

CoCoALib - Design #1735

PushFront/PushBack without checks?

25 Apr 2023 21:29 - John Abbott

Status:	Rejected	Start date:	25 Apr 2023
Priority:	Normal	Due date:	
Assignee:	John Abbott	% Done:	100%
Category:	Improving	Estimated time:	1.11 hour
Target version:	CoCoALib-0.99850	Spent time:	1.05 hour
Description Currently PushFront and PushBack check their args (correct coeffring, correct ppmoid). Should there also be unsafe non-checking versions? I think it may make the fn faster. 2024 Conclusion: if you don't want the checks, call the member function. This was a guideline we had many years ago (and the forgot about?).			

History

#1 - 25 Apr 2023 21:31 - John Abbott

The suggestion arose from some new code for computing cyclotomic polynomials.

The coeff vec is computed quite quickly, but the conversion (from vector<long>) to a CoCoALib polynomial takes quite a lot longer than computing the coeffs (almost 10 times as long!)

I should check that disabling the arg checks actually makes it faster....

#2 - 16 Feb 2024 10:00 - John Abbott

As I stated in the comment just above: I should test whether a non-checking impl would really make it faster. Maybe the slow down is due to something else (mem mgt)?

#3 - 16 Feb 2024 10:23 - Anna Maria Bigatti

- % Done changed from 0 to 10

Surely worth a try.

PushFront_nocheck?

I could imagine cases when this might be used (homomorphisms preserving ordering)

#4 - 16 Feb 2024 21:22 - John Abbott

- Status changed from New to In Progress

- Assignee set to John Abbott

I have just tried disabling the checks inside **PushFront** and **PushBack**. There was no difference when calling cyclotomic because that function calls the non-checking member function **myPushFront** directly.

The function **reverse** defined in SparsePolyOps-RingElem.C around line 1290 does call PushFront -- and it seems not many other functions do call PushFront. I created a large cyclotomic, and then reversed it. The timings are:

- p = NextPrime(10000000)
- Create cyclotomic(p,x) in ZZ[x] takes about **13.7s**
- reverse with checks takes about **39s**
- reverse without checks takes about **27s**
- reverse hacked to call myPushFront takes about **22.5s** (this includes the time to divide PPs)

Conclusion: if you don't want the checks, call the member function. This was a guideline we had many years ago (and the forgot about?).

So **reject**?

PS PushBack does less checking than PushFront since it is not so easy to access that last PP (maybe?)

#5 - 07 Mar 2024 20:31 - John Abbott

- *Status changed from In Progress to Rejected*

- *% Done changed from 10 to 100*

- *Estimated time set to 1.11 h*

Even the documentation mentioned about myPushFront *etc.* I have slightly improved the doc. Otherwise we can reject this since there was already a way achieve what was desired.

PS I did also improve the impl of reverse

#6 - 08 Mar 2024 14:38 - Anna Maria Bigatti

- *Description updated*