Some Verilog stuff for Java coders

Jan 2014 - NOTE12: Verilog notes for software developers

For our purposes (combinational logic), my fave really quick Verilog overview is here:

lyle.smu.edu/~lli/cse3381_session14.pdf

Some differences between Java and Verilog:

Description	Java	Verilog
Execution	Statements executed in order	Events travel through a network of logic gate connections
Instantiation	Java methods are called and then return	Each use of a Verilog module is unique and named. `xor U7( OUT, IN1, IN2);`
Testing	There are many ways to test (or not) a Java program	Verilog test benches are very specialized and specify input waveforms for your test. Output can be printed or viewed in a graphical waveform viewer like gtkwave.

Physical delay	The delay of a method is how long it takes to execute	The delay of a module instance can be specified using "#"
		`and #10 u1( );`
		
		Also, you can specify the units of delays using the timescale directive before your module.
		`'timescale 1ns/1ns`

Levels	Java is pretty much Java	There are 3 distinct levels in Verilog: gates/ boolean logic, Register-transfer level, and behavioral. We will focus only on the first level, logic.

Just for CSC 220

Our Verilog naming standards will be:

- For module XXX, name your file `XXX.v`
- Place test bench for module XXX in file `XXX_tb.v`
- Save simulation results (`$dumpfile`) for module XXX in file `XXX.vcd`
- ALL CAPS for port names, ex: `module( A, B, OUT);`

- Lower case for other names, ex: `and u1( w7, w1, w2);`
- Separate words with an underscore, ex: `output_enable`

Other things just for our class:

- Let's use nanoseconds as our time unit: `` `timescale 1ns/1ns ``
- My examples and template Verilog files (design and test bench) are available on the k: drive, `program2` folder.

Copy/print/capture your simulation results - I had trouble with File/Print in gtkwave. So, In your gtkwave window... Zoom out to see your entire simulation. Press <alt> PrintScreen. Copy (control-V) the image into a text editor like Word or Google docs.