**CPU Project Report**

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**(a) What I you learn from this project?**

From this project, I learned the whole process of designing a CPU, and get more insightful views on computer architecture. We began this project by creating its ISA, and this help me to further realize the relationship among instruction, C code and machine code. Then, by drawing data-path made me have more feeling about how machine code pass through from those logical paths and finally carry out results. The design of control unit is more helpful for me to learn this course, since it reveal the logical level design, and make previous data-path drawing have more sense. After verifying the design by VHDL code and further on FPGA board, I gain some knowledge about implementation for the CPU design.

**(b) What would you do differently next time?**

If I have chance to redo the project, I would like to further figure out the relationship between code and hardware first. Since during the implementation phase, I found that the success in the code does not necessarily mean success on final board, and there're lots of unrealized issues, like delay cell and critical path. Therefore, to realize those issues can be more helpful for me rather than design a new architecture. However, there does have some architecture like superscalar is attracting to me for his reorder mechanism and worth trying.

**(c) What is your advice to someone who is going to work on a similar project?**

In my personal view, the most important advice for those future students is that choosing the most comfortable structure to handle, since more complicated doesn't mean more helpful, and sometimes it also means confusing. The goal for the project is to understand computer architecture with supplementary from lectures, therefore thinking deeply of those simple questions which you are curious about is more meaningful for the future use. No matter what architecture is decided to be done, pipe line or single circle, it's always good to fully understand every step which is going to be implemented.