

CoCoALib - Feature #1330

New syntax for NewQuotientRing

08 Oct 2019 12:20 - Anna Maria Bigatti

Status:	Closed	Start date:	08 Oct 2019
Priority:	Normal	Due date:	
Assignee:	Anna Maria Bigatti	% Done:	100%
Category:	Improving	Estimated time:	0.00 hour
Target version:	CoCoALib-0.99650 November 2019	Spent time:	2.70 hours
<b>Description</b> Making a quotient ring is often tedious. In CoCoA-5 we need to write (the best we can do):  <pre>QQy ::= QQ[y]; R := NewQuotientRing(QQy, ideal(RingElem(QQy,"y^2-5")));</pre> Consider the syntax:  <pre>R := NewQuotientRing(NewPolyRing(QQ,"a,i"), "a^2-5, i^2+1");</pre> where the string is automatically read as an ideal in the base ring. (similar syntax for PolyAlgebraHom)			
<b>Related issues:</b> Related to CoCoA-5 - Design #1327: Inconvenient PolyRingHom, PolyAlgebraHom Related to CoCoALib - Feature #1332: New function: vector of RingElem from st... Related to CoCoA-5 - Feature #1003: New syntax for creating poly rings? Related to CoCoALib - Feature #1485: Simple syntax for making a quotient ring?			
		Closed	07 Oct 2019
		Closed	08 Oct 2019
		In Progress	27 Jan 2017
		New	14 Sep 2020

History

- #1 - 08 Oct 2019 12:20 - Anna Maria Bigatti
- Related to Design #1327: Inconvenient PolyRingHom, PolyAlgebraHom added
- #2 - 08 Oct 2019 12:21 - Anna Maria Bigatti
- Subject changed from New syntax for creating QuotienRing to New syntax for creating QuotientRing
- #3 - 08 Oct 2019 14:41 - Anna Maria Bigatti
- Target version set to CoCoALib-0.99700
- % Done changed from 10 to 50

Implemented in CoCoALib, passed to CoCoA-5  
For the moment, only for principal ideal

```
/**/ S := NewQuotientRing(NewPolyRing(QQ, "x,y,z"), "x-3"); -- string shortcut
/**/ use S;
/**/ (x+y)^2;
(y^2 +6*y +9)
```

**#4 - 08 Oct 2019 14:44 - Anna Maria Bigatti**

- Description updated

**#5 - 08 Oct 2019 14:46 - Anna Maria Bigatti**

- Description updated

**#6 - 08 Oct 2019 15:04 - Anna Maria Bigatti**

documented, cvs-ed.

**#7 - 08 Oct 2019 15:50 - Anna Maria Bigatti**

- Related to Feature #1332: New function: vector of RingElem from string -- in CoCoALib added

**#8 - 09 Oct 2019 17:48 - Anna Maria Bigatti**

- Related to Feature #1243: New function: Read a string into a list (of RingElem) -- CoCoA-5 added

**#9 - 09 Oct 2019 17:50 - Anna Maria Bigatti**

- Related to deleted (Feature #1243: New function: Read a string into a list (of RingElem) -- CoCoA-5)

**#10 - 09 Oct 2019 18:22 - Anna Maria Bigatti**

- Description updated

- Status changed from In Progress to Resolved

Now also for non principal ideals

```
R := NewQuotientRing(NewPolyRing(QQ,"a,i"), "a^2-5, i^2+1");  
/**/ use R;  
/**/ (a+i)^2;  
(2*a*i +4)
```

**#11 - 10 Oct 2019 09:34 - Anna Maria Bigatti**

- Assignee set to Anna Maria Bigatti

- Target version changed from CoCoALib-0.99700 to CoCoALib-0.99650 November 2019

- % Done changed from 50 to 80

**#12 - 10 Oct 2019 09:51 - Anna Maria Bigatti**

- Description updated

**#13 - 10 Oct 2019 09:55 - Anna Maria Bigatti**

reminder: write doc for cocoalib

**#14 - 10 Oct 2019 18:35 - Anna Maria Bigatti**

- Subject changed from New syntax for creating QuotientRing to New syntax for NewQuotientRing

**#15 - 10 Oct 2019 18:40 - Anna Maria Bigatti**

- Status changed from Resolved to Feedback

- % Done changed from 80 to 90

**#16 - 15 Oct 2019 17:52 - Anna Maria Bigatti**

- Status changed from Feedback to Closed

- % Done changed from 90 to 100

**#17 - 15 May 2020 10:39 - Anna Maria Bigatti**

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

**#18 - 02 Jan 2024 11:19 - Anna Maria Bigatti**

- Related to Feature #1485: Simple syntax for making a quotient ring? added