

## Outline for April 18, 2022

**Reading:** *text*, §30, 33

**Assignments:** Lab Exercise and Extra Credit 1, due Apr 18

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1. Remote procedure calls (RPC)
2. Common concurrency problems
  - (a) Atomicity violation bugs
  - (b) Order violation bugs
3. Livelock
4. Deadlock
  - (a) Resource allocation
  - (b) Policies to handle deadlock
    - i. Ignore it
    - ii. Prevention
    - iii. Avoidance
    - iv. Detection and recovery
5. Deadlock prevention
  - (a) Mutual exclusion
  - (b) No preemption
  - (c) Circular wait, resource waiting
  - (d) Hold and wait, partial allocation