CoCoALib - Bug #1416

IdealOfProjectivePoints and MinGens

14 Feb 2020 09:00 - Anna Maria Bigatti

Status:	Closed	**Start date:**	14 Feb 2020
Priority:	Normal	**Due date:**	
Assignee:	Anna Maria Bigatti	**% Done:**	100%
Category:	Maths Bugs	**Estimated time:**	2.01 hours
Target version:	CoCoALib-0.99700	**Spent time:**	1.40 hour

Description

Juan Migliore found this weird bug:

```
/**/ A := GenericPoints(R,6,7000);
/**/ K := IdealOfProjectivePoints(R,mat(A));
/**/ MinGens(K);  -- gives []
```

Related issues:

Related to CoCoALib - Feature #374: Porting "IdealOfProjectivePoints"	**Closed**	**18 Jun 2013**
Related to CoCoALib - Design #1255: Ideals with trivial GBasis	**New**	**11 Mar 2019**
Related to CoCoA-5 - Bug #1420: IdealOfProjectivePoints and MinGens: problem ...	**Closed**	**18 Feb 2020**
Related to CoCoALib - Feature #1433: HilbertDriven Buchberger Algorithm	**New**	**04 Mar 2020**

History

#1 - 14 Feb 2020 09:01 - Anna Maria Bigatti

- Related to Feature #374: Porting "IdealOfProjectivePoints" added

#2 - 14 Feb 2020 09:03 - Anna Maria Bigatti

- Subject changed from IdealOfProjectivePoints and MinPoly to IdealOfProjectivePoints and MinGens

#3 - 14 Feb 2020 09:18 - John Abbott

- Status changed from New to In Progress

- % Done changed from 0 to 10

The following works:

```
use R ::= QQ[x,y,z];
I := IdealOfProjectivePoints(R, mat([[1,0,0]]));
MinGens(I);
J := IdealOfProjectivePoints(R, mat([[1,0,0],[0,1,0]]));
MinGens(J);
```

#4 - 14 Feb 2020 09:32 - Anna Maria Bigatti

- Category changed from Safety to Maths Bugs

#5 - 14 Feb 2020 09:33 - Anna Maria Bigatti

and this doesn't.

```
/**/ use P ::= QQ[x,y,z];
/**/ K := IdealOfProjectivePoints(P,mat([[0,1,1],[0,0,1]]));
/**/ MinGens(K);
[]
```

what's going on???

#6 - 21 Feb 2020 14:53 - John Abbott

- Related to Design #1255: Ideals with trivial GBasis added

#7 - 25 Feb 2020 15:48 - Anna Maria Bigatti

- Related to Bug #1420: IdealOfProjectivePoints and MinGens: problem with CoCoA_ASSERT added

#8 - 03 Mar 2020 21:51 - John Abbott

There are also some other functions which create a GB without having to calculate it, right?
IdealOfPoints, ...

#9 - 04 Mar 2020 14:19 - Anna Maria Bigatti

- Status changed from In Progress to Closed

- Assignee set to Anna Maria Bigatti

- % Done changed from 10 to 100

IdealOfProjectivePoints computes GB but cannot determin MinGens.
Neccessary to recompute GBasis with Buchbeger algorithm.
Done and working (see #1420).

Improvement: do it with Hilbert driven Buchberger algorithm.

#10 - 04 Mar 2020 14:20 - Anna Maria Bigatti

- Related to Feature #1433: HilbertDriven Buchberger Algorithm added

```
/**/ use P ::= QQ[x,y,z];
/**/ K := IdealOfProjectivePoints(P,mat([[0,1,1],[0,0,1]]));
/**/ MinGens(K);
[]
```