CoCoA-5 - Bug #1239

CartesianProductList: case of just 1 entry in list

29 Jan 2019 12:09 - John Abbott

Status:	Closed	Start date:	29 Jan 2019	
Priority:	High	Due date:		
Assignee:	Anna Maria Bigatti	% Done:	100%	
Category:	bug	Estimated time:	0.99 hour	
Target version:	CoCoA-5.3.0	Spent time:	1.00 hour	
Description				
I believe CartesianProductList handles wrongly the case of a list with just 1 entry:				
	0,7			
>>> CartesianProductList([01, 01, 01]);				
[[0, 0, 0], [0,	, 0, 1], [0, 1, 0], [0, 1	, 1], [1, 0, 0], [1, 0, 1],	[1, 1, 0],
[1, 1, 1]]				
>>> CartesianProductList([01, 01]);				
[[0, 0], [0, 1], [1, 0], [1, 1]]				
>>> CartesianProductList([01]);				
[0, 1]				

Surely the last result ought to be [[0], [1]], right?

History

#1 - 29 Jan 2019 12:11 - John Abbott

The bug would found by a student in Passau (Bernhard Andrashko). His program misbehaved when computing CartesianProductList with a single "factor".

#2 - 15 Feb 2019 12:21 - Anna Maria Bigatti

- Assignee set to Anna Maria Bigatti

- % Done changed from 0 to 10

hmmmmm, true. I had been reasoning too mathematically....

I do not much like it though. should instead return an error? (or maybe just print a warning?) Do you remember how that was used?

Anyway, I have fixed it in my copy, now.

#3 - 15 Feb 2019 12:50 - John Abbott

- Status changed from New to In Progress

- % Done changed from 10 to 20

I can try asking the student again for a copy of his program. However, the student was fairly good at programming, and I was mystified when he inserted code to handle a "special case" when I fully expected the general case to work (but it did not because of the bug in this issue).

Given my expectation, I think the case of CartesianProductList(L) where L is a list of a single list should work without warning (and certainly it should not give an error). While I understand the thinking behind "protecting a programmer from a careless mistake", I am not happy about a design which makes it more difficult to write a correct program (*i.e.* needing special handling for the case of a cartesian product of 1 factor). I also not that the function product works fine when given as argument a list containing a single entry.

#4 - 15 Feb 2019 12:54 - John Abbott

I do note that CartesianProductList([]) returns [] without warning (or error, obviously).

I might be willing to be convinced that this case ought to product a warning/error...

#5 - 15 Feb 2019 14:37 - Anna Maria Bigatti

- % Done changed from 20 to 50

OK, convinced.

If he actually wrote a progam where he needed to handle the 1-case (and had to design his own workaround) then we fix it. Already done.

For the empty list I'm flexible. Now I think that the 0-case is OK and should give no nasty surprises:

```
/**/ CartesianProductList([[],[],[]]);
[]
/**/ CartesianProductList([]);
[]
```

#6 - 15 Feb 2019 14:49 - John Abbott

- Status changed from In Progress to Resolved

- % Done changed from 50 to 80

Good, we're agreed. I've fixed it too -- we'll merge when I'm in Genoa. I do still have a minor doubt about the empty product, but it's not that important.

#7 - 04 Mar 2019 12:30 - John Abbott

- Status changed from Resolved to Closed
- % Done changed from 80 to 100
- Estimated time set to 0.99 h

JAA notes that the product of zero factors should return a list containing 1 element which is a 0-tuple (namely, the list of the empty list). Code corrected.

Checked in. Closing.