

CoCoA-5 - Feature #1503

More flexible ring creation syntax (after use or ::=)

08 Oct 2020 14:02 - John Abbott

Status:	New	Start date:	08 Oct 2020
Priority:	Normal	Due date:	
Assignee:		% Done:	0%
Category:	enhancing/improving	Estimated time:	0.00 hour
Target version:	CoCoA-5.4.2	Spent time:	0.35 hour
Description			
This request comes from Florian Walsh.			
The suggestion is permit the following syntax:			
<pre>use QQ(a,b)[x,y];</pre>			
which is intended to be shorthand for the cumbersome			
<pre>QQab ::= Q[a,b]; k := NewFractionField(QQab); use k[x,y];</pre>			
Note that the cumbersome approach also uses two variables (and someone has to think of names for them).			
Related issues:			
Related to CoCoA-5 - Feature #657: use command, ring syntax, RingOf		New	20 Jan 2015
Related to CoCoA-5 - Feature #1003: New syntax for creating poly rings?		In Progress	27 Jan 2017

History

#1 - 08 Oct 2020 14:02 - John Abbott

- Related to Feature #657: use command, ring syntax, RingOf added

#2 - 08 Oct 2020 14:02 - John Abbott

- Related to Feature #1003: New syntax for creating poly rings? added

#3 - 08 Oct 2020 14:11 - John Abbott

We discussed this over lunch today.

JAA thinks that this is not incompatible with [#657](#).

Which term order should be used in the implicitly created ring $QQ[a,b]$?

JAA thinks the default order can be used; if the user really wants to specify some other order then the current "cumbersome" approach can be used.

If we want to implement this then we must change the parser/interpreter... ouch!

Relevant places in the source code are:

Parser.C: 356 inside parseUseStatement

Parser.C: 1397 inside parseFunBodyStatement

Parser.C: 1428 inside parseRingDefinition

Looks pretty scary to me!

#4 - 08 Oct 2020 14:16 - John Abbott

How flexible/limited should a new syntax be?

Should it be possible to make arbitrarily long extensions? Such as

$\mathbb{Q}\langle a \rangle[x] \langle b \rangle[y] \langle z \rangle$

A first attempt should probably allow just two levels (incl. $\mathbb{Q}\langle x \rangle[y] \langle \rangle$)

JAA is inclined to exclude quotient rings; so it would not be possible to write something like

$(\mathbb{Q}\langle \sqrt{2} \rangle / \text{ideal}(\sqrt{2}^2 - 2)) \langle x \rangle$