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Final Project Reflection

Even though we didn’t get everything working properly I really really enjoyed working on this final project and I got to learn so much from it. I learned to build my own assembly language and specify how to format those assembly instructions into 16-bit hexadecimal code. I really liked the experience of building my own assembler from scratch and learning how to make it assemble my assembly code into hex code. Having to design and program my own microprocessor was fairly difficult but it was fun to understand how a microprocessor works. I copied a lot of code from the MIPS 3 assignment but having to change a lot of stuff from it really forced me to understand how the MIPS processor was working and how microprocessors in general work.

Coding the assembler in Python went well (after we already designed our language). That turned out easier than expected. Tying the I/O to the board went well as well, we just didn’t have enough time to do much with it. Assembling the instructions to hex was easy and getting the arithmetic instructions to work on the processor went fairly well.

There were a lot of challenges throughout the project. It was slightly challenging to design our own assembly language and trying to make sure everything would work properly later while working on the processor. Understanding the MIPS processor wiring in detail was a little challenging when working to code our processor, and getting the instructions to work properly and debugging the simulation was the most challenging part of the project. Rewiring the ports for the I/O components was slightly challenging as well. There were a lot of challenges but honestly they were fun to deal with.

We worked together on the project and explained what we were doing to each other so that we were learning everything. We could have attended class more and started the project earlier.