**What did we learn from this project?**

While doing this project we learned many different things. This project allowed us to demonstrate our knowledge over an entire processor system. We designed everything from the ISA of our processor to the hardware implementation. By going through each step of the design process we were able to become familiar with many different aspects of processor design and optimization. In order to come up with a working design it was necessary to have a well thought out plan that will work in all aspects, otherwise the processor would not be functional. We learned how to design and implement an ISA, datapath, and control unit. Once we had successfully tested and implemented the design for each of these components, we were able to combine them together using VHDL in order to program them into an FPGA. We then mapped the pins of the FPGA to appropriate components in order to visually display information to the user. Once we had successfully tested our working processor we implemented another components to the processor that would allow use to display the current instruction being executed on the LCD screen provided on the FPGA. In order to do this we had to become familiar with the screen operating signals and decode the current instruction to send the appropriate signals to the screen. We were ultimately able to come up with a working component for the LCD and able to successfully combine it with our processor.

**What would we do differently next time?**

If we were to do a similar project again we would have a more carefully thought out plan for each stage of the design process. It was difficult to have a big picture view of the entire processor design when we began the project so we did not have a plan that was as carefully thought out as we would have liked. We more or less dove head first into design and hoped for the best. With design revisions along the way we were able to complete a working design in the end. With the knowledge we have now it would be much easier to see the big picture plan when designing the processor, but from the upstart it was difficult.

**What is our advice to someone who is going to work on a similar project?**

Our advice to someone working on a similar project would be to stick to a simple design that will not be too difficult to implement. It will make the project go much smoother if you start with a simple design and make it operation. From this point you can then make tweaks and changes as necessary in order to optimize your unit. This will prevent someone from getting in over their head and becoming too confused.