

# Capability-Based Access Control

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*GW*

Sources:

Memon's notes, Brooklyn Poly

Bishop's Text, Chapter 15

Bishop's slides, Chapter 15

Text by Pfleeger and Pfleeger, Chapter 4

# Access Control Mechanisms

- Access Control Matrix
- Access Control List
- Capability based access control
- Lock and Key based access control.
- Rings-based access control

# Capability based access control.

- Conceptually, *capability* is a row of ACM i.e. list of rights for a subject.
- *Definition:* Let  $O$  be set of objects, and  $R$  the set of rights of a system. A *capability list*  $c$  is a set of pairs

$$C = \{(o, r) : o \in O, r \subseteq R\}$$

Let *cap* be function that determines capability list  $c$  associated with subject  $s$ . Then

$$\text{cap}(s) = \{(o_i, r_i) : 1 \leq i \leq n\}$$

is that subject  $s$  may access  $o_i$  using any right in  $r_i$ .