Algorithm to recover data for deferred update (NO UNDO/REDO) techniques

1. Committed transaction list before checkpoint
2. Committed transactions list since last checkpoint
3. The active transactions  List *T* (**active list**).

**Perform following Actions on created list**

1. Ignore all committed transactions before checkpoint as their changes are permanently recorded in database.

2. Perform REDO action on all committed transactions since last checkpoint

3. Perform ROLLBCAK operations on /active transactions as changes made by them are not updated in database.

**The following are log entries at the time of system crash:**

[Start-transaction, T1]

[Write-item, T1, B, 10]

[Commit, T1]

Active transactions those who have started their execution but not completed their commit action.

[Start-transaction, T5]

[Write-item, T5, A, 50]

Committed Transactions before checkpoint.

[Write-item, T5, B, 70]

[Start-transaction, T2]

[Write-item, T2, D, 20]

[Write-item, T2, A, 30]

[Commit, T2]

[Checkpoint]

[Start-transaction, T3]

[Write-item, T3, B, 20]

Committed transaction since last checkpoint

[Commit T3]

[Start-transaction, T4]

[Write-item, T4, C, 10] ;\_\_\_\_\_\_\_System Crash

If deferred update with checkpoint is used, what will be the recovery process?

**Solution**

1. List of committed transactions before checkpoint are T1 and T2,as changes made by these transactions are updated in database successfully, no any action to be formed for T1 and T2
2. **List of committed transactions since last checkpoint includes T3**

**Perform REDO operation for T3 by tracing its operations in forward direction**

**REDO([T3,B,20])**

1. List of active transactions is T5 and T4

Perform Rollback action on on T5 and T4

ROLLBACK T5 AND T4

**Assignment question**

1. The following are log entries at the time of system crash:

[Start-transaction, T1]

[Write-item, T1, B, 10]

[Write-item, T1, A, 10]

[Checkpoint]

[Start-transaction, T5]

[Write-item, T5, A, 50]

[Write-item, T5, B, 70]

[Start-transaction, T2]

[Write-item, T2, D, 20]

[Write-item, T2, A, 30]

[Commit, T2]

[Checkpoint]

[Start-transaction, T3]

[Write-item, T3, B, 20]

[Write-item, T3, D, 20]

[Write-item, T3, Z, 20]

[Commit T5]

[Start-transaction, T4]

[Write-item, T4, C, 10] ;\_\_\_\_\_\_\_System Crash

If deferred update with checkpoint is used, what will be the recovery process?