# CoCoA-5 - Bug #1230

## PrimaryDecomposition with lex ordering

19 Oct 2018 17:19 - John Abbott

| | | | |
|---|---|---|---|
| **Status:** | Closed | **Start date:** | 19 Oct 2018 |
| **Priority:** | Normal | **Due date:** | |
| **Assignee:** | Anna Maria Bigatti | **% Done:** | 100% |
| **Category:** | Incomplete function | **Estimated time:** | 1.23 hour |
| **Target version:** | CoCoA-5.3.0 | **Spent time:** | 1.25 hour |

**Description**

Robbiano reports the following problem:

```
Use P::= QQ[x,y,z];
f1:=z^2-y;  f2:= x^2 -2*x*z +y; f3:=y^2-y-z;
J:=ideal(f1,f2,f3);
PrimaryDecomposition(J);
-->  [ideal(z^2 -y,  y^2 -y -z,  x^2 -2*x*z +y,  z),  ideal(z^2 -y,  y^2 -y -z,  x^2 -2*x*z +y,  z
^3 -z -1)]
-- Change ordering, same ideal
Use P::= QQ[x,y,z],Lex;
f1:=z^2-y;  f2:= x^2 -2*x*z +y; f3:=y^2-y-z;
J:=ideal(f1,f2,f3);
PrimaryDecomposition(J);
--> ERROR: NOT YET IMPLEMENTED -- please be patient, we're working on it
--> [CoCoALib] GBasisByHomog not drl
```

**Related issues:**

| | | |
|---|---|---|
| Related to CoCoALib - Feature #1212: New function: GBasisByHomog | **Closed** | **05 Aug 2018** |
| Related to CoCoALib - Slug #1105: Primary Decompositon (zero-dim)  slow cases | **Closed** | **02 Oct 2017** |

**History**

**#1 - 22 Oct 2018 16:04 - Anna Maria Bigatti**

*- Related to Feature #1212: New function: GBasisByHomog added*

**#2 - 01 Oct 2019 14:44 - John Abbott**

*- Status changed from New to In Progress*

*- Assignee set to Anna Maria Bigatti*

*- % Done changed from 0 to 20*

The given example seems to work now.  Has this been fixed?
If so, close; otherwise postpone to next version.

**#3 - 02 Oct 2019 16:12 - John Abbott**

*- Related to Slug #1105: Primary Decompositon (zero-dim)  slow cases added*

**#4 - 11 Oct 2019 22:03 - John Abbott**

*- Status changed from In Progress to Resolved*

*- % Done changed from 20 to 80*

I think this has already been done.  Changed status to "resolved".

**#5 - 14 Oct 2019 17:32 - Anna Maria Bigatti**

*- Status changed from Resolved to In Progress*

*- % Done changed from 80 to 70*


Not quite :-/
there is still something dodgy:


```
/**/ J:=ideal(f1,f2,f3);
/**/ GBasisByHomog(J);
[y -z^2,  y^2 -z^2 -z,  x^2 -2*x*z +z^2,  y*z^2 -z^2 -z,  z^4 -z^2 -z]
/**/ PrimaryDecomposition(J);
--> ERROR: NOT YET IMPLEMENTED -- please be patient, we're working on it
--> [CoCoALib] myPrimaryDecomposition() -- general ideal
--> PrimaryDecomposition(J);
--> ^^^^^^^^^^^^^^^^^^^^^^^
```


**#6 - 16 Jan 2020 12:15 - John Abbott**

This seems to work for me now.

We must add a test to exbugs.cocoa5; we can simply copy the failing case from the issue description.

Then close?


**#7 - 13 Feb 2020 09:25 - Anna Maria Bigatti**

*- Status changed from In Progress to Feedback*

*- % Done changed from 70 to 90*


Seems to work now.
We did not note how we fixed the problem in comment 5. :-/
closing?


**#8 - 13 Feb 2020 10:09 - John Abbott**

*- Status changed from Feedback to Closed*

*- % Done changed from 90 to 100*

*- Estimated time set to 1.23 h*


I have added the example to exbugs.cocoa5

Closing!