CoCoALib - Design #584

BaseRing for all rings

08 Jul 2014 11:38 - John Abbott

Status:	Closed		Start date:	08 Jul 2014
Priority:	Normal		Due date:	
Assignee:	John Abbott		% Done:	100%
Category:	New Function		Estimated time:	6.50 hours
Target version:	CoCoALib-0.99534 Seoul14		Spent time:	6.50 hours

Description

I'm considering implementing BaseRing for all rings (except perhaps ZZ).

With our current design every ring has a single "parent" ring (*i.e.* one step closer to ZZ), and it can be helpful to know if one ring is derived from another (*e.g.* for iterated canonical hom).

Related issues:

Related to CoCoALib - Feature #151: Iterated CanonicalHom	**New**	**03 May 2012**
Related to CoCoALib - Feature #150: RingOf rather than owner? (and than Ambie...	**In Progress**	**03 May 2012**
Related to CoCoALib - Design #415: Remove AsPolyRing etc?	**Closed**	**23 Nov 2013**

History

#1 - 08 Jul 2014 11:41 - John Abbott

One problem with this approach is that we would exclude product rings, since a product ring could have several "parents". It is not clear to me whether there would be any real interest in having product rings (*e.g.* for implementing chinese-remaindering style algorithms?)
I suppose BaseRing could have an optional second arg saying which parent to select (default would be the "first" parent).

#2 - 08 Jul 2014 11:43 - John Abbott

Not sure what BaseRing(ZZ) should produce:
(A) either ZZ itself
(B) an error

My current preference (after very little reflection) is for **(B)**

#3 - 08 Jul 2014 17:48 - John Abbott

- Assignee set to John Abbott

- % Done changed from 0 to 30

- Estimated time set to 3.00 h

I've implemented it, and it seems to work. Currently the impl does **(B)**, but it'd be easy to change to **(A)**.
(20140714: apparently I also checked everything in)

Not sure about the best name for BaseRing; in some ways ParentRing (or just parent) might be more indicative... not sure that it is a good idea to break backward compatibility.

No doc, no tests, no examples.

#4 - 10 Jul 2014 16:52 - John Abbott

- Status changed from New to Resolved

- % Done changed from 30 to 60

I have just noticed that the function which says over which a ring a matrix lies is called **BaseRing**. I'm not so happy about the name being the same as that of the function which "decomposes" a ring.

I note that for an ideal, the function saying to which ring it belongs is called **AmbientRing**; maybe we could use the same name for matrices?

20140714 consider also issue [#150](#) which proposes the name **RingOf**

#5 - 30 Jul 2014 13:40 - John Abbott

- % Done changed from 60 to 70

I have now changed the name BaseRing into RingOf for matrices and modules.
I have changed AmbientRing into RingOf for ideals.

Examples and tests have been updated. Doc has been updated. Check in after lunch.

#6 - 30 Jul 2014 16:54 - John Abbott

- Status changed from Resolved to Feedback

- % Done changed from 70 to 90

Checked in. Updated documentation. Everything works --> feedback.

#7 - 31 Jul 2014 16:55 - John Abbott

- Status changed from Feedback to Closed

- % Done changed from 90 to 100

- Estimated time changed from 3.00 h to 6.50 h

Time is tight. Since it is just a name change, no real need to stay in feedback for any length of time. Closing.