Read-Modify-Write Operations

* Atomic (all or nothing - another thread can’t get in there)
* At some level - hardware must support this
* Test-And-Set
  + public int testAndSet()
  + Sets the value to 1, and returns old value
    - If 0 is returned, then caller successfully set it to 1
    - If 1 is returned, then nothing was set (unavailable)
    - Use reset() to put it back to 0 (but only if you own it!)
  + Can be used to implement Lock (Mutex) interface
* Compare-And-Swap
  + public boolean compareAndSwap(int oldValue, int newValue)
  + public boolean compareAndSwap(long oldValue, long newValue)
  + Returns true if oldValue matched and newValue was set
  + Return false if oldValue wasn’t a match
  + Might be hardware implementation
  + We’re going to build it using Test-And-Set (just to show it's possible!)
  + Modern CPU's offer this as a hardware instruction (AtomicLong)