ICS 321 Data Storage & Retrieval — Ex#15 Name:______________________________

Adapted from Ex 6.6.1: Consider the two programs that operate on the two relations:

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Product (maker, model, type)   PC (model, speed, ram, hd, price)
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T1: Given a model number, delete the tuple for that model from both PC and Product.

T2: Given a model number, decrease the price of that model PC by $100.

Q1) Sketch the resulting transactions in terms of BEGIN TXN, COMMIT, ABORT, READ(*tuple*), WRITE(*tuple*). Assume reads and writes operate on tuples of a table. You may use control structures like 'for' or 'while' loops where necessary.

Q2) Modify your programs to include locking operations: XLOCK(*tuple*) for requesting exclusive locks, SLOCK(*tuple*) for requesting shared locks, and RLOCK(*tuple*) for releasing locks.

Q3) Give a schedule for concurrent execution of T1 and T2 with the locking operations.

Q4) Design a logging system to ensure atomicity and support crash recovery. What would the sequence of log entries for your schedule in Q3 look like ?

Q5) Show how to recover from a crash at some point in the sequence of log entries.