

# **CS 550:** Advanced Operating Systems

## **Consistency**

Part 2

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CS 550

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# Eventual Consistency

- Many systems: one or few processes perform updates
  - How frequently should these updates be made available to other read-only processes?
- Examples:
  - DNS:
    - Single naming authority per domain
    - Only naming authority allowed updates (no write-write conflicts)
    - How should read-write conflicts (consistency) be addressed?
  - NIS:
    - User information database in Unix systems
    - Only sys-admins update database, users only read data
    - Only user updates are changes to password

# Eventual Consistency

- Assume a replicated database with few updaters and many readers
- *Eventual consistency*:
  - Definition: in absence of updates, all replicas converge towards identical copies
  - Only requirement: an update should eventually propagate to all replicas
  - Cheap to implement: no or infrequent write-write conflicts
  - Things work fine as long as user accesses same replica
  - What if they don't?