Purdue University
Computer Science Department
CS 448: Introduction to Database Systems
Prof: Bharat Bhargava

CS 448 – Homework #4, Due: 11/16/2017, before class

Reference: Fundamentals of Database Systems, Elmasri and
Navathe, 6th or 7th Edition.

Answer all the questions in itemized fashion like the questions.

Question 1
Problem 21.1. (page 808 in 7th edition)
Or
Problem 22.1. (page 803 in 6th edition)

- What is the two-phase locking protocol?
- How does it guarantee serializability?

Question 2
Problem 21.3. (page 808 in 7th edition)
Or
Problem 22.3. (page 803 in 6th edition)

Discuss the problems of deadlock and starvation, and the different
approaches to dealing with these problems.

Question 3
Problem 21.10. (page 809 in 7th edition)
Or
Problem 22.11. (page 803 in 6th edition)

- How do optimistic concurrency control techniques differ from
  other concurrency techniques?
- Why are they also called validation or certification techniques?
- Discuss the typical phase of an optimistic concurrency control.

Question 4
Problem 21.12. (page 809 in 7th edition)
Or
Problem 22.12. (page 803 in 6th edition)

- How does the granularity of the data items affect the performance of concurrency control?
- What factors affect the selection of granularity size for data items?

Question 5
Problem 22.1. (page 834 in 7th edition)
Or
Problem 23.1. (page 828 in 6th edition)

- Discuss the different types of transaction failures.
- What is meant by catastrophic failure.

Question 6
Problem 22.3. (page 834 in 7th edition)
Or
Problem 23.3. (page 828 in 6th edition)

- What is the system log used for?
- What are the typical kinds of entries in a system log?
- What are checkpoints and why are they important?
- What are transactions commit points, and why are they important?

Question 7
Problem 22.6. (page 834 in 7th edition)
Or
Problem 23.6. (page 828 in 6th edition)

What are UNDO-type and REDO-type log entries?