

CoCoA-5 - Design #636

Distinguish indets from symbols in coeffring in Use command

23 Oct 2014 18:42 - John Abbott

Status:	Rejected	Start date:	23 Oct 2014
Priority:	High	Due date:	
Assignee:	John Abbott	% Done:	100%
Category:	enhancing/improving	Estimated time:	0.66 hour
Target version:	CoCoA-5.4.0	Spent time:	0.65 hour
Description			
The use command assigns the top-level variables whose names match those of the symbols in the ring. The assigned values are the values of the symbols in the given ring.			
Suggestion: if the ring is a polynomial ring then the indeterminates are assigned as they are now, while all other symbols are assigned as elements of the coeffring . This is reasonable only if we already have automatic mapping of ringelems.			
Discuss!			
Related issues:			
Related to CoCoA-5 - Feature #7: Automatic mapping between (some) rings		Resolved	20 Oct 2011
Related to CoCoA-5 - Design #635: Automatic mapping of RingElem (in operation...		Closed	22 Oct 2014
Related to CoCoA-5 - Design #634: Symbol in the coeff ring		Rejected	22 Oct 2014
Related to CoCoA-5 - Design #637: Undesirable consequence of automatic mappin...		Closed	23 Oct 2014
Related to CoCoALib - Design #1515: Indets in coeffring are ringelems in coef...		Rejected	22 Oct 2020

History

#1 - 23 Oct 2014 22:05 - John Abbott

Consider the following scenario:

```
QQa ::= QQ[a];
P ::= QQa[x];
Use P;
deg(a); // will give 1
a2 := (x+a)-x;
a = a2; // true or false or error?
deg(a2); // must surely give 0, right?
```

Should a and a2 be considered as equal/equivalent in all contexts?

#2 - 11 May 2015 14:49 - John Abbott

- Target version changed from CoCoA-5.1.2 summer 2015 to CoCoA-5.1.3/4 Jan 2016

#3 - 17 Feb 2016 13:22 - John Abbott

- Target version changed from CoCoA-5.1.3/4 Jan 2016 to CoCoA-5.?.?.?

I'm delaying this issue until some unspecified time in the future because it looks to be tricky to resolve.

The point is that in a ring such as $\text{QQ}[a][x]$ CoCoA sees everything as a polynomial in just x , so a call such as $\text{deg}(a^2, a)$ is seen as $\text{deg}(\text{coeff}, \text{coeff})$ which makes no sense (and so will produce an error). However an "advanced user" who understands this will have difficulty in effecting the desired computation...

The following will perform the desired computation

```
deg (LC (a^2) , LC (a) ) ;
```

but it is not so clear to the reader what such a call should do. I would like to have something which makes it clear to the reader what the computation is... but how to achieve this?

The solution should work well regardless of the nesting depth of the rings: think of $\text{QQ}[a][b][c][x,y,z]$ for instance.

#4 - 22 Oct 2020 17:31 - John Abbott

- Related to Design #1515: Indets in coeffering are ringelems in coeffering? added

#5 - 27 Oct 2020 17:59 - John Abbott

- Status changed from New to Rejected

- Assignee set to John Abbott

- Target version changed from CoCoA-5.?.? to CoCoA-5.4.0

- % Done changed from 0 to 100

- Estimated time set to 0.66 h

I am rejecting this. This issue is essentially duplicated in [#1515](#).

Main reason for rejection is in comment 3 of issue [#1515](#)

Namely, too hard to interpret a "cleverly" in the ring $\text{QQ}(a)[x]$ where $1/a$ must be allowed.