CoCoALib - Design #1738

Suggestion about Graded polynomial rings

03 May 2023 22:29 - John Abbott

Status:	New	**Start date:**	03 May 2023
Priority:	Normal	**Due date:**	
Assignee:		**% Done:**	10%
Category:	Data Structures	**Estimated time:**	0.00 hour
Target version:	CoCoALib-0.99880	**Spent time:**	0.50 hour

Description

If the user creates a graded polynomial ring, maybe CoCoA could actually create 2 polynomial rings:

- the one requested
- a second one which **homog** maps into

The rings should know about each other so that **homog** and **dehomog** know where to map values to.

Is this a good idea? Or an unnecessary complication?

History

#1 - 03 May 2023 22:32 - John Abbott

In CoCoA a poly ring has default term-order degrevlex which we regard as 1-graded.
My suggestion means that by default two polynomial rings are created, which is a little wasteful. But if the second ring is never used, it will not be noticeably wasteful.

#2 - 05 May 2023 08:47 - Anna Maria Bigatti

- % Done changed from 0 to 10

Sounds interesting: this is surely handy for "human handling".
Maybe the homogenizing ring could be created the first time homog is called?
(tricky, the ring should be mutable?)

I'm just undecided about one thing: we have to make some choices

1. name of homogenizing indet (I suggest h)
2. first or last? Matematically we add "x_0" as the new first indet, so that the indices of the other indets are left unchanged (also convenient for keeping DegRevLex), but for "automatic handling" this means the indices will be shifted by 1.