**Introduction to Databases, Spring 2020**

**Homework #5 (40 Pts, June 8, 2020)**

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**(1) [20 pts]** Check whether the following schedule is serializable. For a serializable schedule, determine the equivalent serial schedule(s). Note that indicates *read* operation on for . Explain why (**5pts each**).

(a)

**Answer**

**In serializability testing, the graph has cycle with t1,t2,t3.**

**So, this schedule is not serializable.**

(b)

**Answer**

**In serializability testing, the graph has cycle with t1&t3.**

**So, this schedule is not serializable.**

(c)

**Answer**

**In serializability testing, the graph doesn’t have cycle**

**So, this schedule is serializable, and we can make equivalent**

serial schedule like this.

T1: r(x) w(x)

T2: r(x)

T3: r(x) w(x)

Time sequence

(d)

**Answer**

**In serializability testing, the graph has cycle with t1&t3.**

**So, this schedule is not serializable.**

**(2) [20 pts]** Consider the three transactions T1, T2, and T3. Draw the serializability (precedence) graphs for two schedules S1 and S2, and check whether each schedule is serializable or not. If the schedule is serializable, write down the equivalent serial schedule(s) (**5pts each**).

(a)

**Answer**

This schedule is serializable because there is no cycle.

T3->T1->T2 can be a equivalent serial schedule.

T1: r(x) r(z) w(x)

T2: r(z) r(y) w(z) w(y)

T3: r(x) r(y) w(y)

(b)

**Answer**

**serializability graph has cycle.**

**So this schedule is not serializable.**