

CS127 Homework #7

Due: December 1st, 2017 2:59 P.M.

Problem 1

Consider a database with the following initial values, and the attached command log:

$A = 50, B = 48, C = 0, D = 47$

LOG:

```

< T0, start >
< T0, A, 50, 75 >
< T1, start >
< T1, B, 48, 92 >
< T2, start >
< T2, C, 0, 33 >
< T1, B, 92, 108 >
< checkpoint : T0, T1, T2 >
< T3, start >
< T0, A, 75, 100 >
< T2, commit >
< T3, D, 47, 52 >
< T3, commit >

```

Assume that the system crashes before the remaining transactions can commit. Use the recovery protocol for concurrent transactions (which persists all in-memory dirty pages and transaction log entries at each checkpoint) to answer the following questions.

1. List any transactions that will need to be undone or redone in the recovery process.

Answer: T0 and T1 will need to be undone. T2 and T3 will need to be redone.

2. List, in order, the set of logged operations to be performed to undo or redo the transactions. (*i.e.* “Set A to 7”, “Set B to 39”, *etc.*)

Answer:

```

// UNDO
Set B to 92;
Set B to 48;
Set A to 50;
// REDO
Set D to 52;

```

3. Give the final values for A, B, C, and D.

Answer: A = 50; B = 48; C = 33; and D = 52.