Axiomatic Semantics

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As you know, we did not follow Louden for axiomatic semantics. Louden takes a unique approach that starts out with what most others do as part 2 of axiomatic semantics de-emphasizing correctness proofs and proof outlines, while I decided to take a more traditional approach. Although I think you are better off by just following the lecture (and doing a lot of practice problems) instead of looking for a reference, people often think they need a written reference; thus, I referred you to Chapter 3 of Apt & Olderog's excellent book titled "Verification of Sequential and Concurrent Programs", available in electronic form through the GC library. However, I emphasize that you really only need to understand the lecture.

The lecture is based on Louden's toy language, while A&O's is different; thus, I have listed some of the differences below. But again, I want to emphasize that you can learn just as well by practicing some examples and understanding exactly how they follow from the Hoare rules.

1. Louden's toy programming language does not include booleans, and we thus handle the conditions for selection and iteration statements differently.
2. A & O uses the notation $p[u := t]$ to indicate substitution in states, while we used the notation $p[t\backslash u]$. Our notation was Hoare's original notation and is also the most common notation. I also prefer our notation since it doesn't look like a programming language token (which it has nothing to do with, of course).
3. In an earlier chapter, A& O define the assertion language along with a precedence order of operators. We were less formal and simply said that the assertion language was FOL+math. For any examples we talk about, the two are the same.
4. A & O do some other things (total correctness, completeness, etc.) that we did not do.
5. We did not do the operational and denotational semantics parts of the chapter.

Feel free to use Apt & Olderog to help you learn axiomatic semantics (if it helps), as long as you are aware of the differences (and any others that I might not have listed above). However, you are required to use our syntax and toy language for the course and the qualifiers.