

Homework 3

Due Date: March 6, 2009

Points: 100

Questions

- (25 points) Devise an algorithm that generates an access control matrix A for any given history matrix H of the Chinese Wall model. (*text*, problem 7.1)
- (25 points) Consider the systems Louie and Dewey in Section 8.2.4.
 - Suppose the sends and receives for the buffers are non-blocking. Is the composition of Hughie, Dewey, and Louie still noninterference-secure? Justify your answer.
 - Suppose all buffers are unbounded. Is the composition of Hughie, Dewey, and Louie still noninterference-secure? Justify your answer.(*text*, problem 8.3)
- (25 points) Suppose the composite machine *catdog* (see Section 8.4.1) emits the same value from the left and the right. Show that it has received an even number of inputs from the left. (*text*, problem 8.7, modified)
- (25 points) Revisit the example for $x := y + z$ in Section 16.1.1. Assume that x does not exist in state s . Confirm that information flows from y and z to x by computing $H(y_s|x_t)$, $H(y_s)$, $H(z_s|x_t)$, and $H(z_s)$ and showing that $H(y_s|x_t) < H(y_s)$ and $H(z_s|x_t) < H(z_s)$ (*text*, problem 16.1)

Extra Credit

- (30 points) Prove that a system that meets the definition of generalized noninterference security also meets the definition of deducible security. (*text*, problem 8.6)