EECS 222C
System-on-Chip Software Synthesis
Spring 2013

Assignment 4

Posted: May 3, 2013
Due: May 10, 2013 at 12pm (noon)

Topic: Study the MP3 Decoder model in SCE

1. Setup:

As before, login to one of the Linux hosts:

```
gamma.eecs.uci.edu
omicron.eecs.uci.edu
```

We will continue to use the MP3 decoder model in your **hw3** directory, but for submission purposes, we will create a symbolic link **hw4** that points to **hw3**, as follows:

```
ln –s hw3 hw4
cd hw4
```

We will use the System-on-Chip Environment SCE version 2010. Run the setup script, as follows:

```
source /opt/sce-20100908/bin/setup.csh
```

To avoid incompatibility problems with other SCE versions, delete the **.sce** directory in your home directory before starting SCE:

```
rm –rf ~/.sce
sce &
```

To use SCE on your MP3 Audio Decoder model, create a proper SCE project file with the needed settings, as follows:

- **Project->New**
- **Project->Settings**
  - Set include path to "**.**" (current directory)
  - Set libraries to "**-xl huffman.o**"
  - Set both verbosity and warning level to 2
  - In the Simulator tab, set the simulation command as follows (in a single line!):

```
./%e testStream/spot1_3K.mp3 spot1_3K.pcm &&
diff reference/spot1_3K.pcm spot1_3K.pcm
```

- **Project->SaveAs "mp3.sce"**

Next, you can load, compile and simulate your MP3 Audio Decoder model in SCE, as follows:

- **File->Import "testbench.sc"**
- **Project->AddDesign**
- Right-click on **testbench.sir** in the project window, and **Rename** the model to **Spec**
- **Validation->Compile**
- **Validation->Simulate**

2. Task A: Study the MP3 Decoder Model in SCE

Browse the hierarchy of the model and display its structural hierarchy:

- Select a behavior in the behavior hierarchy browser
- Right-click on a behavior and select **Chart**
- Double-click to add a level of hierarchy (or use the menu)
- **View->Connectivity**
- **…**

As deliverable for this assignment, create and submit the structural hierarchy charts for the Synthesis Filter and the Channel Decoding, as follows:

- Select the **Synth_Full** behavior in the hierarchy browser
- Right-click and select **Chart**
- Add all available levels of hierarchy, but no connectivity
- **Window->Print…** in color (!) to file **Chart_SynthFull.ps**
- Select the **III_decode_channels** behavior in the hierarchy browser
- Add all available levels of hierarchy, including connectivity
- **Window->Print…** in color (!) to file **Chart_DecodeChannels.ps**

For submission, convert the generated PostScript files to PDF and make them readable for the submission script:

```
ps2pdf Chart_SynthFull.ps
chmod 644 Chart_SynthFull.pdf
ps2pdf Chart_DecodeChannels.ps
chmod 644 Chart_DecodeChannels.pdf
```

Use exactly these filenames, otherwise you can't submit.

3. Submission:

For this assignment, submit the following deliverables:

`Chart_SynthFull.pdf`
`Chart_DecodeChannels.pdf`

Both files should be placed in your **`hw4`** directory. In its parent directory, enter **`turnin`**.

As in the previous assignments, the **`turnin`** command will locate the deliverables and allow you to submit them *before the deadline.*

Again, you can submit at any time before the deadline, *but not after!* You can also submit as many times as you want. Newer submissions will overwrite older ones.

Late submissions will not be accepted!

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