**44-560 Advanced Topics in Database Systems**

**Student Exercise: Create Transaction Log KEY**

The following exercise uses this ER diagram:



Explanation of entities:

* The attribute currBal in Customer represents the amount the customer currently owes.
* The attribute orderTotal in Order represents the total amount of the order.
* The attribute lineItemTotal in OrderLine represents the total amount for a line item. Example: If the value of numOrdered is 2, and if the value of unitPrice in ClothingItem for the item ordered is $25.00, then lineItemTotal = 2 \* 25 = 50.
* When a new row is added to OrderLine, currBal in Customer, orderTotal in Order, and quantityOnHand in ClothingItem must all be updated.

Assume:

* Customer 123 has started an order with order number 1111 – so an order exists in the Order table with orderNum of 1111 – and some items may already have been added to this order. Note: This has already been done – do not write SQL statements for this action.

**Step 1:**

Suppose customer 123 adds 3 of item A24Z (unit price $10.00) to order 1111. What SQL statements are required to complete this transaction?

INSERT INTO OrderLine VALUES (‘1111’, ‘A24Z’, 3, 30.00);

UPDATE Order

SET orderTotal = orderTotal + 30.00

WHERE orderNum = ‘1111’;

UPDATE Customer

SET currBal = currBal + 30.00

WHERE custNumber = ‘123’;

UPDATE ClothingItem

SET quantityOnHand = quantityOnHand – 3

WHERE itemID = ‘A24Z’;

**Step 2: (Do not start Step 2 until Step 1 has been approved by the instructor or teaching assistant)**

After writing the SQL statements required for this transaction, create the transaction log. You may add more rows if necessary, or you may not need to use all of the existing rows.

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| **TRL**  **ID** | **TRX**  **NUM** | **PREV**  **PTR** | **NEXT**  **PTR** | **OPERATION** | **TABLE** | **ROW ID** | **ATTRIBUTE** | **BEFORE**  **VALUE** | **AFTER**  **VALUE** |
| 100 | 111 | Null | 120 | START | \* Start Transaction |  |  |  |  |
| 120 | 111 | 100 | 135 | INSERT | OrderLine | 1111, A24Z |  |  | 1111, A24Z, 3, 30.00 |
| 135 | 111 | 120 | 140 | UPDATE | Order | 1111 | orderTotal | 100.00 | 130.00 |
| 140 | 111 | 135 | 145 | UPDATE | Customer | 123 | currBal | 500.00 | 530.00 |
| 145 | 111 | 140 | 150 | UPDATE | ClothingItem | A24Z | quantityOnHand | 20 | 17 |
| 150 | 111 | 145 | Null | COMMIT | \* End Transaction |  |  |  |  |