

Transaction Processing

Exercise 2

Assignment 1: Which types of executing transactions exist? Which effects and goals do the different types of execution have?

Assignment 2: Explain the principle of the Lock-Unlock model. Which of the following executions is correct? Do the schedules ensure consistency?

a		b		c		d	
T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2
lock A unlock A lock B unlock B	lock B unlock B lock C unlock C	lock A unlock A lock B unlock B lock C unlock C	lock B lock C unlock C	lock A unlock A lock B unlock B lock C unlock C	lock B lock C unlock C	lock A unlock A lock B unlock B lock B unlock B lock A unlock A	lock B unlock B lock A unlock A

Assignment 3: Explain the Read/Write-model.

Assignment 4: What is a scheduler? Which tasks does a scheduler fulfill?

Assignment 5: Formally define a schedule. In addition, formally define the following concepts in suitable order: serial schedule, complete schedule, complete transaction, $SHUFFLE(T)$ and transaction.

Assignment 6: Consider the following set of transactions T :

$$\begin{aligned}T &:= \{T_1, T_2\} \\ T_1 &:= r_1(x)w_1(x)c_1 \\ T_2 &:= r_2(x)r_2(y)w_2(y)c_2\end{aligned}$$

Are the following operator sequences s_i schedules per definition? If so, are the schedules serial or complete?

$$\begin{aligned}s_1 &:= r_1(x)r_2(x)r_2(y)w_1(x)w_2(y) \\ s_2 &:= r_1(x) \\ s_3 &:= r_2(x)r_1(x)w_2(y)r_2(y)w_1(x) \\ s_4 &:= r_2(x)r_2(y)r_1(x)w_1(x)c_1w_2(y)c_2 \\ s_5 &:= r_2(x)r_2(y)r_1(x)w_1(x)r_2(y)w_2(y)c_1c_2 \\ s_6 &:= r_2(x)r_2(y)w_2(y)c_2r_1(x)w_1(x)c_1\end{aligned}$$

Assignment 7: Explain the concept of serializability.