CSC 440 – Database Management Systems
Quiz #3

Student Name: ___________________________  Score: __________________

1. (3 points) Let a database have the constraint "X > Y > 0". Which of the following transactions does NOT preserve the consistency of the database? (Assume X and Y are real numbers - not necessarily integers.)

A) X := X – 1; Y := X – Y
B) X := X + 1; Y := X – Y
C) X := Y + 1; Y := X – Y
D) X := X * 2; Y := Y * 2
E) None of the above

Answer: _______A_________

2. (4 points) Consider the following undo log sequence:

(START S); (S, X, 10); (COMMIT S); (START T); (T, X, 20); (START U); (U, Y, 30); (COMMIT T); (U, X, 40); (START V); (V, Z, 50); (START W); (COMMIT V); (W, Z, 60); (COMMIT W); (U, Y, 80); (COMMIT U).

If a non-quiescent checkpoint starts right before (V, Z, 50), where should the “end checkpoint” record appear? (1 point)

After Commit U.

Explain why. (3 points)

Non-quiescent checkpointing cannot put an end checkpoint record until all transactions that are active at the start of the checkpoint have either committed or aborted.

3. (3 points) At the time of a system crash, let the log segment (in the undo/redo logging scheme) be as follows:

(START S); (S, X, 10, 20); (COMMIT S); (START T); (T, X, 20, 30); (START CKPT(T)); (T, Y, 10, 20); (START U); (COMMIT T); (U, X, 30, 40); (END CKPT); (U, Y, 20, 30); (START V); (START CKPT(U,V)); (COMMIT U); (V, Y, 30, 40)

After recovery, the values of X and Y are:

X= ___40_____

Y= ___30______