DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

6.033—Computer System Engineering   Handout 2—February 7, 1995

ASSIGNMENT: February 8 through February 14

Each week you can expect to find an assignment like this one on the 6.033 home page on the Web, telling you what you should read over the course of the following week. Occasionally we will be organized enough to predict the readings a few days beyond the next Tuesday. Numbered readings, such as "reading #2" refer to materials in the packet of materials that you pick up from the EECS Instrument Room (38-501).

Each week you are expected to complete a reading report. The reading report is a short (one page) written report due at the beginning of every Tuesday recitation. The topic to be addressed in the report will be indicated on the previous week's assignment sheet as above. In recitation you should expect to talk about the whole paper, not just the particular point of the writing assignment.

For Lecture: Wednesday, February 8

Read Saltzer, Chapter 1 (reading #2), and begin reading the paper by Simon, The Architecture of Complexity (reading #3).

For Recitation: Thursday, February 9

Get on-line and find the 6.033 handouts on the Web. We are on the brink of a revolution in publishing. We expect that electronic publishing (as opposed to paper distribution) will happen in the next decade. To be part of this revolution and to experiment with it, 6.033 will attempt to avoid paper publishing and publish all handouts electronically. We will attempt to provide each handout in a form that can be read by any Web browser. We expect you to check the 6.033 home page regularly, since all assignments and the last breaking news will disseminated through the Web. For information about on-line browsing see Handout 1.

Finish reading Simon, The Architecture of Complexity (reading #3). Simon discusses the power of hierarchy using an astonishing variety of examples from many fields. As a personal exercise, after reading the paper, you may want to identify two examples of the use of hierarchy in Project Athena, and understand how hierarchy provided significant leverage or advantage.

In addition, read the Corbató paper (reading #4). This paper discusses building ambitious computer systems. Like in many complex systems, some surprises showed up in the systems that are discussed in this paper. As a personal exercise, identify some of these surprises.

For Lecture, Friday, February 10

This lecture is provided by the staff of the writing program, and is intended to help you do a better job on the one-page reports due on Tuesdays. In preparation for this lecture, read Gopen and Swan, The Science of Scientific Writing (reading #5).

For Lecture, Monday, February 13

Read Saltzer, Chapter 2 (reading #6).

For Recitation, Tuesday, February 14

Read the Levenson paper (reading #7) and write a one-page reading report that addresses the following question. Therac-20 killed far fewer people than did Therac-25, though its software contained some of the same flaws. What was responsible for the difference? How would you describe this difference in terms of Saltzer's "techniques for coping with complexity" (reading #2)? Submit the reading report in your section.

For section also read the Lampson paper (reading #8). The Lampson paper discusses a number of practical hints for designing computer systems. As a personal exercise you can compare Lampson's hints with Saltzer's techniques for coping with complexity. Don't worry if you do not fully understand this paper yet; it will be assigned again at the end of the term.

System aphorism of the week: There is no such thing as a small change in a large system.