January 10, 2023 Outline

Reading: *text*, §20.1.2.2, 2.1–2.2

Assignments: Homework #1, due January 19
Project selection, due January 21

1. Introduction to class
   (a) General information
   (b) Homework
   (c) Handouts
2. The basic components of security
3. Reference monitors and security policy
4. 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)
5. Instantiating access control matrices
   (a) Example: UNIX file system
      i. *read*, *write*, *execute* on files
      ii. *read*, *write*, *execute* on directories
6. Access control matrix and entities
   (a) Example: Boolean expressions
   (b) Example: History and limiting rights
7. 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
8. 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
9. Miscellaneous points
   (a) Copy flag and right
   (b) Own as a distinguished right
   (c) Principle of attenuation of privilege