

CoCoA-5 - Slug #96

sort is too slow

01 Mar 2012 12:26 - John Abbott

Status:	New	Start date:	01 Mar 2012
Priority:	Normal	Due date:	
Assignee:	John Abbott	% Done:	0%
Category:	Incomplete function	Estimated time:	15.00 hours
Target version:	CoCoA-5.?.?	Spent time:	2.10 hours
Description			
Sorting is achieved by \$list.QuickSort.			
Unfortunately it should be called SlowSort. Complexity seems to be quadratic -- why??? The cause may be a bad impl in list.cpkg5, or a problem in the interpreter.			
Try the following code; then again but halving or doubling the value of N.			
<pre>N := 20000; L := [Rand(-N,N) I In 1..N]; T1 := CpuTime(); Sort(ref L); T2 := CpuTime(); PrintLn "Sorted in time ", DecimalStr(T2-T1);</pre>			
At least C5 is better than C4 where QuickSort appeared to be almost cubic!!!			
Related issues:			
Related to CoCoA-5 - Slug #1228: SLUG: filling an array		In Progress	30 Sep 2018

History

#1 - 01 Mar 2012 15:58 - John Abbott

It seems highly likely that copies are being made of the list being sorted. Here is my justification:

I created a list with 40000 random integers, and then called \$list.QuickSort1 to sort just the first 10000 elements (I also sorted just the last 10000 elements to confirm that it took about the same time). The time taken was about 10.8s on my computer. Compare this to 3.8s which is the time needed to sort a list of length 10000 (full of random integers). I conclude that somewhere copies are being made of the entire list even though it is passed by reference.

Anna suspects that it may be related to issue [#31](#).

#2 - 02 Apr 2014 17:34 - Anna Maria Bigatti

- Target version set to CoCoA-5.1.0 Easter14

#3 - 04 Apr 2014 17:35 - Anna Maria Bigatti

- Category set to Incomplete function

- Assignee set to John Abbott

#4 - 09 Apr 2014 15:03 - John Abbott

- Target version changed from CoCoA-5.1.0 Easter14 to CoCoA-5.?.?

#5 - 29 Apr 2019 14:51 - John Abbott

- Related to Slug #1228: SLUG: filling an array added

#6 - 28 May 2021 20:40 - John Abbott

I have just re-run the test: it took about 9.0s on my current linux laptop.
Still too slow :-)