

CoCoALib - Feature #1035

Improvement: how to sort QuotientBasis?

28 Mar 2017 13:43 - Anna Maria Bigatti

Status:	Closed	Start date:	28 Mar 2017
Priority:	Normal	Due date:	
Assignee:	John Abbott	% Done:	100%
Category:	Improving	Estimated time:	0.77 hour
Target version:	CoCoALib-0.99560	Spent time:	0.75 hour
Description			
QuotientBasis returns a list of power-products ordered by increasing lex (independently of the ordering in the ring). This is slightly confusing for a human user. However, calling sorted(QB) may tak considerably longer (100x) than computing the QB itself.			
Can we make a sorted version without too much overhead? and/or make a new function SortedQuotientBasis(l) faster than sorted(QuotientBasis(l))?			

History

#1 - 28 Mar 2017 13:43 - Anna Maria Bigatti

- Target version set to CoCoALib-0.99560

#2 - 04 Apr 2017 17:04 - John Abbott

- Status changed from New to In Progress

- % Done changed from 0 to 10

First we should decide what the public interface is to be.

- One possibility is to have 2 fns **QuotientBasis** and **QuotientBasisSorted**
- another possibility is to have an optional 2nd arg **QuotientBasis(l)** and **QuotientBasis(l, lIncreasingOrder)**

A first impl of the "sorted" version should simply call the unsorted version, and then sort the result. It might be slow, but will surely be correct.

A probably better way to implement the "sorted" version is to replace all calls to "concat" by calls to merge (after checking that the args to merge are correctly ordered themselves). I've no idea how much faster that might be than simply sorting the result of the original impl. The main problem seems to be that there would be considerable duplication of code :-)

#3 - 19 Jul 2017 19:20 - John Abbott

As far as I can tell QuotientBasisSorted is already implemented in CoCoA-5. Should it be moved into CoCoALib?

Since C++ has a sort fn, this ought to be very easy... (famous last words?)

#4 - 25 Sep 2017 14:30 - John Abbott

- Status changed from In Progress to Feedback

- Assignee set to John Abbott

- % Done changed from 10 to 90

- *Estimated time set to 0.77 h*

I have just moved the impl from CoCoALibSupplement.C (what was it doing there?!?) to SparsePolyRing.C

There is already CoCoA-5 doc.

I have written 1 line of doc for CoCoA-5 ; strangely this is in ideal.txt even though the source code is in SparsePolyRing.C

Should there be an example (or test) separate from that for QuotientBasis?

#5 - 06 Nov 2017 15:53 - John Abbott

- *Status changed from Feedback to Closed*

- *% Done changed from 90 to 100*