

Kepler - Bug #6577

infinite loop resolving port width

07/09/2014 04:06 PM - Daniel Crawl

Status:	Resolved	Start date:	07/09/2014
Priority:	Normal	Due date:	
Assignee:	Daniel Crawl	% Done:	90%
Category:	actors	Estimated time:	0.00 hour
Target version:	2.5.0	Spent time:	0.25 hour
Bugzilla-Id:			

Description

There are several actors whose output port is set to multiport. When this port is connected to a multiport input port, an error occurs when the workflow executes saying that the default port width could not be determined. The error message says that one way to fix this is call `setDefaultPortWidth(1)`. This works if the output port is connected to only one port, but if the output port is connected to more ports, an infinite loop occurs during `preinitialize()`. I'm attaching an example workflow.

History

#1 - 08/12/2015 03:41 PM - Daniel Crawl

I just checked, and this still occurs.

#2 - 08/16/2015 06:39 PM - Daniel Crawl

- *Category set to actors*

- *Assignee set to Christopher Brooks*

I'm reassigning to Christopher since this problem is in Ptolemy. The attached workflow reproduces the problem.

#3 - 08/17/2015 08:56 AM - Christopher Brooks

- *File `MultiportOutHangDuringGetWidth.xml` added*

- *% Done changed from 0 to 20*

I can replicate this in Ptolemy, outside of Kepler.

It seems that the problem has to do with having more than one Display actor connected to a multiport output.

The attached model (`MultiportOutHangDuringGetWidth.xml`) replicates the problem using the Minimum actor, which has a multiport output connected to two Display actors.

The model hangs in `preinitialize()`:

```
at java.util.LinkedList.addAll(LinkedList.java:408)
    at java.util.LinkedList.addAll(LinkedList.java:387)
    at java.util.LinkedList.<init>(LinkedList.java:119)
    at ptolemy.actor.RelationWidthInference.inferWidths(RelationWidthInference.java:338)
)
    at ptolemy.actor.CompositeActor.inferWidths(CompositeActor.java:824)
    at ptolemy.actor.IORelation.getWidth(IORelation.java:325)
    at ptolemy.actor.IOPort._getWidth(IOPort.java:4999)
    at ptolemy.actor.IOPort.getWidth(IOPort.java:1952)
    at ptolemy.actor.IOPort._getReceivers(IOPort.java:4859)
    at ptolemy.actor.IOPort.getReceivers(IOPort.java:1754)
    at ptolemy.actor.IOPort.getInsideReceivers(IOPort.java:1365)
    at ptolemy.domains.sdf.kernel.SDFScheduler._scheduleConnectedActors(SDFScheduler.java:1513)
    at ptolemy.domains.sdf.kernel.SDFScheduler._getSchedule(SDFScheduler.java:585)
    at ptolemy.actor.sched.Scheduler.getSchedule(Scheduler.java:189)
    at ptolemy.domains.sdf.kernel.SDFDirector.createSchedule(SDFDirector.java:408)
    at ptolemy.domains.sdf.kernel.SDFDirector.preinitialize(SDFDirector.java:761)
    at ptolemy.actor.CompositeActor.preinitialize(CompositeActor.java:1820)
```

However, `$PTII/ptolemy/actor/lib/test/auto/MinimumMultiports.xml` does not hang.

It has the Minimum actor connected to Test actors instead of Display.

I tried reverse type inference on my test case, but that did not change anything.

I'll see if I can get Edward's input.

#4 - 09/12/2015 10:05 AM - Christopher Brooks

- Assignee changed from Christopher Brooks to Daniel Crawl

- % Done changed from 20 to 90

I checked a copy of MultiportOutHangDuringGetWidth.xml in to \$PTII/ptolemy/actor/lib/test/auto

I think this is fixed.

I'm redispaching to Dan.

Edward wrote:

--start--

"I found a logic error in the width inference algorithm and have checked in a fix."

"Note that nevertheless one should not be making output ports multiports to accomplish broadcast."

"The ones in the Ptolemy tree that do this are legacy. E.g., Maximum.java says:"

```
/* Note that the output ports need not be multiports since all output
 * channels carry the same data. Using multiports this way is not
 * recommended, so please do not emulate this design in your own actors.
 * Changing this actor to the recommended design would break existing
 * models, so we leave it as is.
 */
```

"Instead of making output ports multiports, model builders should create a relation and fork the output from there."

--end--

#5 - 09/12/2015 12:12 PM - Daniel Crawl

- Status changed from New to Resolved

Fixed!

Files

InfiniteLoop1.xml	26.9 KB	07/09/2014	Daniel Crawl
MultiportOutHangDuringGetWidth.xml	5.07 KB	08/17/2015	Christopher Brooks