

CSCE 310 – Database Systems
 Fall 2020 – Dr. McGuire
 Homework Assignment #5

A system crash has occurred while processing this database. The DBMS uses a deferred-write (deferred update) technique. The crash has left the database in an inconsistent state. Using the information in the transaction log, go through the recovery process so that the database is once again in a consistent state. Highlight all the changes made to the database systems when reporting your answer.

CUSTOMER

CUS_CODE	CUS_LNAME	CUS_FNAME	CUS_INITIAL	CUS_AREACODE	CUS_PHONE	CUS_BALANCE
10010	Ramas	Alfred	A	615	844-2573	0.00
10011	Dunne	Leona	K	713	894-1238	675.72
10012	Smith	Kathy	W	615	894-2285	345.86
10013	Olowski	Paul	F	615	894-2180	536.75
10014	Orlando	Myron		615	222-1672	0.00
10015	O'Brian	Amy	B	713	442-3381	0.00
10016	Brown	James	G	615	297-1228	277.55
10017	Williams	George		615	290-2556	768.93
10018	Farriss	Anne	G	713	382-7185	216.55
10019	Smith	Olette	K	615	297-3809	0.00

PRODUCT

P_CODE	P_DESCRIPT	P_INDATE	P_QTYOH	P_MIN	P_PRICE	P_DISCOUNT	V_CODE
11QER/31	Power painter, 15 psi., 3-nozzle	1/2/2019	8	5	109.99	0	25595
13-Q2/P2	7.25-in. pwr. saw blade	1/12/2019	32	15	14.99	0.05	21344
14-Q1/L3	9.00-in. pwr. saw blade	2/12/2019	18	12	17.49	0	21344
1546-QQ2	Hrd. cloth, 1/4-in., 2x50	1/14/2019	15	8	39.95	0	23119
1558-QW1	Hrd. cloth, 1/2-in., 3x50	8/14/2018	23	5	43.99	0	23119
2232/QTY	B&D jigsaw, 12-in. blade	2/28/2019	8	5	109.92	0.05	24288
2232/QWE	B&D jigsaw, 8-in. blade	1/23/2019	6	5	99.87	0.05	24288
2238/QPD	B&D cordless drill, 1/2-in.	12/19/2018	12	5	38.95	0.05	25595
23109-HB	Claw hammer	2/19/2019	23	10	9.95	0.1	21225
23114-AA	Sledge hammer, 12 lb.	11/1/2018	8	5	14.40	0.05	
54778-2T	Rat-tail file, 1/8-in. fine	1/14/2019	43	20	4.99	0	21344
89-WRE-Q	Hicut chain saw, 16 in.	11/6/2018	11	5	256.99	0.05	24288
PVC23DRT	PVC pipe, 3.5-in., 8-ft	2/19/2019	188	75	5.87	0	
SM-18277	1.25-in. metal screw, 25	2/28/2019	172	75	6.99	0	21225
SW-23116	2.5-in. wd. screw, 50	1/23/2019	237	100	8.45	0	21231
WR3/TT3	Steel matting, 4'x8'x1/6", .5" mesh	2/16/2019	18	5	119.95	0.1	25595

INVOICE

INV_NUMBER	CUS_CODE	INV_DATE	INV_TOTAL	INV_TERMS	INV_STATUS
1001	10014	3/18/2019	24.95	CASH	PAID
1002	10011	3/18/2019	9.98	CASH	PAID
1003	10012	3/18/2019	153.85	CASH	PAID
1004	10011	3/19/2019	34.87	CASH	PAID
1005	10018	3/19/2019	70.44	CASH	PAID
1006	10014	3/19/2019	397.83	CASH	PAID
1007	10015	3/19/2019	34.97	CASH	PAID
1008	10011	3/19/2019	399.15	CASH	PAID
1009	10016	3/19/2019	9.98	CHARGE	UNPAID

LINE

INV_NUMBER	LINE_NUMBER	P_CODE	LINE_UNITS	LINE_PRICE
1001	1	13-Q2/P2	1	14.99
1001	2	23109-HB	1	9.95
1002	1	54778-2T	2	4.99
1003	1	2238/QPD	1	38.95
1003	2	1546-QQ2	1	39.95
1003	3	13-Q2/P2	5	14.99
1004	1	54778-2T	3	4.99
1004	2	23109-HB	2	9.95
1005	1	PVC23DRT	12	5.87
1006	1	SM-18277	3	6.99
1006	2	2232/QTY	1	109.92
1006	3	23109-HB	1	9.95
1006	4	89-WRE-Q	1	256.99
1007	1	13-Q2/P2	2	14.99
1007	2	54778-2T	1	4.99
1008	1	PVC23DRT	5	5.87
1008	2	WR3/TT3	3	119.95
1008	3	23109-HB	1	9.95
1009	1	89-WRE-Q	1	277.55

ACCT_TRANSACTION

ACCT_TRANS_NUM	ACCT_TRANS_DATE	CUST_NUMBER	ACCT_TRANS_TYPE	ACCT_TRANS_AMOUNT
10003	3/17/2019	10014	charge	329.66
10004	3/17/2019	10011	charge	615.73
10006	3/17/2019	10014	payment	329.66
10007	3/19/2019	10016	charge	277.55

TRANSACTION LOG FILE

TRL_ID	TRX_NUM	PREV_PTR	NEXT_PTR	OPERATION	TABLE	ROW_ID	ATTRIBUTE	BEFORE_VAL	AFTER_VAL
341	101	NULL	352	START	***Begin Transaction				
352	101	341	363	UPDATE	PRODUCT	54778-2T	PROD_QOH	45	43
355	****			CHECKPOINT					
363	101	352	365	UPDATE	CUSTOMER	10011	CUS_BALANCE	615.73	675.72
365	101	363	NULL	COMMIT	*** End Transaction				
397	106	NULL	405	START	***Begin Transaction				
405	106	397	415	INSERT	INVOICE	1009			1009, 10016, 3/19/2019, 9.98. CHARGE, UNPAID
415	106	405	419	INSERT	LINE	(1009,1)			1009,1, 89-WRE-Q, 1,277.55
419	106	415	427	UPDATE	PRODUCT	89-WRE-Q	PROD_QOH	12	11
427	106	419	431	UPDATE	CUSTOMER	10016	CUS_BALANCE	0.00	277.55
431	106	427	521	INSERT	ACCT_TRANSACTION	10007			10007, 3/19/2019, 10016, CHARGE, 277.55
457	155	NULL	525	START	***Begin Transaction				
521	106	431	NULL	COMMIT	*** End Transaction				
525	155	521	????	UPDATE	PRODUCT	2232/QWE	PROD_QOH	6	26
	****			CRASH					

The changes made to the database in recovery were apart of transactions 101 and 106. The transaction 155 was not taken into account because no commit operation had been called.