M.I.T. DEPARTMENT OF EECS

6.033 - Computer System Engineering **Handout 12 - March 12, 1998**

Assignment 6: March 12 through March 31

For Recitation, Thursday, March 12 (DNS)

Read "Development of the Domain Name System" by Mockapetris and Dunlap (#19). While reading the paper, think about such things as reliability and scalability, and to what extent the original designers addressed these issues. You might also have fun playing with the 'dig' and 'nslookup' programs on Athena. To use 'dig', you must 'add watchmaker' first. You should use 'man dig' and 'man nslookup' to understand how the two programs work.

Special Lecture, Friday, March 13 (Writing A Good Paper)

This is a special lecture to teach you how to write a paper. Since the paper on the design project is due next week, this lecture can help you greatly in writing your paper.

For Lecture, Monday, March 16 (Naming Networks)

This is the second and last lecture on naming.

For Recitation, Tuesday, March 17 (Semantic File Systems)

Read "Semantic file systems" by Gifford et al. (#20) This paper offers a very powerful way of naming files. Is the usefulness of a semantic file system restricted to shell scripts and commands, where the user is available to interactively examine the consequence? Alternately, is there a real use for this feature in writing C programs? How might caching be used to shorten the time needed to generate a virtual directory lookup?

Since your design project is due on Thursday, there will be no written assignment for today. Please use the extra time to write excellent papers!

For Lecture, Wednesday, March 18 (Security)

Today we start a new topic in 6.033: security. As an introduction to security, we will first discuss privacy and security in society. To get prepared, read "Teaching students about responsible use of computers", by Lerman et al. (#22). (The journal incorrectly showed Saltzer as the sole author.) Also read the very enlightening Social Security FAQ.

For Recitation, Thursday, March 19 (Cryptosystems)

Design Project 1 is due today in recitation. The official policy on late papers is as follows: for each recitation that you wait to turn in the paper, you lose one full letter grade on the paper. So if you turn in the paper by the Tuesday after Spring Break, you are graded normally and then one full letter grade is subtracted. If you wait until the Thursday after Spring Break, then two full letter grades are subtracted.

If you want us to forward your paper to the Phase II committee, please indicate so in the top, right corner of your first page. Note that you need to receive a B or better in order to qualify for Phase II. Downgrading due to lateness will not disqualify your paper from forwarding to Phase II (e.g., if you turn in your paper on Monday after Spring break and receive a B downgraded to a C, your paper still qualifies for Phase II review).

For recitation, read Anderson's "Why cryptoystems fail" (#24). It is pretty easy reading, but read it with care; the author provides many interesting examples and insights. According to "6.033 At A Glance" this reading is assigned for after Spring break, but we are rearranging the schedule a little bit so that we have more time to prepare the readings with latest developments on mobile code and active networks.

Spring Break, Monday, March 23 - March 27 (Fun)

At this point we start a new topic in 6.033: ***Fun***. We will learn how to have fun skiing, biking, partying, visiting friends and family, etc. At the end of the week, share with us the insights you had on the relationship between fun and 6.033.

We recommend that you read Spafford's "Crisis and aftermath" (#21). It is a very interesting and entertaining security reading; it reports the events around the Internet worm constructed by Robert Morris in 1988. This worm brought large parts of the Internet down and led to a flurry of articles in the national newspapers discussing its ethical and social implications. Morris was fined over $10,000, sentenced to 400 hours of community service, and placed on probation for 3 years. Some people think this punishment was too light, others think it was too heavy. What do you think?

For Lecture, Monday, March 30 (Authentication)

In preparation for this lecture, read the first section of "The protection of information in computer systems" by Saltzer and Schroeder (#25).

For Recitation, Tuesday, March 31 (Kerberos)

Read Miller et al., "Kerberos authentication and authorization system" (#23). This is an important paper, so read it with care. Try to understand the protocols and the line of reasoning behind them. Your one-page reading report should address the following issue:

> Kerberos relies on loosely synchronized clocks for its operation. Discuss a major advantage and a major disadvantage of this design decision (don't hesitate to dive into the details of Kerberos in order to get the insight for this question).

System aphorism of the week

Engineering is the art of modeling materials we do not wholly understand, into shapes we cannot precisely analyse so as to withstand forces we cannot properly assess, in such a way that the public has no reason to suspect the extent of our ignorance. (Dr. A. R. Dykes, British Institution of Structural

Engineers, 1976)
