CoCoALib - Bug #1779

Radical error with lex (again)

05 Feb 2024 17:57 - Anna Maria Bigatti

Status:	Closed	**Start date:**	05 Feb 2024
Priority:	Normal	**Due date:**	
Assignee:	Anna Maria Bigatti	**% Done:**	100%
Category:	Various	**Estimated time:**	0.00 hour
Target version:	CoCoALib-0.99850	**Spent time:**	3.25 hours

Description

This problem resurfaced now that radical is in C++.

```
/**/ use QQ[x,y],lex;
/**/ I := ideal(x*y +x,  x^2 +x);
/**/ radI := radical(I); --> triggered error
--> ERROR: Ring is not standard graded
--> [CoCoALib] dim
```

I'm very grateful to test/exbugs and to its reference to redmine with the solution ;-)

Related issues:

Related to CoCoA-5 - Bug #1577: radical: lex order, ERROR: Ring is not stand...	**Closed**	**15 Feb 2021**
Related to CoCoALib - Slug #1646: radical: could be more clever	**Closed**	**17 Jan 2022**
Related to CoCoALib - Feature #1780: radical for ideals in SparsePolyRing: c...	**Closed**	**06 Feb 2024**
Related to CoCoALib - Support #1782: Make CoCoALib test file for radical	**New**	**23 Feb 2024**

History

#1 - 05 Feb 2024 17:58 - Anna Maria Bigatti

- Related to Bug #1577: radical: lex order, ERROR: Ring is not standard graded added

#2 - 05 Feb 2024 17:58 - Anna Maria Bigatti

- Subject changed from Radical error with lex to Radical error with lex (again)

#3 - 05 Feb 2024 18:32 - Anna Maria Bigatti

- % Done changed from 0 to 30

first bug fixed.
New bug:

```
/**/ use ZZ/(5)[x,y,z];
/**/ SetVerbosityLevel(99);
/**/ radI := radical(ideal(x^2+z,y+z)); --> gave error in factorizer
--> ERROR: Poly must be non-constant
--> [CoCoALib] UnivariateIndetIndex
```

in the code there is

```
factorization<RingElem> Q = factor(one(RingOf(I))); // sichtbar machen
```

which is a trick. Investigating why and how to avoid it

#4 - 05 Feb 2024 19:00 - Anna Maria Bigatti

- Related to Slug #1646: radical: could be more clever added

#5 - 05 Feb 2024 21:29 - John Abbott

- Status changed from New to In Progress

It would be easy to allow the factorize to return a result if the input is a non-zero constant.
I suppose I made it trigger an error because it is fairly pointless factorizing a constant.
Should I change the code to allow factorizing a constant?

UPDATE after skype discussion, we have decided to leave **factorizing a deg 0 poly as an error**

#6 - 06 Feb 2024 09:02 - Anna Maria Bigatti

- Related to Feature #1780: radical for ideals in SparsePolyRing: code in C++ added

#7 - 06 Feb 2024 10:12 - Anna Maria Bigatti

John Abbott wrote:

> It would be easy to allow the factorize to return a result if the input is a non-zero constant.
> I suppose I made it trigger an error because it is fairly pointless factorizing a constant.
> Should I change the code to allow factorizing a constant?

Right now I'm chasing another problem. But I'll try to understand why there was that line, and then see whether that initialization made sense in that context.

#8 - 06 Feb 2024 16:47 - Anna Maria Bigatti

- Status changed from In Progress to Feedback

- % Done changed from 30 to 80

Anna Maria Bigatti wrote:

> John Abbott wrote:
>
> > It would be easy to allow the factorize to return a result if the input is a non-zero constant.
> > I suppose I made it trigger an error because it is fairly pointless factorizing a constant.
> > Should I change the code to allow factorizing a constant?

I don't know why there was that initialization.
Now I call directly

```
    factorization<RingElem> Q = SqFreeFactor(G); // redmine #1779.#3
```

And I haven't met any problem with the tests I have.

It seems all fine.
I have another set of tests (CoCoALib tests) which need some polishing. Then I'll close this issue.

#9 - 23 Feb 2024 11:39 - Anna Maria Bigatti

- Related to Support #1782: Make CoCoALib test file for radical added

#10 - 23 Feb 2024 11:41 - Anna Maria Bigatti

- % Done changed from 80 to 90

I made a new issue for implementing and running the tests.
Closing this one ... hoping non errors will come from the tests.

#11 - 23 Feb 2024 12:13 - John Abbott

- % Done changed from 90 to 80

#12 - 23 Feb 2024 12:28 - Anna Maria Bigatti

- Status changed from Feedback to Closed

- % Done changed from 80 to 100