Setting up Matlab’s HDL Verifier for ModelSim Verification for Log. This example will be based on fxpt\_log\_compute\_debug\_W32F28.vhd that returns the xi, yi updates at each clock cycle.

Steps

1. Run v = fxpt\_log\_vhdl\_code\_gen\_debug(W,F) with W=32, F=30   
     
   This creates: fxpt\_log\_compute\_W32F28.vhd  
    fxpt\_log\_ROM\_b\_coef\_W32F28.vhd  
    fxpt\_log\_ROM\_lnb\_coef\_W32F28.vhd

In the directory \fxpt\_math\fxpt\_log\source\_code\vhdl

1.5 change directory to the verification directory which is where cosimWizard puts all the ModelSim related files.

1. Run cosimWizard
   1. In Cosimulation Type panel select
      1. HDL cosimulation with: MATLAB System Object
      2. HDL Simulator: ModelSim
      3. Select Use the HDL simulator executables at the following location: D:\modeltech64\_10.5c\win64
      4. Click Next
   2. In HDL Files panel Add the three VHDL files created in step 1 and click Next.
   3. No changes are needed to the compilation commands so click next. Fix any compilation errors that come up.
   4. In the Simulation Options panel select
      1. Name of HDL module to cosimulate with: fxpt\_log\_compute\_W32F28.vhd (which is the top level)
      2. Connection method: Socket
      3. Click Next
   5. In the Input/Output Ports panel accept defaults and Click Next.
   6. In the Output Port Details change the done port to unsigned and Click Next.
   7. In the Clock/Reset Details accept defaults and Click Next.
   8. In the Start Time Alignment accept defaults and Click Next.
   9. In the System Obj. Generation accept defaults and Click Finish.  
        
      You may see Warning: Unsupported version of HDL simulator '10.5', which can be ignored (at least for what I’ve seen so far).  
        
      cosimWizard creates:  
        
      launch\_hdl\_simulator\_fxpt\_log\_compute\_w32f28.m  
      hdlcosim\_fxpt\_log\_compute\_debug\_w26f24.m  
      compile\_hdl\_design\_fxpt\_log\_compute\_debug\_w26f24.m (Note: run this file when you change vhdl code to update what ModelSim sees. However, if you change the entity ports, you need to rerun cosimWizard).
2. Run launch\_hdl\_simulator\_fxpt\_log\_compute\_w32f30.m to start ModelSim.
3. In fxpt\_log\_vhdl\_verification\_tb.m update the system object creation so that hdlcosim\_fxpt\_log\_compute\_w32f30.m is called appropriately, i.e. line ~12:  
   fxpt\_log\_hdl = hdlcosim\_fxpt\_log\_compute\_w32f30;  
   This will need to change to reflect the code generated files if W,F change.   
     
   Make sure this file is modified to reflect the inputs and outputs that the entity has.
4. Run fxpt\_log\_vhdl\_verification\_tb.m to perform the verification.

Matlab/ModelSim tips:

1. Opening up ModelSim multiple times or having entity port mismatches can crash/hang ModelSim. If this happens (assuming Windows OS), open the Windows task manager and delete the ModelSim task (and Matlab if Matlab has frozen)
   1. Tasks to delete via task manager
      1. Under Applications: ModelSim
      2. Under Processes: vsimk.exe
   2. Files to delete (in working directory): vsim.wlf  
      # \*\* Warning: (vsim-WLF-5000) WLF file currently in use: vsim.wlf  
      # \*\* Warning: (vsim-WLF-5001) Could not open WLF file: vsim.wlf
   3. If you keep having problems, rerun cosimWizard.
2. Click the restart button in ModelSim (to the left of run length window) before each Matlab simulation run. Otherwise the simulation just gets appended to the waveform window in ModelSim.
3. If you add new signals in your VHDL code and you run: compile\_hdl\_design\_fxpt\_log\_compute\_w32f30.m   
   you need to shut down modelSim and relaunch with:  
   launch\_hdl\_simulator\_fxpt\_log\_compute\_w32f30.m  
   otherwise the signals will not show up.