

Semaphores and Bounded Buffer

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Semaphores

- ◆ **Semaphore** is a type of generalized lock
 - Consist of a positive integer value
 - Two operations
 - ◆ **P()**: an atomic operation that waits for semaphore to become positive, then decrement it by 1
 - ◆ **V()**: an atomic operation that increments semaphore by 1 and wakes up a waiting thread at P(), if any.

Origin of Semaphores

- ◆ Defined by Dijkstra in the last 60s
- ◆ Main synchronization primitives used in UNIX
- ◆ The P operation is an abbreviation for ***proberen*** (Dutch), meaning “to test”
- ◆ The V operation stands for ***verhogen***, meaning “to increment”