

DELFT UNIVERSITY OF TECHNOLOGY

OPERATING SYSTEMS LABORATORY

TI2726-C

Question 5.4

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Other possible methods

Explain other methods that could be used to solve assignment 5.3. Why and how should those methods be used?

Since a few years multicore systems have become increasingly common. Below we will highlight some of the alternative solutions that could be used.

Transactional memory

In order to solve the synchronization problem on multicore systems, one could implement some sort of transactional memory operations. These operations would then guarantee the user that an operation will be safely executed and that it leaves the resulting memory in the correct state.

The construct *atomic*{*S*} mentioned in the book is an example of such an implementation.

OpenMP

Another approach is to use the OpenMP compiler directives to define regions that can be run parallel and critical sections. This is in fact almost the same mechanism as just using mutexes, but it removes the need for defining mutexes by hand and is therefore slightly easier to use.

Functional Programming Languages

Yet another approach is to use functional programming languages. Since functional programming languages do not allow mutable state or mutable variables, there is no way a program can run into synchronization issues when altering a variable, since the whole concept of *altering a value* does not exist.