Computer Architecture Essay

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One of the more surprising assignments I have done in a computer science class was writing an essay describing the subject of what Computer Architecture is. This assignment gave me one of the few opportunities in the computer science curriculum to develop my writing and communication skills. Scott Overholser, the professor of the class, told us how important it was to be able to communicate technical details of your job to people who don’t have the same background knowledge that you do, and that being able to write technical reports is important in any kind of software development career. I had thought that we would have to implement a hardware project and write code to make the hardware perform a specific function, since many of the labs involved running a program on the Stelaris Launchpad. The essay I wrote was broken into several paragraphs discussing and reflecting on what I had learned throughout the whole course. While I have had final projects and exams to demonstrate my knowledge of previous computer science courses, I never had to write an essay about my experiences in what I had learned. This was one of the few times where I have actually had to reflect on what the class was about. With many of the finals I have take here, I often go in for two hours, complete a set of problems, and then I move on with only programs and written assignments as reminders of what I did or learned in a class. This essay gave me a chance to demonstrate a big picture view of Computer Architecture and prove that I can communicate technical ideas to people without technical backgrounds.

Computer Architecture taught me about how hardware operates a program as well as how various systems work together. In the essay, I talked about how various labs introduced components of the hardware like the processor, and how they used registers and stacks to perform various functions. After each lab, we would write a lab report where we would report our observations and reflect on what was actually happening as opposed to just answering a few questions. When I wrote the essay, I looked back through the textbook, lab reports, homework assignments, and many other sources to remember what I had learned over this semester. The essay made me realize that Computer Architecture is perhaps the only class where students get to interact with hardware and learn about how software interacts with the various components inside a computer. The essay also reflects on how having an understanding of the hardware of any computer can make a programmer write better software, as anyone can program but could write code that does not address hardware limitations or capabilities. The essay also described assembly language, which is how the computer interprets programs written in languages like C, Java, or Python. The labs often have us look at different views to see what’s happening when we step through various lines of code, and the instructions we see are often in assembly language. Writing essays is something that almost never happens in most computer science classes, and as important as it is to be able to write programs and know many theoretical aspects of software and hardware design and implementation, effective communications skills are also valuable in the real world, as many people I will work with won’t understand or care about the technical aspects of software that I am working on.