CoCoALib - Feature #987

GCD: add special case if args are monomials

28 Nov 2016 21:54 - John Abbott

Status:	New	Start date:	28 Nov 2016	
Priority:	Normal	Due date:		
Assignee:		% Done:	0%	
Category:	Improving	Estimated time:	0.00 hour	
Target version:	CoCoALib-1.0	Spent time:	0.25 hour	
Description				
While trying to comprehend the (undocumented) code I wrote in ArithGroup.cpkg5, I noticed a comment about GCD being very slow for monomials over a finite field (because it drops through to the general syzygy method).				
Add a special case: perhaps not hugely useful, but should be fairly easy to implement.				
Related issues:				
Related to CoCoALib - Slug #129: Better GCD			New	15 Apr 2012

History

#1 - 28 Nov 2016 22:04 - John Abbott

The relevant place in the code seems to be in SparsePolyRing.C:814.

To see how slow the current code is, try the following:

```
f := x+y+z;
g := f^256; --> has 33153 terms
lcm(support(g)); --> takes about 1.1s
use ZZ/(32003)[x,y,z];
f := x+y+z;
g := f^256; --> has 33153 terms
lcm(support(g)); --> takes ages (36s)
```

#2 - 28 Nov 2016 22:17 - John Abbott

- Related to Slug #129: Better GCD added