

Distributed Trust Management: Assignment 1

Questions

- Search in the news an article about privacy violations. Describe briefly the reported incident and discuss its privacy implications (at most half page). The reference to the article should be given.
- Consider the access matrix of HRU model.
 - Compute the matrix that results from the following initial state

	File 1	File 2	File 3	File 4
Alice	own read write		own write exec	
Bob	read	own read write	write	*read
Charlie	read write			own read exec

by executing the sequence of commands α defined as follows:

CREATE(Alice, File5)
*CONFER*_{read}(Bob, Alice, File2)
*TRANSFER*_{read}(Bob, Charlie, File2)
*CONFER*_{exec}(Alice, Bob, File5)
*CONFER*_{*read}(Alice, Bob, File5)
*TRANSFER*_{write}(Bob, Charlie, File3)
*REVOKE*_{write}(Bob, Alice, File1)
*TRANSFER*_{read}(Bob, Alice, File4)
*TRANSFER*_{read}(Alice, Charlie, File2)
*REVOKE*_{read}(Charlie, Bob, File4)
*CONFER*_{read}(Bob, Charlie, File5)
*REVOKE*_{read}(Alice, Charlie, File5)

Use the definition of commands given in class.

- Is α leaking access privileges? (Consider only Charlie to be untrusted) Justify the answer.
- Alice can read and write file f_1 , can read file f_2 , and can execute file f_3 . Bob can read f_1 , can read and write f_2 , and cannot access f_3 .
 - Write the access matrix for this situation.
 - Write a set of access control lists for this situation. Which list is associated with which file?
 - Write a set of capability lists for this situation. With what is each list associated?
 - Define a construction to show that a system implementing the Chinese Wall model can support the BLP Model.
 - Define a RBAC₃ system to regulate an on-line grading system. The system should implement (at least) the following requirements:
 - Instructors can add, modify, and view students' partial grades.
 - Lectures can add, modify, and view students' partial grades.
 - Students can only view their final grades.
 - Instructors can view and add students' final grades.

- (e) Lectures can add, modify, and view students' final grades.
 - (f) Student administration staff can view students' final grades.
 - (g) Instructors cannot be students during the same academic year in which they give instructions.
6. Differentiate between static separation of duty (SSD) and dynamic separation of duty (DSD). Suppose we have $(\{r_1, r_2, r_3, r_4\}, 3) \in SSD$ and $(\{r_1, r_2, r_3, r_4\}, 3) \in DSD$. What are the implications of having both of these separation of duty constraints present in a system at the same time.
7. Provide some real life examples of systems implementing the following access control model
- (a) Discretionary Access Control
 - (b) Mandatory Access Control
 - (c) Role-Based Access Control

Deadline: 11 November 2011
How to submit the assignment: <ul style="list-style-type: none">- by email (n.zannone at tue dot nl)- mail box (HG, 9th floor, north side)
For any question send me an email or come to my office (HG 10.73)