\_adder" script (adding one given from the solution in all possible ways to an expanded form and checking if it's still depth 3) is a bit slower, but has processed over 99%. The "minimizer" script is next at around 90%.

The "solver" script has rated about 25% of the puzzles. (I need to switch over to PGPExplainer.) Expanded forms are currently in the 24c-38c range (with the lower clue counts tending to expand quite a bit more with basics), and I have it rating lower clue counts first right now, so almost all the puzzles at 29c or less are rated. (Once I get this "min-expand" thing added, I'll prefer those instead.)

On the minimal side (closing in on 500k), the (+2+1) script has processed a bit less than 25%, (+1+2) around 2%, and (-2+2) less than 1%. I'm going to be optimizing this a bit to focus on minimals with higher rated expanded forms - right now, it's just testing it on clue count. Otherwise, I'm going to look into whether I can outperform gsf for the actual neighborhood search - generating them is still the most significant bottleneck. (It will also be running some neighborhood tests on the "min-expand" puzzles once those are marked to see how efficient they are at generating new puzzles.)

mith  
2010 Supporter  
Posts: 952  
Joined: 14 July 2020

Re: The hardest sudokus (new thread)

City denis\_berthier • Mon Apr 11, 2022 3:57 pm

11toOnly wrote:

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OK, good example.

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Posts: 4075  
Joined: 04 April 2018

Re: The hardest sudokus (new thread)

City mith • Tue Apr 12, 2022 3:10 pm

Up to 39c now, with three (closely related) examples:

```
CODE: SELECT ALL
.....1..2..12.....3..45...3..16...1..3..5...7852..1521..34...6415...2313...65..2..596..1..4
.....1..2..12.....3..4..5...3..16...1..3..5...7852..1251..34...4615...231..3...65..52..36..1..4
.....2..2..12.....3..4..5...3..16...1..3..5...7852..1521..34...4615...231..3...65..25..36..1..4
```

Smallest expanded forms are still 24c, with 4 examples now. Minimals range from 22c to 31c.

I've turned off a couple scripts now, and am letting the minimizer script catch up. The number of puzzles left to process is going down (~8k now, out of 158k), but it's prioritizing smaller clue count so the remaining ones are going to take longer. Anyway, once that's done and all the scripts operating on the expanded database have settled, I'll get an update together (in a csv format. 158k expanded forms and 566k minimals is a bit much for people sheets...)

mith  
2010 Supporter  
Posts: 952  
Joined: 14 July 2020

Re: The hardest sudokus (new thread)

City mith • Mon Apr 18, 2022 7:00 pm

Here is the smallest example so far of a depth 3 puzzle which can't be expanded by basics:

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CODE: SELECT ALL
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The trivalue oddagon here has four guardian cells in three different boxes.

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Re: The hardest sudokus (new thread)

City denis\_berthier • Tue Apr 19, 2022 3:28 am

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11toOnly  
2010 Supporter  
Posts: 4075  
Joined: 04 April 2018



