

Assignment 5

Addendum: Hierarchical Port Mapping Example,
Conceptual DVD Player

1. SpecC:

A conceptual model of a DVD player is available as part of the System-on-Chip Environment (SCE) installation on the department servers.

(a) Source code: `/opt/sce/examples/parallel/play.sc`

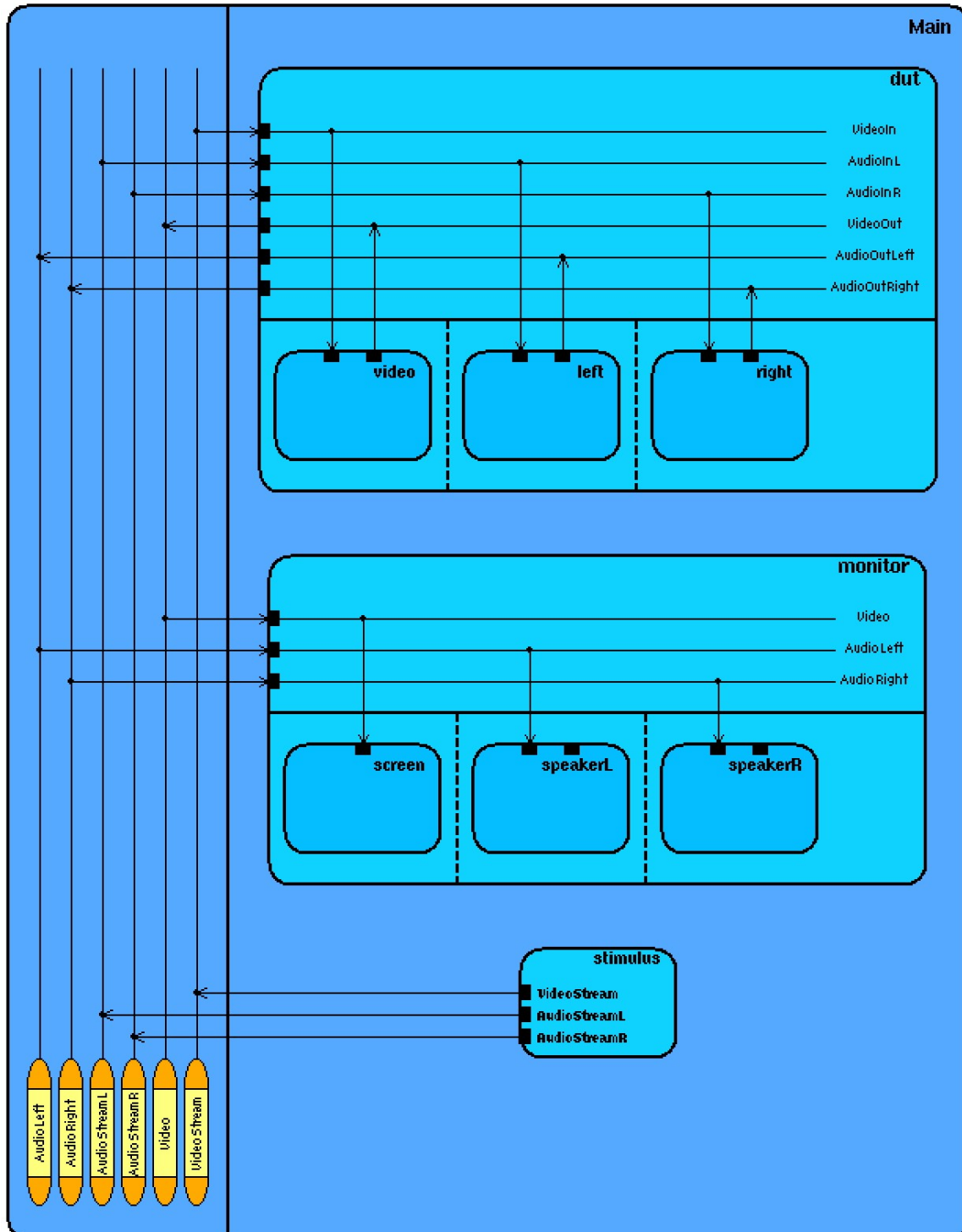
(b) Instance hierarchy:

```
behavior Main
|----- DUT dut
|   |----- AudioCodec left
|   |----- AudioCodec right
|   \----- VideoCodec video
|----- Monitor monitor
|   |----- Display screen
|   |----- Speaker speaker
|   \----- Speaker speaker
|----- Stimulus stimulus
|----- c_data_queue AudioLeft
|----- c_data_queue AudioRight
|----- c_data_queue AudioStreamL
|----- c_data_queue AudioStreamR
|----- c_data_queue Video
\----- c_data_queue VideoStream
```

(c) Script:

```
source /opt/sce/bin/setup.csh
vi /opt/sce/examples/parallel/play.sc
cp /opt/sce/examples/parallel/play.sc .
scc play -sc2sir
scchart play.sir
sir_tree -bt play.sir
```

(d) Hierarchical view with connectivity:



1. SystemC:

A conceptual model of a DVD player is available as part of the Recoding Infrastructure for SystemC (RISC) installation on the department servers.

(a) Source code:

```
/opt/pkg/risc_v0.5.0/examples/demo/play_fifo.cpp
```

(b) Instance hierarchy:

```
::Top top
|
|---- ::Stimulus stimulus
|   |
|   |-sc_fifo_out < long long > VideoStream->
|   |   |-> ::Top top->sc_fifo < long long > VideoStream
|   |
|   |-sc_fifo_out < long long > AudioStreamL->
|   |   |-> ::Top top->sc_fifo < long long > AudioStreamL
|   |
|   |-sc_fifo_out < long long > AudioStreamR->
|   |   |-> ::Top top->sc_fifo < long long > AudioStreamR
|
|---- ::DUT dut
|   |
|   |-sc_fifo_in < long long > VideoIn->
|   |   |-> ::Top top->sc_fifo < long long > VideoStream
|   |
|   |-sc_fifo_in < long long > AudioInL->
|   |   |-> ::Top top->sc_fifo < long long > AudioStreamL
|   |
|   |-sc_fifo_in < long long > AudioInR->
|   |   |-> ::Top top->sc_fifo < long long > AudioStreamR
|   |
|   |-sc_fifo_out < long long > VideoOut->
|   |   |-> ::Top top->sc_fifo < long long > Video
|   |
|   |-sc_fifo_out < long long > AudioOutLeft->
|   |   |-> ::Top top->sc_fifo < long long > AudioLeft
|   |
|   |-sc_fifo_out < long long > AudioOutRight->
|   |   |-> ::Top top->sc_fifo < long long > AudioRight
|   |
|   |---- ::VideoCodec video
|   |   |
|   |   |-sc_fifo_in < long long > p1->
|   |   |   |-> ::Top top->sc_fifo < long long > VideoStream
|   |   |
|   |   |-sc_fifo_out < long long > p2->
|   |   |   |-> ::Top top->sc_fifo < long long > Video
|   |
|   |
```

```

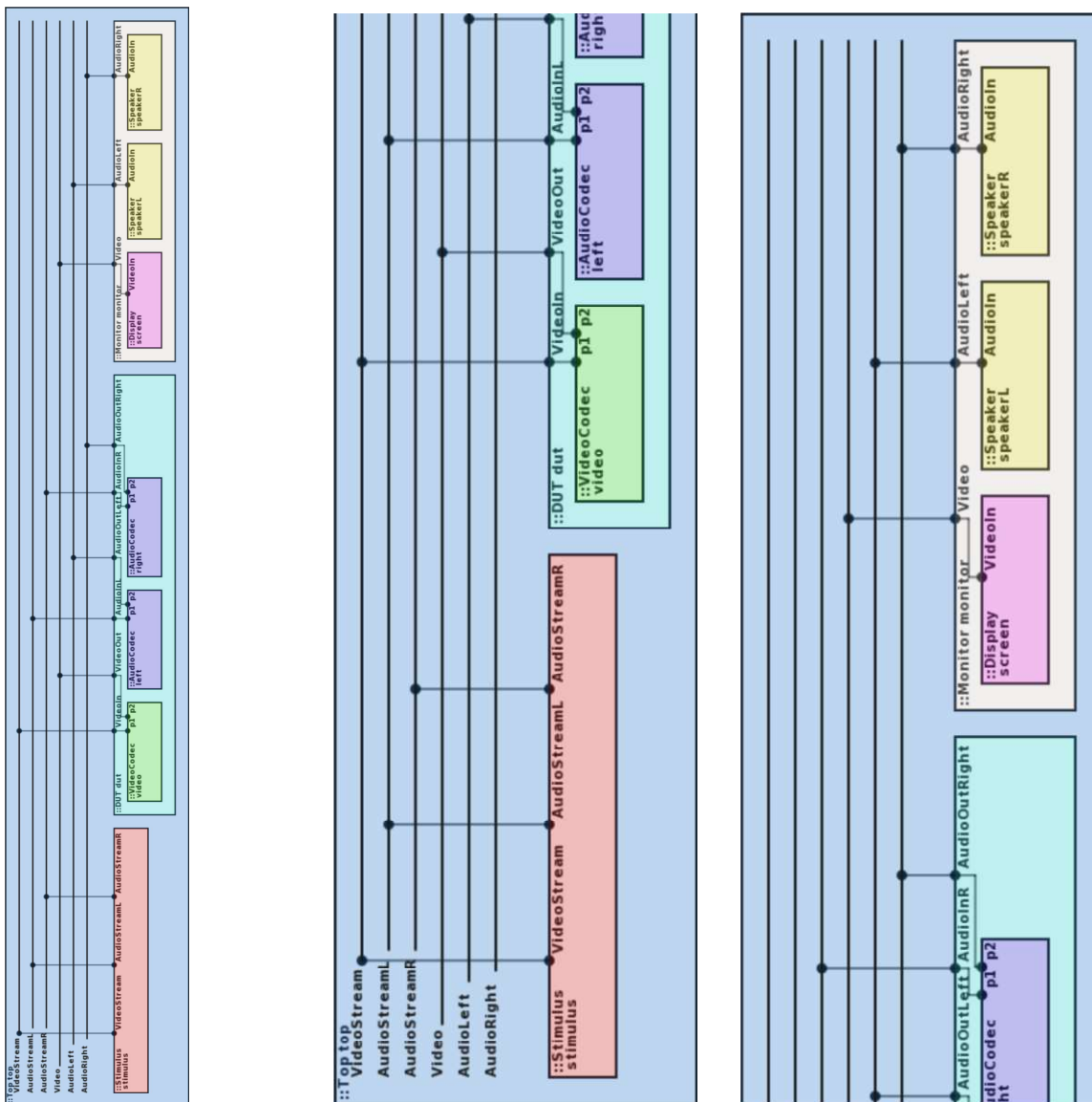
|      |-----long long d
|      |----- ::AudioCodec left
|      |      |
|      |      |-sc_fifo_in < long long > p1->
|      |      |   |-> ::Top top->sc_fifo < long long> AudioStreamL
|      |      |
|      |      |-sc_fifo_out < long long > p2->
|      |      |   |-> ::Top top->sc_fifo < long long > AudioLeft
|      |      |
|      |      |-----long long d
|      |----- ::AudioCodec right
|      |      |
|      |      |-sc_fifo_in < long long > p1->
|      |      |   |-> ::Top top->sc_fifo < long long > AudioStreamR
|      |      |
|      |      |-sc_fifo_out < long long > p2->
|      |      |   |-> ::Top top->sc_fifo < long long > AudioRight
|      |      |
|      |      |-----long long d
|----- ::Monitor monitor
|      |
|      |-sc_fifo_in < long long > Video->
|      |   |-> ::Top top->sc_fifo < long long > Video
|
|      |-sc_fifo_in < long long > AudioLeft->
|      |   |-> ::Top top->sc_fifo < long long > AudioLeft
|
|      |-sc_fifo_in < long long > AudioRight->
|      |   |-> ::Top top->sc_fifo < long long > AudioRight
|
|----- ::Display screen
|      |
|      |      |-sc_fifo_in < long long > VideoIn->
|      |      |   |-> ::Top top->sc_fifo < long long > Video
|
|----- ::Speaker speakerL
|      |
|      |      |-sc_fifo_in < long long > AudioIn->
|      |      |   |-> ::Top top->sc_fifo < long long > AudioLeft
|      |      |
|      |      |-----char Channel
|
|----- ::Speaker speakerR
|      |
|      |      |-sc_fifo_in < long long > AudioIn->
|      |      |   |-> ::Top top->sc_fifo < long long > AudioRight
|      |      |
|      |      |-----char Channel

```

(c) Script:

```
source /opt/pkg/risc_v0.5.0/bin/setup.csh
vi $RISC_HOME/examples/demo/play_fifo.cpp
cp $RISC_HOME/examples/demo/play_fifo.cpp .
tree play_fifo.cpp
visual play_fifo.cpp
```

(d) Hierarchical view with connectivity (full view, 2 cropped views):



For any technical questions, please use the course message board.

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