Fully synchronized buffer problem

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Core ideas of Anderson/Dahlin method

Rules that a thread should follow:

1. Surround code that accesses shared data with lock/unlock
   - Even if only read access!
2. After modifying shared data, signal if other threads might want to know about it
3. If waiting for some condition to become true on shared data, use a pthread_wait() inside a loop that exits when the condition is true.

Example

In the bounded buffer problem:

- shared data consists of the ‘buf’ and ‘count’ variables
- writer:
  - waits for count to be 0
  - signals after changing count
- reader:
  - waits for count to be 1
  - signals after changing count

Fully synchronized buffer problem

- In the (baby) bounded buffer, write():
  - waits until the buffer is empty
  - writes to the buffer
  - returns
- In the fully-synchronized version, write():
  - waits until the buffer is empty
  - writes to the buffer
  - waits until the buffer is empty
  - returns