CoCoA-5 - Feature #1236

Add "socket" devices

07 Jan 2019 17:59 - John Abbott

Status:	Closed	**Start date:**	07 Jan 2019
Priority:	High	**Due date:**	
Assignee:	John Abbott	**% Done:**	100%
Category:	CoCoA-4 function to be added	**Estimated time:**	9.90 hours
Target version:	CoCoA-5.3.0	**Spent time:**	9.50 hours

Description

Kreuzer wants "socket" devices as in CoCoA-4 so that ApCoCoA can be easily ported to CoCoA-5.

I see two parts:
(1) a function to create a socket device (ought to be easy with BOOST ASIO)
(2) a function to read from a device (previously CoCoA-4 used source).

Related issues:

Related to CoCoA-5 - Support #1240: John's visit Feb 2019	**Closed**	**08 Feb 2019**

History

#1 - 07 Jan 2019 18:04 - John Abbott

I think creating the device should be fairly easy: BOOST ASIO sublibrary already has a nice class
boost::asio::ip::tcp::iostream

Reading from a socket-stream is trickier. In CoCoA-5 the **source** comand can be used only at top-level.
A simple first solution would be to implement something like GetLine which reads a string value.
However we might typically want to read several lines...

#2 - 08 Jan 2019 14:48 - John Abbott

The interpreter has a way of representing OSTREAM but nothing for input-streams or input+output-streams.

Right now I see two approaches:

1. replace OSTREAM by IOSTREAM which decides at run time whether it is IN, OUT or IN+OUT
2. add new classes for ISTREAM and IOSTREAM

The first approach appears to be simpler: just change 1 class, rather than add 2 new classes.
Note that for us a socket is IN+OUT; a file could be any of IN, OUT or IN+OUT (but perhaps
IN+OUT is ill-advised?)

#3 - 13 Feb 2019 15:51 - John Abbott

- Status changed from New to In Progress

- Assignee set to John Abbott

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

- % Done changed from 0 to 20

I have opted for the following design in the first impl:
OpenSocket creates a RECORD with two fields **send** and **recv**.
send has type <out-stream>, while recv has type <in-stream>.

Some simple tests pass. Doc not yet updated. Ange is testing.

#4 - 13 Feb 2019 15:53 - John Abbott

I have used the BOOST "asio" library. On my machine compilation requires the linking flag **-lpthread**

#5 - 14 Feb 2019 14:36 - Anna Maria Bigatti

OK, I'll test it on Mac when you are in Genova

#6 - 15 Mar 2019 15:41 - John Abbott

I have updated the CoCoA-5 manual.

I have modified the code so that OpenSocket returns a record with 4 fields: **send** and **recv** as mentioned above, and **host** and **port** for the hostname and port number respectively (this could be useful during debugging).

At the moment I have not mentioned the fields host and port in the documentation.
Should I? Are these field names good? Perhaps HostName and PortNum are better?

#7 - 15 Mar 2019 17:25 - John Abbott

- Status changed from In Progress to Feedback

- % Done changed from 20 to 90

- Estimated time set to 9.90 h

Anna prefers the longer field names. Code cleaned, and checked-in. Anna will test.
Doc updated.

#8 - 15 Mar 2019 17:27 - John Abbott

- Related to Support #1240: John's visit Feb 2019 added

#9 - 11 Oct 2019 22:06 - John Abbott

It would be good to close this soon.
We should test it on the 3 usual platforms: GNU/Linux seems OK to me, Mac? Microsoft?

#10 - 05 Feb 2020 14:12 - John Abbott

I have made the manual entry better (I hope!)

#11 - 19 Feb 2020 11:43 - John Abbott

- Status changed from Feedback to Closed

- % Done changed from 90 to 100

I have just tested, and slightly modified the manual.
Closing.