# Outline for January 11, 2012

**Reading:** §2; [Z+05]

1. Access control matrix and entities
    a. Subject, objects (includes subjects)
    b. State is $(S, O, A)$ where $A$ is access control matrix
    c. Rights (represent abstract notions)
2. Instantiating access control matrices
    a. Example 1: UNIX file system
        i. *read, write, execute* on files
        ii. *read, write, execute* on directories
    b. Example 2: Boolean expression evaluation
        i. Verbs and rules
        ii. Access Restriction Facility
    c. Example 3: History and limiting rights
        i. Static rights, current rights
        ii. Malicious library routine
3. Primitive operations
    a. **enter** $r$ **into** $A[s, o]$
    b. **delete** $r$ **from** $A[s, o]$
    c. **create subject** $s$ (note that $\forall x [A[s', x] = A[x, s'] = \varnothing]$)
    d. **create object** $o$ (note that $\forall x [A[x, o'] = \varnothing]$)
    e. **destroy subject** $s$
    f. **destroy object** $o$
4. Commands and examples
    a. Regular command: *create•file*
    b. Mono-operational command: *make•owner*
    c. Conditional command: *grant•rights*
    d. Biconditional command: *grant•read•if•r•and•c*
    e. Doing "or" of 2 conditions: *grant•read•if•r•or•c*
    f. General form
5. Miscellaneous points
    a. Copy flag and right
    b. Own as a distinguished right
    c. Principle of attenuation of privilege