



Introduction to Computer Security

Access Control Matrix
Take-grant model

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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**
 - Describes the conditions under which a system is secure (in a protection state)
 - Consists of two parts:
 - A set of generic rights
 - A set of commands
- **State transition**
 - Occurs when an operation (command) is carried out



Protection System

- Subject (S: set of all subjects)
 - Active entities that carry out an action/operation on other entities; 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)