

CoCoA-5 - Support #890

ImportByRef and ImportByValue behave in an unexpected manner (i.e. fail when I think they should succeed)

15 Jun 2016 13:42 - John Abbott

Status:	Closed	Start date:	15 Jun 2016
Priority:	Normal	Due date:	
Assignee:	John Abbott	% Done:	100%
Category:	Manual/documentation	Estimated time:	1.50 hour
Target version:	CoCoA-5.3.0	Spent time:	1.45 hour
Description			
<p>While cleaning, I found some old CoCoA-5 "bugs". In this case there are two simple examples where ImportByRef gives an error which I did not expect; also the hint for resolving the problem is unhelpful (<i>i.e.</i> it says to use import!)</p> <p>In the following excerpt reading the definition of gun produces an error</p> <pre>Define fun(x) PrintLn RingOf; Return RingOf(x); EndDefine; -- fun Define gun(x) ImportByRef fun; Return fun(x); EndDefine; -- gun</pre> <p>The on-line documentation suggests that ImportByRef and ImportByValue work only inside anonymous functions; so I tried the following:</p> <pre>Define fun(x) PrintLn RingOf; Return RingOf(x); EndDefine; -- fun Define hun(x) fun2 := func() ImportByRef fun; return fun; endfunc; Return fun2(x); EndDefine; -- hun</pre> <p>CoCoA-5 still gives an error when reading the definition of hun.</p> <p>Note that replacing ImportByRef with TopLevel works in both cases. Is this what we want?</p>			
Related issues:			
Related to CoCoA-5 - Bug #726: TopLevel cannot "import" a package variable		Closed	06 Jun 2015

History

#1 - 15 Jun 2016 13:47 - John Abbott

While TopLevel and ImportByRef are very similar there is a difference: namely, that TopLevel will search only in the top level even if there is a local variable with the same name; in contrast the meaning of ImportByRef could change if some local variables (with the same name) are removed or newly created.

Since the meaning of ImportByRef and ImportByValue can vary depending on a non-local change, it is probably best to discourage use of these commands (for non-experts anyway).

#2 - 15 Jun 2016 13:55 - John Abbott

- Status changed from New to In Progress
- % Done changed from 0 to 10

I am guessing that `ImportByRef` and `ImportByValue` may be used only for importing local variables in an outer lexical scope (and **not for names at top level**) -- if this is true, then I think it is probably the right design/semantics. Unfortunately the documentation is too vague; it must be improved! I suggest writing the documentation in such a way that it makes `TopLevel` very visible, and "discourages" use of `ImportByRef` and `ImportByValue`.

Another unfortunate aspect is the wording of the error message:

```
--> ERROR: Cannot find fun
--> WHERE: at line 12 (column 30) of bug1.cocoa5
-->   fun2 := func() ImportByRef fun; return fun; endfunc;
-->                                     ^^^
--> ERROR: Cannot find a variable named "fun" in scope, but there is one in an outside scope. You're probably
missing an import statement
--> WHERE: at line 12 (column 42) of bug1.cocoa5
--> ...   fun2 := func() ImportByRef fun; return fun; endfunc;
-->                                     ^^^
```

It seems that the parser/interpreter did find the name (at top level), but then it should recommend using `TopLevel` and not an import statement.

#3 - 15 Jun 2016 14:07 - John Abbott

- Related to Bug #726: `TopLevel` cannot "import" a package variable added

#4 - 20 Feb 2020 10:04 - John Abbott

- Target version changed from `CoCoA-5.?.?` to `CoCoA-5.3.0`

The doc for `ImportByRef` and `ImportByValue` starts with a big warning. Is this still necessary?

Check this issue; maybe we can fix the doc and close it?

#5 - 20 Feb 2020 16:05 - John Abbott

- Status changed from In Progress to Feedback
- Assignee set to John Abbott
- % Done changed from 10 to 90
- Estimated time set to 1.23 h

I have improved the documentation (which is where I believe the problem lay).

The impl seems to be reasonable; but it is hard to give a good, concise explanation in the doc -- I hope the current version is OK.

#6 - 26 Feb 2020 16:50 - John Abbott

- *Status changed from Feedback to Closed*
- *% Done changed from 90 to 100*
- *Estimated time changed from 1.23 h to 1.50 h*