

CSCI3170 Short Assignment #5

(Deadline: Dec 9 23:59)

Name:

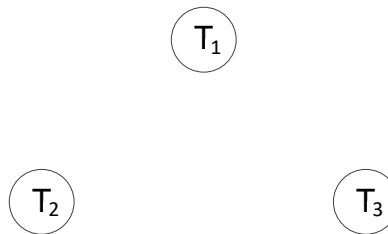
Pass / Fail

Student ID:

1. Consider the following history:

| T_1 | T_2 | T_3 |
|----------|----------|---------|
| Read[b] | | |
| | Write[b] | |
| Write[b] | | |
| | Write[a] | |
| | | Read[a] |

- a) Draw the conflict serialization graph of the above history. Please arrange your nodes as follows.



- b) Is the history in part (a) conflict serializable? Why?

2. Suppose each log record for recovery describes a single database write with the following fields <Transaction name, Data item name, Old value, New value>. After a crash failure, the following log records are found in disk.

| Log Record |
|-------------------|
| <T1, start> |
| <T1, A, 0, 100> |
| <T2, start> |
| <T1, B, 0, 200> |
| <T1, commit> |
| <T2, B, 200, 300> |

Suppose the values of A and B found in the disk after the crash are 0 and 300 respectively.

- a) Which recovery strategy (deferred update or immediate update) is used by the system? Please explain.

- b) Which transaction has committed before the Crash?

- c) Please fill the action (redo/undo/no action) and the values of A and B in the following table after each log record for write operation is considered in the recovery process.

| | Action(redo/undo/no action) | A | B |
|----------------|-----------------------------|---|-----|
| | | 0 | 300 |
| <T2,B,200,300> | | | |
| <T1,B,0,200> | | | |
| <T1,A,0,100> | | | |