Administrivia

- Project 5 questions?
- 2nd midterm next Thursday, April 25
  - practice exam by tomorrow
  - discuss and any other questions Tuesday
- Office hours today and tomorrow
  - today was at 11
  - tomorrow at 2

Last time

- Concurrent (OO) programming
  - Immutability – no locks required
    - Stateless service objects
    - freeze state after construction
  - Locking
    - for atomicity
    - watch out for liveness problems
    - Java locks and thread caching
    - fully synchronized objects – all methods sync’ed
    - precedence for preventing deadlock
  - State dependence
    - many policies for state dependent actions (ignore, proceed, balk, guard, retry, timeout, …)