

CoCoALib - Feature #1444

HNF: Hermite Normal Form

10 Mar 2020 15:43 - John Abbott

Status:	New	Start date:	10 Mar 2020
Priority:	Normal	Due date:	
Assignee:		% Done:	0%
Category:	New Function	Estimated time:	0.00 hour
Target version:	CoCoALib-0.99880	Spent time:	0.20 hour
Description			
It would be nice to have HNF in CoCoALib.			
I can see two cases:			
<ul style="list-style-type: none">• (special) over ZZ• (general) over a more general ring (where all necessary ideals are principal)			
There are also two possible outputs:			
<ul style="list-style-type: none">• just the HNF itself• the HNF and the unimodular transformation matrix			
Related issues:			
Related to CoCoALib - Feature #122: Porting "LinKer"		Closed	04 Apr 2012
Related to CoCoALib - Feature #125: Matrix equation solving; linear system so...		In Progress	05 Apr 2012
Related to CoCoALib - Feature #206: Matrix equation solving: LinKer		In Progress	10 Jul 2012
Related to CoCoA-5 - Feature #1304: Hermite normal form		New	29 Aug 2019

History

#1 - 10 Mar 2020 15:43 - John Abbott

- Related to Feature #122: Porting "LinKer" added

#2 - 10 Mar 2020 15:43 - John Abbott

- Related to Feature #125: Matrix equation solving; linear system solving added

#3 - 10 Mar 2020 15:44 - John Abbott

- Related to Feature #206: Matrix equation solving: LinKer added

#4 - 10 Mar 2020 15:44 - John Abbott

- Related to Feature #1304: Hermite normal form added

#5 - 10 Mar 2020 15:47 - John Abbott

Florian has already put a prototype impl (CoCoA-5) in issue [#1304](#). This should be ported to C++.

NTL has HNF which produces just the HNF and not the unimodular matrix. The unimodular matrix can be useful for computing LinKerZZ (see [#206](#)), but there are other approaches too -- I think NTL uses LLL for this.

#6 - 06 Oct 2020 15:12 - John Abbott

- Target version changed from CoCoALib-0.99800 to CoCoALib-0.99850

#7 - 16 Feb 2024 09:53 - John Abbott

- Target version changed from CoCoALib-0.99850 to CoCoALib-0.99880