CS 4803 CNS: Computer and Network Security March 28, 2006

Homework 3

Lecturer: Sasha Boldyreva Due: April 6, 2006

Recommended reading is Chapters 4-5 from P&P.

Problem 3.1, 10 points. Consider an access control matrix for managing access to files associated with a course.

	assignment files	scores file	exam file
Professor	Read	Read / Write	Read / Write
Teaching Assistant (TA)	Read	Read / Write	–
Enrolled Students	Read / Write	–	–
Other users	–	–	–

Show how the specified access rights can be enforced in a UNIX system that supports ACLs where each user is a member of a group, and access can be given to an individual user, group and the public.

You need to learn about and use UNIX commands chmod, chgrp, chown.

Problem 3.2, 6 points.

Can a user cleared for $\langle$ *secret*; {password, cryptogram, proxy} $\rangle$ have access to documents classified in each of the following ways under the military security model?

1. $\langle$ top secret; {password} $\rangle$
2. $\langle$ secret; {password} $\rangle$
3. $\langle$ secret; {password, cryptoanalysis} $\rangle$
4. $\langle$ secret; {cryptoanalysis} $\rangle$
5. $\langle$ confidential; {proxy, cryptogram, password} $\rangle$
6. $\langle$ confidential; {cryptoanalysis} $\rangle$

Problem 3.3, 6 points. According to the Bell-LaPadula model, what restrictions are placed on the two active subjects that wish to send and receive messages to each other? Justify your answer.

Problem 3.4, 10 points. Learn about the design of a trusted Linux OS from `http://www.hpl.hp.com/research/papers/Dalton.ACM.pdf` According to the criteria defined in the Orange Book for rating trusted computing systems, in what division/class would you place the trusted Linux from HP Labs? Justify your answer.