

Outline for January 13, 2012

Reading: §3.1, 3.2

1. What is the safety question?
 - a. An unauthorized state is one in which a generic right r could be leaked into an entry in the ACM that did not previously contain r . An initial state is safe for r if it cannot lead to a state in which r could be leaked.
 - b. Question: in a given arbitrary protection system, is safety decidable?
2. Mono-operational case: there is an algorithm that decides whether a given mono-operational system and initial state is safe for a given generic right.
3. General case: It is undecidable whether a given state of a given protection system is safe for a given generic right.
 - a. Approach: represent Turing machine tape as access control matrix, transitions as commands
 - b. Reduce halting problem to it
4. Take-Grant
 - a. Counterpoint to HRU result
 - b. Symmetry of take and grant rights
 - c. Islands (maximal subject-only tg -connected subgraphs)
 - d. Bridges (as a combination of terminal and initial spans)
5. Sharing
 - a. Definition: $can\bullet share(\alpha, \mathbf{x}, \mathbf{y}, G_0)$ true iff there exists a sequence of protection graphs G_0, \dots, G_n such that $G_0 \vdash^* G_n$ using only take, grant, create, remove rules and in G_n , there is an edge from \mathbf{x} to \mathbf{y} labeled α