Out: December 2nd, 2016
Due: December 8th, 2016

Goal

To gain experience writing constrained-random tests, moving beyond directed testing to take advantage of a testbench with automated protocol checking, monitoring, and functional coverage. Randomized tests can be employed when the automated monitors have been built to eliminate the need to review waveforms after every test.

Procedure

1. Extract the included PDM testbench project to a working folder. This project is essentially the PDM testbench of lab 6 with the module component completed and working (and encrypted ☺). The project includes the familiar compile_all.do script for compiling all DUT and testbench files, and the run_rand_test.do script for running the randomized test that you will be writing for this assignment.

2. Add random stimulus generation to tests/rand_test.sv. Follow the "TO DO" comments as a guide to the specific code to write. Use the randomization lecture notes as well as the rand_test in the SBIU Phase 2b testbench for reference.

3. Ensure that your rand_test compiles, then run it until all of the random packages from the randsequence block have been driven completely through the PDM. Review the stimulus that was driven by looking at the transaction records printed by the monitors and confirm that your randomization constraints are working as expected.

4. View the collected functional coverage in the Cover Groups browswer (View -> Coverage -> Covergroups). Take note of how the monitors have provided you with the assurance that there were no functional errors during the test, and that the functional coverage provides a record of what was actually tested even though you didn't know what stimulus to expect up front due to the randomization.

   With a complete testbench a verifier is able to finish his or her project by focusing on writing and running the tests that will bring functional coverage as close to 100% as possible.

Deliverable

Completed copy of the rand_test.sv file. Include your name, NSID, and student number in the filename, and email to the course marker Mehedi Hasan (mehedi.hasan@usask.ca) by midnight on December 8th.