Exercises for Transaction Systems, summer term 2017
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http://www-db.in.tum.de/teaching/ss17/transactions/

Sheet No. 6

Info
- Due date: Friday, June 30, 3pm.
- Please send your solution via e-mail, and prefix the subject with [transactions].
- Please include your Matrikelnummer and your name.

Exercise 1 (10 points) Investigate the relationship between Gen(BTO) and Gen(2PL). (equal? intersect? subset? . . . )
Hint: Look for (counter-)examples rather than a formal proof.

Exercise 2 (10 points) For the following schedule show the output of BOCC and FOCC. Remember that write steps are actually performed on private workspaces, the commit requests initiate the validation, and the write steps are performed after successful validation.

\[ s_1 = r_1(x) r_2(x) r_1(y) r_3(x) w_1(x) w_1(y) c_1 r_2(y) r_3(z) w_3(z) c_3 r_2(z) c_2 \]

Exercise 3 (5 points) Design an “exam question” that covers properties of concurrency control algorithms, and give a short answer. I will publish the questions and answers on the website. Let me know whether you want to stay anonymous or not.

For example:

Q: Name a concurrency control algorithm that performs well for read-only or read-mostly workloads. Why?
A: FOCC. Read-only transactions do not need to be validated at all, and read-mostly transactions have a small write-set, so the validation step is relatively cheap.

Some more ideas:
Name one drawback/advantage of protocol X, how does protocol X solve drawback Y of protocol Z, what would be a good/bad protocol for an e-commerce database and why, why is protocol X slow when there are many concurrent transactions / long-running transactions, . . .