Northeastern University
CS5200 – DBMS
Spring 2025, Derbinsky

Homework 6

This assignment has three (3) problems (equally weighted). Notes:

- Submit to Canvas a **a single PDF** document, containing your responses to all the problems.
- You must typeset all responses – hand-drawn/written work will receive 0% credit.

Problem 1. Consider the following schedule...

$$r_1(A), r_2(B), w_1(A), w_1(B), r_2(C), w_1(A), c_1, r_3(B), w_3(B), c_3, w_2(C), c_2$$

Assume that all writes to A, B, and C prior to the operations above have already committed. Provide an answer, **with justification**, for each of the following questions.

a. Is this schedule serial?
b. Is this schedule conflict serializable?
c. Is this schedule recoverable?
d. Is this schedule cascadeless?

Problem 2. Consider the following transactions ...

$$T_1 : r(B), r(A), w(A)$$
$$T_2 : r(B), w(B), r(A)$$

List **all** schedules that are conflict equivalent to serial schedule (T_2, T_1).

Problem 3. Consider the following schedule...

$$r_3(C), r_1(A), w_3(C), r_2(A), r_1(C), r_2(B), w_2(B), r_1(B), w_1(A)$$

Answer each of the following questions.

a. Construct a precedence graph for this schedule.
b. Is this schedule conflict serializable? If so, list all conflict-equivalent serial schedule(s). If not, provide justification.