

Capability-Based Access Control

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GWU

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 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 .