

Lessons Learned from Project

The CPU design project was very worthwhile, allowing us to explore several aspects of modern computer architecture and design. Through the design and implementation of our CPU, we were able to study in great detail not only CPU design but also VHDL, use of CAD tools, as well as FPGA hardware. The experience gained in each of the aforementioned areas will be of great use in the job market. We were satisfied with the manner in which we went about our design and implementation. Some things we might have liked to have covered in the project but did not have time for are pipelining, a complete arithmetic instruction set including multiply and divide and incorporation of floating point arithmetic. The main point of advice we would like to extend to those attempting the project in the future is to manage time wisely and not allow project work to pile up. In addition, remembrance of the VHDL design principles learned in ELEC 4200 is key to the success of the project. Take great care to learn and understand proper VHDL design principles before attempting the project. It might also be of great benefit to build the Control Unit before or at the same time as the datapath, in order to simulate and verify the datapath in an easier way than using force files to verify each individual instruction. Taking the time to become accustomed with the Altera board earlier in the semester might also prove to be beneficial when it is time to implement the design on the board.