

# 1 Comments and Suggestions

- I thought that each section within the chapter seemed a little disconnected from the previous. This is probably unavoidable as each section deals with very different problems. However, I think there should be a brief sentence or two at the end of each section, introducing the next section so that the reader can follow the structure of the chapter.
- I think there should be a hint for Exercise 5.1.3 to inform the reader on which graph problem to reduce from. I had difficulty trying to reduce from 3-colorability. In the homework, I solved the problem by reducing from Exact Cover, but Exact Cover is not mentioned in this chapter. Adding to that, I think it would be useful to mention Exact Cover briefly along with vertex cover, or give it as another exercise problem.
- As opposed to the previous chapter, this chapter involves several differently structured graph problems that are all NP-complete. Personally, I often find myself wasting a lot of time (in Homeworks) trying to reduce directly from the wrong graph problem, which can get difficult. I think it would be useful to include a very brief discussion/list of the sort of problems that each of Hamiltonian Cycle, Vertex Cover, k-coloring, and ordering can be easily reduced to (e.g. perhaps some of Garey and Johnson's graph theory problems). This way it improves the reader's understanding of how to use them as tools in hardness proofs.
- In the beginning of section 5.3, the steps to reduce the Flood-it game are described, but the flood-it game itself is not defined till 5.3.2. Without an idea of what the flood-it game is, it was hard to see why we cared about the RSCS problem until much later. I think there are two ways to structure this that could be better:
  1. Move the definition of flood-it in 5.3.2 to the beginning of section 5.3, then outline the steps to reduce the Flood-it game (i.e. currently page 149), then define the SCS and RSCS problem (5.3.1), and finally complete the reduction proof.
  2. Create a separate section before 5.3 (before mentioning the flood-it game) for the SCS and RSCS problems alone. Reference these problems in the Flood-it section that comes after.