

Models of Concurrent Computation

CHAPTER 14

Current-day computer systems allow multiple programs to be loaded into memory and executed concurrently. This resulted in the notion of a **process**, which is a program in execution. A process is the unit of work in a modern computer system. Such a system consists of a collection of processes: operating-system processes executing system code and user processes executing user code. Potentially, all these processes can execute concurrently, with the CPU (or CPUs) multiplexed among them. By switching the CPU between processes, the computer system becomes more productive.

CHAPTER OBJECTIVES

- To introduce the notion of a process — a program in execution, which forms the basis of all computation.
- To introduce the critical-section problem, whose solutions can be used to ensure the consistency of shared data.
- To introduce the concept of a transaction and describe mechanisms to implement it.

14.1 Motivation

14.2 Process Concept

14.3 The Critical-Section Problem

14.4 Semaphores

14.5 Classic Problems of Synchronization

14.6 Transaction Concept

14.7 Concurrent Transactions

14.8 Summary

Exercises

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Bibliographical Notes

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