CoCoA-5 - Feature #553

Port function MantissaAndExponent2

12 May 2014 18:35 - Anna Maria Bigatti

Status:	Closed	**Start date:**	12 May 2014
Priority:	Normal	**Due date:**	
Assignee:	John Abbott	**% Done:**	100%
Category:	CoCoA-5 function: new	**Estimated time:**	4.00 hours
Target version:	CoCoA-5.1.1 Seoul14	**Spent time:**	4.25 hours

Description

MantissaAndExponent2 is defined in CoCoALib and mentioned in the manual for CoCoA-5.
Porting it to CoCoA-5 should be easy (copying **MantissaAndExponent10**)

History

#1 - 12 May 2014 21:29 - John Abbott

- Status changed from New to In Progress

- Assignee set to John Abbott

- % Done changed from 0 to 30

I've just copied the code for MantissaAndExponent10 -- it seems a waste writing code using cut-and-paste :-(

Added the missing entry to the C5 manual.

There is an inconsistency:
MantExp10(0.5,3) produces Record[exp:=-1, mant:=500]
so the value represented is 10^(exp)*mant/10^(numdigits)

MantExp2(0.5,8) produces Record[exp:=-8, mant:=128]
so the value represented is 2^(exp)*mant

Which approach is better?

#2 - 12 May 2014 23:49 - Anna Maria Bigatti

John Abbott wrote:

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>
> Added the missing entry to the C5 manual.
>
> There is an inconsistency:
> MantExp10(0.5,3) produces Record[exp:=-1, mant:=500]
> so the value represented is 10^(exp)*mant/10^(numdigits)
>
> MantExp2(0.5,8) produces Record[exp:=-8, mant:=128]
> so the value represented is 2^(exp)*mant
>
> Which approach is better?

I'd like to have Record[exp:=-1, mant:=500, NumDigits:=3]
even though it is a bit redundant.
exp:=-1 is the most meaningful information, so it would be a bit odd to have it depending on the number of digits.
On the other hand a direct interpretation of the result, as in the second case, is nice. So it would be nice to give the extra information about numdigits without having to compute a logarithm.

#3 - 14 May 2014 09:38 - Anna Maria Bigatti

For JAA: commit file for fixing
BuiltInFunctions.C:678: error: 'class CoCoA::MantExp2' has no member named 'myNumDigits'

12:52 DONE!

#4 - 14 May 2014 15:31 - John Abbott

- Status changed from In Progress to Feedback

- % Done changed from 30 to 90

- Estimated time set to 4.00 h

I have implemented, tested, & documented.

I followed Anna's suggestion: a MantExp2 structure now contains 4 (public) fields

- mySign
- myExponent
- myMantissa
- myNumDigits

The value represented is mySign * myMantissa * 2^(myExponent-myNumDigits+1)

Similarly for MantExp10

#5 - 03 Sep 2014 12:36 - John Abbott

- Status changed from Feedback to Closed

- % Done changed from 90 to 100