TTK4145 - Exercise 2

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Mutex and Channel basics

- **What is an atomic operation?** An operation acting on shared memory is atomic if it completes in a single step relative to other threads. Hence an atomic operation is an operation that has no possibility of being decomposed into several smaller operations.

- **What is a semaphore?** Semaphores are variables controlling the access of global variables by different processes in concurrent systems. They serve to avoid race conditions. Counting semaphores tell the number of resources available and binary semaphores tell if a certain resource is available for execution.

- **What is a mutex?** Mutex is the concept of mutual exclusion used when you have a multi-thread application where the threads use the same resources. The mutex is used to show that one thread has locked or has ownership of a resource. Other threads needing the same resource must wait untill the mutex is unlocked/available to proceed with their tasks.

- **What is a critical section?** A part of a function or a process that accesses shared memory. Needs to be protected to avoid concurrent read-write operations. Often recognized as blocks of code not allowed to run simultaneously.