

Precision Synthesis

Precision is the Mentor Graphics tool that will allow us to take our verilog modules written in ModelSim and synthesize the code down to hardware. Specifically precision is used when targeting FPGA's, rather than standard cells. To compile a verilog module follow the following procedure:

Start Precision

- Login to a machine
- Open a terminal
- **source /opt/und/mentor/.prerc**
- **precision&**

Create a Project

- Click on the new Project button
- Select a path and create the project

Add Input File

- Under the design tab click **Add Input Files**
- Select your verilog module and click **OK**

Setup Design

- Now that we've added the design we want to target a specific technology
- Under the design tab click **Setup Design**
- Click on the **Xilinx** section of the **Technology** window
- Select a device, for this class use a **SPARTAN 2** device, click **OK**

Compile

- Under the design tab click on **compile**, this will compile your design and create the RTL schematic
- If you have errors check the transcript tab at the bottom to see what they are and fix them

Synthesize

- Again under the design tab click on **Synthesize**
- If you have no errors your design should now be synthesized for the Spartan 2 device and a Technology schematic will have been created

Viewing your schematics

- Two types of schematics are created when using Precision
- **RTL schematic** is the traditional gate level schematic that you will easily recognize
- **Technology schematic** is what the design will look like in the FPGA you selected, with the necessary LUT's and buffers.
- To view your schematics under the output files folder for your project (in the design center tab) there will be icons for both RTL and Technology schematics, select your choice and view

Saving your schematic

- To save your schematic you will need to print it using the print icon at the top left of the program.
- You may want to print to file, this saves a .prn file that can be turned into a image file by using the program gimp. In your terminal type **gimp file_name.prn**
- You should now have an image editing program up, save your schematic as a normal image format (bmp, jpeg...)

**Note: for homework generally it is almost always the RTL schematic that we want, so make sure you turn in the correct one.