CSCI3170 Short Assignment #5  
(Deadline: Dec 9 23:59)

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1. Consider the following history:

|  |  |  |
| --- | --- | --- |
| T1 | T2 | T3 |
| Read[b] |  |  |
|  | Write[b] |  |
| Write[b] |  |  |
|  | Write[a] |  |
|  |  | Read[a] |

1. Draw the conflict serialization graph of the above history. Please arrange your nodes as follows.



1. Is the history in part (a) conflict serializable? Why?

No, because it is not a DAG diagram.

1. 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.

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

Immediate update strategy, since it updates the database while the transaction is active.

1. Which transaction has committed before the Crash?

T1.

1. 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> | undo | 0 | 200 |
| <T1,B,0,200> | no action | 0 | 200 |
| <T1,A,0,100> | redo | 100 | 200 |