

## Key words

- Critical Section
- Semaphore
- Mutex
- Monitor

## **Critical Section**

Concurrent accesses to shared resources sometimes can lead to unexpected or erroneous behavior.

The critical section or critical region is a part of the program where access to the shared resource is protected.

It cannot be executed by more than one thread.

## **Semaphore**

A semaphore is a variable that is changed (incremented or decremented) depending on programmer-defined conditions.

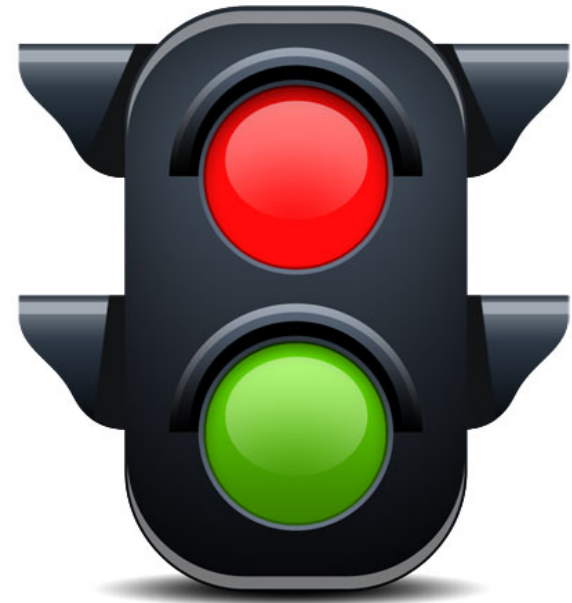
The variable is then used as a condition to control access to some system resource.

A semaphore tracks how many resources are free.

## Mutex

Mutex is Mutual Exclusion Semaphore. A semaphore with only two states: free or occupied.

Mutexes are used to protect shared resources. So, they can be used in critical sections.



## Monitor

Monitor is a mutex + pool of blocked thread.

Monitor also must be able to stop threads and notify them.