CoCoA-5 - Design #1067

"Randomize" and "Randomized" obsolete?

14 May 2017 10:57 - John Abbott

Status:	Closed	**Start date:**	14 May 2017
Priority:	Normal	**Due date:**	
Assignee:	John Abbott	**% Done:**	100%
Category:	CoCoA-4 function to be added	**Estimated time:**	1.55 hour
Target version:	CoCoA-5.2.2	**Spent time:**	1.45 hour

Description
While looking through the CoCoA-5 on-line manual, I noticed that there are references to Randomize and Randomized. These CoCoA-4 functions have not been ported to CoCoA-5; should we do so, or should we regard them as obsolete? My preference is to regard them obsolete.

Related issues:		
Related to CoCoA-5 - Feature #1122: New fn: RandomLinearForm	**Closed**	**15 Nov 2017**

History

#1 - 14 May 2017 11:03 - John Abbott

- Project changed from CoCoALib to CoCoA-5

- Category deleted (Various)

- Status changed from New to In Progress

- Target version deleted (CoCoALib-1.0)

- % Done changed from 0 to 10

The old CoCoA-4 function Randomize(F) is essentially equivalent to:

```
sum([random(-CoeffMax, CoeffMax)*t | t in support(F)]);
```

where CoeffMax is some value (perhaps 2^{31}?). The vagueness about the value of CoeffMax is one reason I prefer to make these fns obsolete.

Randomize(F) is the same as F := Randomized(F);

If we do decide to make them obsolete then any "see also" references in the manual should be removed.

We could also use my implementations above to define them in obsolescent.cpkg5.

Comments? Other ideas?

#2 - 15 May 2017 07:48 - Anna Maria Bigatti

- Target version set to CoCoA-5.2.2

I sometimes miss old Randomized.

I suggest implementing it, but with explicit range: randomized(f, 100); randomizes in the range -100..100.
and maybe also randomized(f, 100, 200); in the range 100..200.

(should work for polynomials and for matrices?)

#3 - 15 May 2017 10:36 - John Abbott

- Category set to CoCoA-4 function to be added

I thought Randomize in CoCoA-4 would work only for polynomials (and integers). Did it also work for matrices?

KISS: I do not like Randomize(f, 100,200) and find it hard to imagine when it could be useful.

If we do keep Randomize but with a different interface then the old is still obsolete/obsolescent.

#4 - 15 May 2017 10:59 - Anna Maria Bigatti

L := DensePoly(P,1); randomized(L, -100,100); is a nice way to make lots of random linear forms.

#5 - 15 May 2017 11:17 - John Abbott

We could create: RandomLinearForm(P,100) or even RandomLinearForm(P) if coeff ring is finite field.

#6 - 15 May 2017 11:46 - Anna Maria Bigatti

- % Done changed from 10 to 50

ok, you convinced me: let's declare Randomize(d) obsolete, and make (in case) explicit functions for random things.

#7 - 15 May 2017 12:31 - John Abbott

OK, I'll do it and check in tomorrow -- too busy today.

#8 - 16 May 2017 11:35 - John Abbott

There is also an undocumented fn called **Rand** in misc.cpkg5.
Should it be made obsolete? Or simply eliminated?

NOTE I should have checked **before** writing. There is also an exported fn called **Rand** in BackwardCompatible.cpkg5, and there may be a call to it in regularity.cpkg5. I can easily change the call into a call to random.

But what about BackwardCompatible.cpkg5? How does it differ from obsolescent.cpkg5?

#9 - 16 May 2017 13:20 - John Abbott

There is a commented out fn called RandomLinearForm in experimental.cpkg5.

#10 - 16 May 2017 15:06 - Anna Maria Bigatti

John Abbott wrote:

> But what about BackwardCompatible.cpkg5? How does it differ from obsolescent.cpkg5?

Undecided, I suppose we can make it obsolescent and this point.

#11 - 16 May 2017 15:21 - Anna Maria Bigatti

John Abbott wrote:

> There is a commented out fn called RandomLinearForm in experimental.cpkg5.

That's a kind of randomized, with huge coefficients. Good thing it is commented out ;-)

these are the "random" functions in cocoa-5:

```
--> All 8 matches for "rand":
 ? random
 ? randomize
 ? randomized
 ? RandomSubset
 ? RandomSubsetIndices
 ? RandomTuple
 ? RandomTupleIndices
 ? RandomUnimodularMat
```

I think we could also add RandomLinearForm(P, Lo, Hi)

#12 - 16 May 2017 15:32 - John Abbott

Why do you want to specify lo and hi for RandomLinearForm?
Is it not enough to specify a single value N and use the symmetric range from -N to N?

What about when the coeff ring has non-zero characteristic? Then it might make sense to allow no range?

#13 - 16 May 2017 17:22 - Anna Maria Bigatti

John Abbott wrote:

> Why do you want to specify lo and hi for RandomLinearForm?
> Is it not enough to specify a single value N and use the symmetric range from -N to N?

because it is more similar to random.

What about when the coeff ring has non-zero characteristic? Then it might make sense to allow no range?

well, KISS (nothing personal ;-)

#14 - 15 Nov 2017 17:01 - John Abbott

- Related to Feature #1122: New fn: RandomLinearForm added

#15 - 15 Nov 2017 17:02 - John Abbott

- Status changed from In Progress to Closed

- Assignee set to John Abbott

- % Done changed from 50 to 100

- Estimated time set to 1.55 h

I shall close this issue, and create a new issue about creating RandomLinearForm.