Sudoku Players' Forums

THE REAL DISTRIBUTION OF MINIMAL PUZZLES

Goto page Previous 1, 2, 3 ... , 19, 20, 21 Next

newtopic postreply **Sudoku Players' Forums Forum Index -> General/puzzle**

View previous topic :: View next topic

Author	Message
denis_berthier Joined: 19 Jun 2007 Posts: 828 Location: Paris, France	Posted: Wed Sep 23, 2009 11:48 pm Post subject: quote I've done the chi-square test using matlab, on: - Mike's sample - the first sample I got with the "optimised" version of suexg-cb. In both cases, the sample was consistent with the suexg-cb distrbution (estimates through the 180000 sample I had before introducing optimisation). Of course, this doesn't prevent us from checking the points mentioned in my previous post. Last edited by denis_berthier on Thu Sep 24, 2009 3:32 am; edited 1 time in total Back to top profile pm www
m_b_metcalf Joined: 15 May 2006 Posts: 2359 Location: Berlin	Posted: Thu Sep 24, 2009 1:24 am Post subject: quote **denis_berthier wrote:** **Mike**, Do you apply any of the optimisations discussed in this thread (apart from deleting the first 46 clues)? A some point, you spoke of a random vector from which you choose the next cell for deletion. Do you re-init it for each new complete grid? Denis, 1) I have applied none of the other optimizations discussed. 2) The random vector is refreshed for each new grid. 3) The big surprise (to me): when I look in more detail at my program running at 35 initial clues, I see that **90%** of all attempts fall at the first hurdle -- the unavoidable sets test that precedes any call to any solver Even starting at 44 clues, half fall. This shows the value of using fast tests before calling a solver

(**coloin** will be delighted!).

Regards,

Mike

Last edited by m_b_metcalf on Thu Sep 24, 2009 4:33 am; edited 1 time in total

Back to top profile pm

eleven

Posted: Thu Sep 24, 2009 1:35 am Post subject: quote

Joined: 10 Feb 2008
Posts: 483

> **denis_berthier wrote:**
>
> **Eleven**, could you say a few words on how the next cell is chosen for deletion in suexg.

dukuso uses a nice method to calculate a random order of the 81 cells, in which the clues are deleted then. I am sure, that it has a name in the math world, but i dont know it:
for(i=1;i<=81;i++){mr4:x=(MWC>>8)&127;if(x>=i)goto
mr4;x++;P[i]=P[x];P[x]=i;}
In pseudo code:

Code:

```
for i is 1 to n
  calculate a random number k between 1 and i
  set order(i) to k and order(k) to i
```

This way in each step you get a random order for i elements (the probabiltity, that order(k)=l always is 1/i for all k,l <= i)

Back to top profile pm

David P Bird

Posted: Thu Sep 24, 2009 1:42 am Post subject: quote

Joined: 16 Sep 2008
Posts: 149
Location: Middle England

> **m_b_metcalf wrote:**
>
> The big surprise (to me): when I look in more detail at my program running at 35 initial clues, I see that **90%** of all attempts fail at the first hurdle -- the unavoidable sets test that precedes any call to any solver Even starting at 44 clues half fail. This shows the value of using fast tests before calling a solver (**coloin** will be delighted!).

I can't speak for **coloin** but I certainly am!

Back to top profile pm

eleven

Posted: Thu Sep 24, 2009 1:44 am Post subject: quote

Joined: 10 Feb 2008
Posts: 483

> **m_b_metcalf wrote:**
>
> 3) The big surprise (to me): when I look in more detail at my program running at 35 initial clues, I see that **90%** of all attempts fail at the first hurdle -- the unavoidable sets test ...

Unfortunately now this does not have a big effect to the performance. After

removing all the solver calls down to 34, now the grid generation seems to need the bigger part of the time.

Back to top profile pm

David P Bird

Posted: Thu Sep 24, 2009 2:07 am Post subject: quote

Joined: 16 Sep 2008
Posts: 149
Location: Middle England

> **eleven wrote:**
> now the grid generation seems to need the bigger part of the time.

Well, you could try this

PS know dukuso's randomising procedure as the card shuffle.

Back to top profile pm

eleven

Posted: Thu Sep 24, 2009 2:31 am Post subject: quote

Joined: 10 Feb 2008
Posts: 483

To verify, what i said, i quickly measured the times for grid generation and solving. The relation is about 2:1 with the modified algorithm and dukusos functions.

> **David P Bird wrote:**
> > **eleven wrote:**
> > now the grid generation seems to need the bigger part of the time.
>
> Well, you could try this

As i already said, i dont have much time for such implementations. Also we should know, what Red Ed thinks about the bias of this algorithm.
btw i would be interested, what bias we would get, if we just randomly select one of the 5 billions non equivalent grids (probably the fastest way).

> **Quote:**
> PS know dukuso's randomising procedure as the card shuffle.

Thanks.

Back to top profile pm

David P Bird

Posted: Thu Sep 24, 2009 3:20 am Post subject: quote

Joined: 16 Sep 2008
Posts: 149
Location: Middle England

> **eleven wrote:**
> As i already said, i dont have much time for such implementations

If you ignored the continuation involving the integral solver, you could safely shuffle the digits in boxes 1,5, and 3 diagonal cells in box 9 at the start I think. That is, if your generator can accept pre-assignments. This should provide some time saving at least.

Back to top profile pm

denis_berthier

Posted: Thu Sep 24, 2009 3:35 am Post subject: quote

Joined: 19 Jun 2007
Posts: 828
Location: Paris, France

> **m_b_metcalf wrote:**
>
> The big surprise (to me): when I look in more detail at my program running at 35 initial clues, I see that **90%** of all attempts fail at the first hurdle -- the unavoidable sets test that precedes any call to any solver ! Even starting at 44 clues half fail. This shows the value of using fast tests before calling a solver (**coloin** will be delighted!).

Very good
The first point doesn't really surprise me: most of the complete grids lead to no minimal puzzle.

> **m_b_metcalf wrote:**
>
> Maybe you could edit your previous posts so as not to leave erroneous information around to confuse posterity.

Done

Back to top profile pm www

eleven

Posted: Thu Sep 24, 2009 4:45 am Post subject: quote

Joined: 10 Feb 2008
Posts: 483

> **David P Bird wrote:**
>
> you could safely shuffle the digits in boxes 1,5, and 3 diagonal cells in box 9 at the start I think.

I tried that.
When i set the cells in the first box to 1-9 and fill box 5 and the 3 diagonal cells in box 9 randomly, the grid generation time reduces to 56.6 % .
This could speed up the puzzle generator to be almost 1 1/2 times faster.

Back to top profile pm

David P Bird

Posted: Thu Sep 24, 2009 5:11 am Post subject: quote

Joined: 16 Sep 2008
Posts: 149
Location: Middle England

> **eleven wrote:**
>
> This could speed up the puzzle generator to be almost 1 1/2 times faster.

Thanks for that information!

So perhaps this monkey sitting at the typewriter can, just occasionally, produce a line or two of a sonnet! Mind you he won't accept any disdainful smokescreen that the grids produced are "probably biased" without proof.

Back to top profile pm

Red Ed

Posted: Thu Sep 24, 2009 9:24 am Post subject: quote

> **David P Bird wrote:**

Joined: 06 Jun 2005
Posts: 724

> disdainful smokescreen that the grids produced are "probably biased"

Disdainful? Stop whining. My comments on grid bias are generally neutral: so you should assume that they will continue to be.

Yes, *this* response *is* disdainful.

Back to top profile pm

Red Ed Posted: Thu Sep 24, 2009 9:28 am Post subject: quote

Joined: 06 Jun 2005
Posts: 724

> **eleven wrote:**
>
> > **David P Bird wrote:**
> >
> > > you could safely shuffle the digits in boxes 1,5, and 3 diagonal cells in box 9 at the start I think.
> >
> > I tried that.

I'd be happy to test the output if you post the code.

Back to top profile pm

David P Bird Posted: Thu Sep 24, 2009 10:08 am Post subject: quote

Joined: 16 Sep 2008
Posts: 149
Location: Middle England

Red Ed all I know is if a) I wrote to someone that I hadn't written something for their benefit, b) gave scant attention to anything they wrote and c) I didn't reply to them on the grounds I've been busy while I was exchanging posts with someone else, I would be brushing them off, and trusting that they were getting the message. Well that's the message I received from you!

I'm here to exchange ideas; sometimes I'll be acquiring knowledge and sometimes I'll be passing it on. In doing this I'll treat people with the same level of respect that they treat me.

Back to top profile pm

Red Ed Posted: Thu Sep 24, 2009 10:19 am Post subject: quote

Excellent. Then let's agree to ignore each other, so saving bandwidth.

Joined: 06 Jun 2005
Posts: 724

Back to top profile pm

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