

## CoCoALib - Feature #987

### GCD: add special case if args are monomials

28 Nov 2016 21:54 - John Abbott

<b>Status:</b>	New	<b>Start date:</b>	28 Nov 2016
<b>Priority:</b>	Normal	<b>Due date:</b>	
<b>Assignee:</b>		<b>% Done:</b>	0%
<b>Category:</b>	Improving	<b>Estimated time:</b>	0.00 hour
<b>Target version:</b>	CoCoALib-1.0	<b>Spent time:</b>	0.25 hour
<b>Description</b>			
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.			
<b>Related issues:</b>			
Related to CoCoALib - Slug #129: Better GCD		<b>New</b>	<b>15 Apr 2012</b>

### 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