

CoCoA-5 - Bug #1714

IsDivisible error (in QuotRing)

24 Nov 2022 12:11 - John Abbott

Status:	Closed	Start date:	24 Nov 2022
Priority:	Normal	Due date:	
Assignee:	John Abbott	% Done:	100%
Category:	bug	Estimated time:	1.99 hour
Target version:	CoCoA-5.4.2	Spent time:	1.95 hour
Description			
Bernhard Andraschko reported by email the following:			
<pre>Use R ::= ZZ/(2)[x,y]; I := ideal(R, [i^2-i i in indets(R)]); S := R/I; Use S; IsDivisible(x+y,x+y); // works OK IsDivisible(x+y,x+y+1); // index error!?!</pre>			
The error is			
<pre>--> ERROR: Row index out of range --> [CoCoALib] M(i,j) --> WHERE: at line 6 (column 6) of Anfdraschko-bug.cocoa5 --> /**/ IsDivisible(x+y,x+y+1); --> ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^</pre>			

History

#1 - 24 Nov 2022 12:13 - John Abbott

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

Bug confirmed with current internal version.

Does not depend on char; same bug with other chars.

#2 - 24 Nov 2022 12:17 - John Abbott

Simpler failing case:

```
p := 2;
Use R ::= ZZ/(p)[x];
I := ideal(x^p-x);
S := R/I;
Use S;
IsDivisible(x+1,x+1); // works OK
IsDivisible(x,x+1); // index error!?!
```

#3 - 24 Nov 2022 13:36 - John Abbott

The problem exists also in char 0

```
p := 3;
Use R ::= QQ[x];
I := ideal(x^p-x);
S := R/I;
Use S;
IsDivisible(x+1,x+1); // works OK
IsDivisible(x,x+1); // index error!?!
```

#4 - 26 Nov 2022 14:18 - John Abbott

I can also trigger NYI:

```
/**/ I := ideal(x^2);
/**/ S := R/I;
/**/ use S;
/**/ IsDivisible(x, x+1);
--> ERROR: NOT YET IMPLEMENTED -- please be patient, we're working on it
--> [CoCoALib] SparsePolyRingBase::IdealImpl::myDivMod
--> IsDivisible(x, x+1);
--> ^^^^^^^^^^^^^^^^^^^^^^^^^^^
```

#5 - 26 Nov 2022 14:52 - John Abbott

- Status changed from In Progress to Feedback
- Assignee set to John Abbott
- % Done changed from 10 to 90

Problem was in **SparsePolyRingBase::IdealImpl::myDivMod** (in file SparsePolyOps-idea.C)
We did not check for the case that there was no soln to the linear system.

BTW this function is very incomplete -- whence the NYI error above.

I'll check in shortly.

#6 - 14 Dec 2022 16:44 - John Abbott

- Status changed from Feedback to Closed

- % Done changed from 90 to 100

- Estimated time set to 1.99 h

Added test (to exbugs.cocoa5).

Closing.