

CoCoALib - Slug #1136

IsInRadical: sometimes a bit slow

06 Dec 2017 13:33 - John Abbott

Status:	Closed	Start date:	06 Dec 2017
Priority:	Low	Due date:	
Assignee:	John Abbott	% Done:	100%
Category:	Improving	Estimated time:	0.00 hour
Target version:	CoCoALib-0.99700	Spent time:	0.70 hour
Description I noticed that test-RadicalMembership1.C was rather slow, and wanted to make it faster. It tests for membership in the radical of the ideal generated by <pre>RingElem g1 = RingElem(P, "2*x^2+3*y*z-x-4"); RingElem g2 = RingElem(P, "3*x*y*z-5*x*z+2*y"); ideal I = ideal(power(g1,4) + power(g2,5), power(g1,4) - power(g2,5));</pre> The membership tests are: <pre>RingElem f1 = g1*g1 + g2; CoCoA_ASSERT_ALWAYS(IsInRadical(f1,I)); RingElem f2 = g2*g2 + g1 - g2; CoCoA_ASSERT_ALWAYS(IsInRadical(f2,I));</pre> I tried the reducing the exponents in the generators to (3,4) instead of (4,5) in the hope that the membership tests would become faster, but instead they become noticeably slower! Why?			
Related issues:			
Related to CoCoA-5 - Bug #1610: IsInRadical: some more little bugs		Closed	27 Sep 2021
Related to CoCoALib - Slug #1569: IsInRadical too slow (test-RadicalMembership)		Closed	22 Jan 2021

History

#1 - 06 Dec 2017 13:43 - John Abbott

- Status changed from New to In Progress
- % Done changed from 0 to 10

With the original exponents (4,5) the timings I obtained are:

- IsInRadical(f1,I) took 2.6s
- IsInRadical(f2,I) took 2.6s

With the lowered exponents (3,4) the timings I obtained are:

- IsInRadical(f1,I) took about 33.9s
- IsInRadical(f2,I) took about 34.5s

With the lowered exponents (4,3) the timings I obatined are

- IsInRadical(f1,I) took about 0.1s
- IsInRadical(f2,I) took about 0.1s

NOTE Ahhh, I had debugging active; anyway it is probably better to make the test a bit faster :-)

#2 - 05 Dec 2019 15:52 - John Abbott

- *Target version changed from CoCoALib-1.0 to CoCoALib-0.99700*

What is the status of this issue?
Can it be closed soon?

#3 - 05 Dec 2019 15:55 - John Abbott

- *Status changed from In Progress to Feedback*

- *Assignee set to John Abbott*

- *% Done changed from 10 to 90*

It took about 0.08s on my computer just now. This is probably fine; I see no advantage in making it lengthier.
Moved to feedback.

#4 - 09 Dec 2019 12:56 - Anna Maria Bigatti

- *Status changed from Feedback to Closed*

- *% Done changed from 90 to 100*

Instant on my computer. I wonder how it was improved....

#5 - 09 Dec 2019 13:34 - John Abbott

Just for the record...

With the exponent pair (3,4), my computer takes about 2.4s whereas with the pair (4,5) it takes about 0.2s.
So for some reason the pair (3,4) is unusually costly; perhaps the GBMill makes an unlucky strategy choice?

It is probably not worth investigating. The timings are acceptable, and there are other more urgent things to do.

#6 - 27 Sep 2021 09:53 - Anna Maria Bigatti

- *Related to Bug #1610: IsInRadical: some more little bugs added*

#7 - 19 Jan 2024 16:57 - Anna Maria Bigatti

- *Related to Slug #1569: IsInRadical too slow (test-RadicalMembership) added*