

Re: Recommend please : free math library

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- *From:* Erwin Kalvelagen <erwin@xxxxxxxx>
 - *Date:* Wed, 19 Oct 2005 22:27:08 GMT
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If I read the problem correctly, this can be formulated as a MIP (mixed integer programming) problem or a CP (constraint programming) problem.
E.g.

```
x(1) - 1024*x(3) = 1024
x(2) - 1024*x(4) = 1024
0 <= x(i) <= 1024
x(i) integer
x(i) alldifferent
```

A MIP formulation could look like:

```
min dummy
x(1) - 1024*x(3) = 1024
x(2) - 1024*x(4) = 1024
x(i) <= x(j) - 1 + d(i,j)*M      for i>j
x(i) >= x(j) + 1 - (1-d(i,j))*M  for i>j
0 <= x(i) <= 1024
x(i) integer
d(i,j) binary for i>j
where M is an appropriate constant e.g. 1025.
and dummy is a dummy objective function, e.g.
minimize x(1).
```

Solvers (including free ones) for such problems are readily available.

Erwin

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linq936@xxxxxxxxxxxxx wrote:

Hi Peter,
Thanks, I will check that out.

Please let me add some more constraints to the original matrix,
1) x1, x2, x3 and x4 are all integer which is less than 1024 and
larger than or equal to 0
2) x1, x2, x3 and x4 do not equal

And the last, the program only need one numeric solution, do not care
the whole solution set.

Given the above, how should I proceed then?

All I had in mind was to work out some symbolic expression for each
variable and then somehow apply the the 2 constraints I mentioned in
this email. Since these 2 are not equations, I do not know how to
combine them with matrix algebra.

Any suggestion is highly appreciated.

Erwin Kalvelagen
GAMS Development Corp., <http://www.gams.com>
erwin@xxxxxxxxx, <http://www.gams.com/~erwin>
