CoCoA-5 - Design #1508

Initial ring

13 Oct 2020 15:11 - John Abbott

Status:	In Progress	**Start date:**	13 Oct 2020
Priority:	Normal	**Due date:**	
Assignee:		**% Done:**	20%
Category:	enhancing/improving	**Estimated time:**	0.00 hour
Target version:	CoCoA-5.4.2	**Spent time:**	1.50 hour

Description

After lunch with Robbiano today...
The question of the initial ring in CoCoA-5 came up. There are two proposals to consider:

- **(A)** Right after the banner print a message saying what the current ring is;
- **(B)** start with no current ring, so the user is forced to set it.

Thoughts? Opinions?

History

#1 - 13 Oct 2020 15:13 - John Abbott

I'm not entirely sure how to achieve technically "start with no current ring":

- **(1)** use an extra flag to say no ring has been set
- **(2)** set a "strange" initial ring (*e.g.* ZZ)

#2 - 19 Oct 2020 11:51 - John Abbott

The technically easiest solution would be start with the ring ZZ; while not exactly what was suggested, I suspect that it would work well. We could also use QQ, which also has no indeterminates.

An important point is that such a change would break *backward compatibility*.

We could implement a flag saying which ring to use upon start-up (*i.e.* choosing between ZZ and the current choice, namely QQ[x,y,z])
A possible name for the flag is **--use-QQxyz**.

#3 - 19 Oct 2020 19:59 - John Abbott

- Status changed from New to In Progress

- % Done changed from 0 to 10

A relevant line in the source code is Interpreter.C:1212 which contains:

```
this->setTopLevelVar("R", new RING(NewPolyRing(RingQQ(),symbols("x,y,z"))), VariableSlot::VSF_None);
```

I removed use R from init.cocoa5, and indeed CurrentRing then returns nothing (presumably NULL). I think I'd feel easier with having ZZ or QQ as the initial ring (rather than nothing at all).

#4 - 23 Oct 2020 10:00 - Anna Maria Bigatti

- % Done changed from 10 to 20

I vote for **(A)** Right after the banner print a message saying what the current ring is

Cleanliness would demand having no initial ring, and indeed CoCoALib has no "CurrentRing".

However, for CoCoA5, I much prefer having an initial ring ready available for two reasons.
1. for the beginner: experience says people don't read the manual, especially when using a program for the first time. We don't want to put them off
2. for all those little computations one user (like me) may run on the fly.

I understand that some user might forget to set his ring "R", and then use the predefined "R", leading to unexpected behaviour.

So my suggestion is:

1. leave the initial current ring as is, activated in init.cocoa5
2. give it an awkward/explanatory name, like QQxyz_StartingRing, instead of R
3. possibly, add a flag for those who want CoCoA to start clean (but I'm not in that list!)

#5 - 23 Oct 2020 16:08 - John Abbott

I like Anna's suggestions:

- by default start with the initial ring QQ[x,y,z] (why should it be assigned to a variable?)
- have a start-up flag to say to start without an initial ring
- if we want the initial ring to be in a variable, how about **CoCoAInitialRing**? Or perhaps **CoCoA_Initial_Ring**?

There is an important technical point: currently the initial ring is set by the line **use R;** in the file **init.cocoa5**.
The changes above require that the initial ring be set by C++ code; finding what changes to the code are needed may be non trivial :-/

#6 - 26 Oct 2020 10:15 - John Abbott

Presumably the CoCoA-5 interpreter has a function which performs the command **source**. If this function can accept an istream then we could just create a string containing **"use CoCoAInitialRing;"**, and then pass an istringstream to the code for executing the source command. This is a short-cut (and avoids having to create a special init file).

HINT: relevant part of Interpreter.C seems to be SourceStatement::implExecute(RuntimeEnvironment *runtimeEnv) around line 4030
PS does not look easy to use as I had hoped :-(

#7 - 04 Nov 2021 23:04 - John Abbott

- Target version changed from CoCoA-5.4.0 to CoCoA-5.4.2