

CoCoALib - Slug #837

factor is very slow on some simple input polynomials

06 Jan 2016 14:32 - John Abbott

Status:	New	Start date:	06 Jan 2016
Priority:	Normal	Due date:	
Assignee:		% Done:	0%
Category:	Improving	Estimated time:	0.00 hour
Target version:	CoCoALib-1.0	Spent time:	0.25 hour
<b>Description</b> The problem lies in CoCoALib, but for simplicity I present it here as CoCoA-5 code.  factor( $x^{780}+780$ ) is very slow; so is factor( $x^{988}+988$ ).  In contrast factor( $(3*5*7*11*17*x)^{988}+988$ ) is fairly fast (about 5s); and factor( $(7*11*17*19*x)^{780}+780$ ) is fairly fast (about 9s).  Presumably the problem is that not enough primes are tried; NTL uses a trick where extra primes are tried if the factor search becomes slow. Perhaps do something similar?			

History

#1 - 06 Jan 2016 14:40 - John Abbott

My "fast" machine in Kassel takes more than 60000s for  $x^{780}+780$ , and 1333s for  $x^{988}+988$ .

In comparison all polys of the form  $x^n+n$  for  $n$  ranging from 1 to 1000 (but excluding the two slow cases) can be factorized in just 164s on my "fast" machine in Kassel.