

CoCoALib - Design #1346

C++14: use the new for loop syntax where appropriate (like cocoa's foreach)

21 Oct 2019 12:26 - John Abbott

Status:	In Progress	Start date:	21 Oct 2019
Priority:	Normal	Due date:	
Assignee:		% Done:	80%
Category:	Improving	Estimated time:	0.00 hour
Target version:	CoCoALib-0.99880	Spent time:	12.55 hours
Description Since C++11 there is a new "range-based" for loop. Employ it where appropriate in CoCoALib.			
Related issues: Related to CoCoALib - Design #1225: Move to C++14 (skipping C++11) In Progress 06 Sep 2018 Related to CoCoALib - Design #1242: C++14: Use type auto where appropriate In Progress 08 Feb 2019 Related to CoCoALib - Feature #1472: Idea for for loops In Progress 23 Jul 2020 Related to CoCoA-5 - Design #1520: Replace BOOST_FOREACH by new C++14 range f... Closed 26 Oct 2020			

History

#1 - 21 Oct 2019 12:26 - John Abbott

- Related to Design #1225: Move to C++14 (skipping C++11) added

#2 - 21 Oct 2019 12:27 - John Abbott

We should maintain a list of files to change and/or a list of files already changed.

- SparsePolyOps-ideal-monomial.C
- TmpPPVector.C

#3 - 21 Oct 2019 12:28 - John Abbott

- Related to Design #1242: C++14: Use type auto where appropriate added

#4 - 21 Oct 2019 18:44 - Anna Maria Bigatti

used massively for monomial ideals.
Tested.
cvs-ed.

#5 - 21 Oct 2019 18:45 - Anna Maria Bigatti

- Status changed from New to In Progress
- % Done changed from 0 to 10

#6 - 13 Jan 2020 17:20 - Anna Maria Bigatti

- Subject changed from C++14: use the new for loop syntax where appropriate to C++14: use the new for loop syntax where appropriate (like cocoa's foreach)

Example: so I know where to find one ;-)

```
for (const auto& f: GB)
    if (!IsSqFree(LPP(f))) return myAssignRadicalFlag(false);
```

#7 - 11 Feb 2020 18:31 - Anna Maria Bigatti

- % Done changed from 10 to 20

worked on TmpGReductor: much more readable!!!

#8 - 13 Feb 2020 16:21 - Anna Maria Bigatti

- Target version changed from CoCoALib-1.0 to CoCoALib-0.99800

- % Done changed from 20 to 50

I looked for iterator and changed in a few more files. (can't remember which)
Not so many left to do.

#9 - 17 Feb 2020 18:15 - John Abbott

I have changed some for loops to use the new syntax.

It is slightly worrying that one can change the code so easily without actually understanding what it does :-/
Anyway, the code still compiles, and all the tests pass...

I prefer to use auto only when the real type is "long and complicated": for example I find it clearer to write

```
for (const RingElem& f: gens(I)) ...
```

rather than

```
for (const auto& f: gens(I)) ...
```

The first form helps the reader (but the second form is easier to write if you do not really know the code).

NOTE I do agree that it usually makes the code much more readable :-)

#10 - 18 Feb 2020 12:35 - John Abbott

- % Done changed from 50 to 60

I have done the following files:

ApproxPts2.C

ApproxPts.C
ExternalLibs-Normaliz.C
GBEnv.C
QuotientRing.C
RingHom.C
TmpGReductor.C (ONLY PARTLY?)
TmpIsTree.C
TmpJBAlgorithm.C
TmpJBDatastructure.C
TmpJBMill.C
TmpLDP.C
TmpPBMill.C
TmpStabilityAlgorithm.C
VectorOps.C

#11 - 25 Sep 2020 11:22 - John Abbott

- Related to Feature #1472: Idea for for loops added

#12 - 26 Oct 2020 10:04 - John Abbott

- Related to Design #1520: Replace BOOST_FOREACH by new C++14 range for syntax added

#13 - 04 Feb 2022 21:57 - John Abbott

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

How should this be done in a systematic way (which can be paused)?
Postponing since it is just "tidying up".
We must try to remember to use the new syntax when writing new code!

#14 - 13 Mar 2023 21:57 - John Abbott

- % Done changed from 60 to 80

This is a mind-numbing task.
Something weird in **SparsePolyOps-reduce.C**:
the obvious transformation of the code seem not to work... no idea why!
I think more could still be done: there are lost of iterators in Mario Albert's code (phew!)

#15 - 14 Mar 2023 21:23 - John Abbott

I have done some more. Anna fixed yesterday's bug.
Need a break from this... anyway it does seem to make the code more readable :-)

#16 - 14 Mar 2023 21:23 - John Abbott

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

#17 - 22 Apr 2024 21:08 - John Abbott

Some files still need to be updated: I think the "morse" files need to be updated.

The "JB" files look scary to touch!

Maybe TmpStability

I wouldn't do any more...

Any volunteers? **Anna?**