COMP9315 14s2

The University of New South Wales

COMP9315 DBMS Implementation Final Exam 14s2

DBMS Implementation

[Instructions] [Notes] [PostgreSQL] [C]
[Q1] [Q2] [Q3] [Q4] [Q5] [Q6] [Q7] **[Q8]**

Question 8 (11 marks)

In multi-version concurrency control, transactions are allocated a timestamp (their start-time) and tuples are tagged with additional fields that hold information about the timestamp of the transaction that last read/wrote the tuple.

- *TS(T)* = start time of transaction *T*
- *WTS(X)* = *TS* of last transaction that wrote *X*
- *RTS(X)* = *TS* of last transaction that read *X*

Consider the following schedule:

```
t0    t1      t2      t3      t4      t5      t6
T1:   R(X)            W(X)            Commit
T2:           W(X)            Commit
```

Assume the following:

- *TS(T1)* = t_1 and *TS(T2)* = t_2
- the initial value of *X* is 1 and its *WTS* and *RTS* are both t_0
- the value of *X* that *T1* writes is 10 and the value of *X* that *T2* writes is 5

a. Is the schedule conflict serializable?
(Do not attempt to put a graph in your `q8.txt` file; you could draw it on your worksheet and describe your working in words in `q8.txt`.)

b. Is the schedule view serializable?

c. For each of the time-points t_0, t_1, t_2, t_3, show the versions of *X* that exist and show their *RTS* and *WTS* values

d. If a transaction commences at t_6, which version of *X* does it see?

e. Under most concurrency control schemes, *T1* would be rolled back when it attempts to write *X*, and the final version of *X* would be the value written by *T2* (which is what it should be). If MVCC allows the write to proceed, discuss briefly whether this will this cause problems?

Instructions:

- Type your answer to this question into the file called `q8.txt`
- Submit via: **`submit q8`**

End of Question