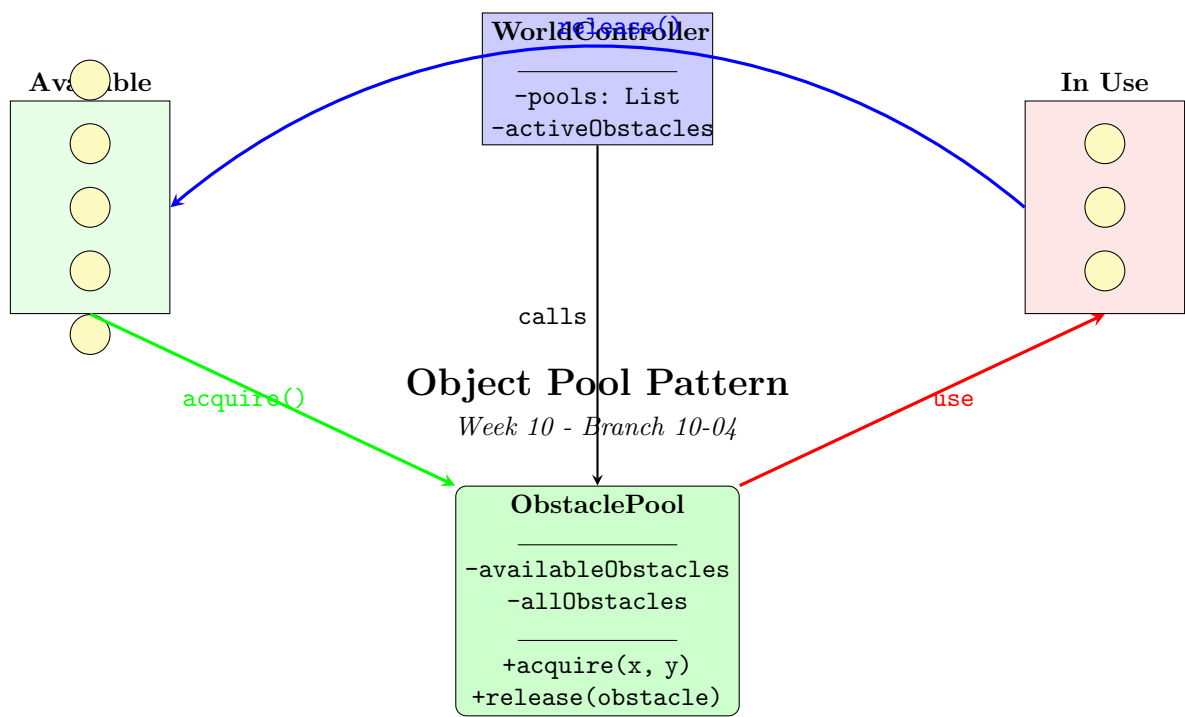


Ready to
borrow
(idle)



Currently
active in
game
(busy)

Object Pool Pattern

Week 10 - Branch 10-04

Object Lifecycle:

1. **Startup:** Pre-allocate
2. **Acquire:** Remove from available
3. **Reset:** Clean state
4. **Use:** Game logic
5. **Release:** Return to available
6. **Reuse:** Goto step 2

Performance Comparison (50s):

Without Pool: 1000+ creates
With Pool: 150 creates, 860+ reuses
GC Time: 9ms
GC Time: 8ms (97% reduction in allocation!)