Today’s Plan

- Exam info and relevance of chapters/algorithms/…
- Your questions, Last week’s homework
- Practicing old exam questions
Admin and Exam

- 90 minutes, 90 points.
- No red or green pens, no pencils!
- No calculators or books/slides/notes. You may bring a dictionary.
- Post-exam Review (Klausureinsicht): Will be announced on the website and during the exam, approx. 2 weeks after the exam.
List of Classes and Algorithms (1/3)

When specific knowledge about a red class/algorithm is needed in the exam, it will be provided. Beside classes and algorithms, you also need to know about e.g. ACID properties, page and object model, dirty read problem, relationships between classes, the MVCC version function, . . .

ch. 3 FSR (thus: Herbrand semantics, reads-from, . . .)
  VSR
  CSR (thus: conflict graph, . . .)
  OCSR, COCSR, CMFSR, CMVSR, CMCSR
  Interleaving Specifications, indivisible units, relative serialization graph
List of Classes and Algorithm (2/3)

ch. 4 2PL/C2PL/S2PL/SS2PL, deadlock prevention and resolution
O2PL
Altruistic Locking
write-only/read-write tree locking
BTO
SGT
BOCC, FOCC
Hybrid protocols
TWR

ch. 5 MVSR (thus: MVSG, …)
MCSR (thus: MVCG, …)
MVTO
MV2PL, 2V2PL
MVSGT
ROMV
List of Classes and Algorithm (3/3)

ch. 6 State-independent CT
    Return-value CT
    Commutativity-based reducibility, CSR
    Tree reducibility

ch. 7 2PL for flat object schedules
    general object-model 2PL, layered 2PL, selective layered 2PL
    Hybrid algorithms
    Escrow locking

ch. 8 Predicate locking, precision locking
    FSR-IDM and CSR-IDM (do not learn the rules!)
    Transaction chopping

ch. 9+10 just the general ideas
Your questions

- Hybrid protocols (Exercise 9 Question 2)
- ROMV: Read versions of read-only and update transactions
- Please explain exercise XYZ again...
Sample exam questions

- 4 points/minutes
- For the two given schedules list all the classes they belong to from the following list of classes: serial, CSR, VSR, FSR. Every correct class is +1 point, every incorrect class is -1 point.

\[ s = w_1(x) \cdot w_2(x) \cdot c_2 \cdot c_1 \]
Sample exam questions

- 5 points/minutes
- For the following schedule give the output schedules produced by two protocols: (a) SS2PL, (b) BTO:
  
  \[
  r_1(x) \quad w_2(x) \quad r_3(y) \quad w_2(y) \quad w_3(z) \quad c_3 \quad r_1(z) \quad c_1 \quad r_2(z) \quad c_2
  \]
Sample exam questions

- 5+5 points/minutes

- Describe the transactional workloads for which FOCC will provide the best throughput (among all page model protocols). Give a short explanation.

- Describe the transactional workload for which a combination of 2PL at the object level and FOCC at the page level will provide the best throughput (among all object model protocols). Give a short explanation.
Sample exam questions

- 5 points/minutes
- Write a SQL statement that locks the entire table $R$ (with attributes $a$ and $b$) for reading under the 2PL scheduler. The statement should output only one row.
Sample exam questions

- 5 points/minutes
- For the following schedule

\[ s = r_1(x) \ w_1(x) \ c_1 \ r_2(x) \ r_3(y) \ w_2(y) \ c_2 \ r_3(z) \ c_3 \]

give the output schedule produced by FOCC.
That was 29 points out of 90 points

Any last questions?