

IS 2150 / TEL 2810

Introduction to Security



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Access Control Model
Foundational Results



Protection System

- State of a system
 - Current values of
 - memory locations, registers, secondary storage, etc.
 - other system components
- Protection state (P)
 - A system state that is considered secure
- A protection system
 - Captures the conditions for state transition
 - Consists of two parts:
 - A set of generic rights
 - A set of commands



Protection System

- Subject (S : set of all subjects)
 - Eg.: users, processes, agents, etc.
- Object (O : set of all objects)
 - Eg.: Processes, files, devices
- Right (R : set of all rights)
 - An action/operation that a subject is allowed/disallowed on objects
 - Access Matrix A : $a[s, o] \subseteq R$
- Set of Protection States: (S, O, A)
 - Initial state $X_0 = (S_0, O_0, A_0)$