



Exercise Sheet 5: Transactions (until Friday 04.07.2014)

Exercises will be discussed on **Friday** on week after the respective lecture was given. The handouts are optional and do not have to be handed in. They only serve as optional preparation for the oral exams at the end of the semester.

Exercise 1 – Transactions

- a. What is the task of the transaction manager?
- b. Why is it important to create interleaved transaction schedules?
- c. Explain for the following classes of transaction schedules:
 - I. What is a **serializable** schedule? What is the advantage of **serializable** schedules compared to **serial** schedules? What is the problem with **serializable** schedules in practice?
 - II. What is a **conflict serializable** schedule? What is the advantage of **conflict serializable** schedules compared to **serializable** schedules? What is the problem with **conflict serializable** schedules in practice?
 - III. What is a **2-Phase-Locking** schedule? What is the advantage of a **2-Phase-Locking** schedules compared to **conflict serializable** schedules? What problems can occur with **2-Phase-Locking** schedules in practice?

Exercise 2 – Conflict Graphs

Given the following schedule:

	T ₁	T ₂	T ₃
1	read(A)		
2	write(B)		
3		read(B)	
4			read(B)
5	write(C)		
6	commit		
7		read(A)	
8		write(C)	
9		commit	
10			write(A)
11			commit

- a. Show the corresponding conflict graph.
- b. Is the schedule serializable? If yes, in which order would the transaction be executed in an equivalent serialized schedule?