



COP 4722 - Survey of Database Systems (U01)

Specification2

Sep 24, 2014

COP-4722 Assignment-2

Due: Thu, Oct 2
before class begins

The purpose of this assignment is to familiarize with serializability. Show the intermediate steps for each answer.

- I. Consider the three transactions T_a , T_b , and T_c , and the schedules S_1 , S_2 , S_3 and S_4 given below. Which of the schedules is (conflict) serializable? The subscript for each database operation in a schedule denotes the transaction number for that operation. For each schedule, show all conflicts, draw the precedence graph, determine and write down if it is serializable or not, and the equivalent serial schedules if exist.

T_a : $r_a(x)$; $w_a(x)$;
 T_b : $r_b(x)$;
 T_c : $r_c(x)$; $w_c(x)$;
 S_1 : $r_a(x)$; $r_c(x)$; $w_a(x)$; $r_b(x)$; $w_c(x)$;
 S_2 : $r_a(x)$; $r_c(x)$; $w_c(x)$; $w_a(x)$; $r_b(x)$;
 S_3 : $r_c(x)$; $r_b(x)$; $w_c(x)$; $r_a(x)$; $w_a(x)$;
 S_4 : $r_c(x)$; $r_b(x)$; $r_a(x)$; $w_c(x)$; $w_a(x)$;

- II. Consider the three transactions T_1 , T_2 , and T_3 , and the schedules S_5 and S_6 given below. Show all conflicts and draw the serializability (precedence) graphs for S_5 and S_6 , and state whether each schedule is serializable or not. If a schedule is serializable, write down the equivalent serial schedule(s).

T_1 : $r_1(p)$; $r_1(r)$; $w_1(p)$;
 T_2 : $r_2(r)$; $r_2(q)$; $w_2(r)$; $w_2(q)$;
 T_3 : $r_3(p)$; $r_3(q)$; $w_3(q)$;
 S_5 : $r_1(p)$; $r_2(r)$; $r_1(r)$; $r_3(p)$; $r_3(q)$; $w_1(p)$; $w_3(q)$; $r_2(q)$; $w_2(r)$; $w_2(q)$;
 S_6 : $r_1(p)$; $r_2(r)$; $r_3(p)$; $r_1(r)$; $r_2(q)$; $r_3(q)$; $w_1(p)$; $w_2(r)$; $w_3(q)$; $w_2(q)$;

Save all answers in a single word file and convert it into a pdf file (asg2.pdf), and upload the pdf file through Moodle (class website).

Submit a print out of this file along with the following signed declaration:

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Name: _____

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Course: COP 4722

Assignment#: 2

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I hereby certify that this work is my own
and none of it is the work of any other person.

Signature: _____

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Topic 2


Topic 3


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