

# Transactions

## Non-conflicting

1 add\_bill in store 1, add bill in store 2

A: bill(160)

B: bill(161)

C: bill\_product(160)

D: bill\_product(161)

T1		T2	
insert into bill(bill_id,customer_id,store_id,date) values(160,15,28,'2023-04-23')	W(A)		
insert into bill_product(bill_id,product_id,quantity) values(160,'gh05',5)	W(C)		
		insert into bill(bill_id,customer_id,store_id,date) values(161,15,29,'2023-04-23')	W(B)
		insert into bill_product(bill_id,product_id,quantity) values(161,'gh05',5)	W(D)

2. add\_warehouse(ret)

A: warehouse(305)

B: warehouse(306)

C: retailer\_warehouse(28,305)

D: retailer\_warehouse(28,306)

T1		T2	
insert into warehouse(warehouse_id,street,city,pincode,capacity) values(305,'street','city','pincode',100)1	W(A)		
insert into retailer_warehouse values(28,305)	W(C)		
		insert into warehouse(street,city,pincode,capacity) values('street1','city1','pincode1',100)	W(B)
		insert into retailer_warehouse values(28,306)	W(D)

### 3. update product\_info

A: product(bu02)

B: product(bu03)

T1		T2	
update product set fat_percent=6 where product_id='bu02'	W(A)		
		update product set cost=60 where product_id='bu03'	W(B)

### 4. Update collective

A: collective(12)

B: collective(13)

T1		T2	
update collective set street=newstreet where collective_id=12	W(A)		
		update collective set no_of_members=100 where collective_id=13	W(B)

# Conflicting

## Raw materials

- 1 collective is supplying raw materials and getting paid.
- 2 Production unit creates batches from raw material

A: collective\_rawmaterial

B: raw\_material

C: collective

D: batch

E: product\_rawmaterial

## conflict serialisable

T1		T2	
insert into collective_rawmaterial values(1,'ame','2023-04-23',100)	W(A)		
UPDATE raw_material SET amount = amount + 100 WHERE raw_id = 1;	W(B)		
		insert into batch (batch_id,product_id,quantity,prod uction_date,expiry_date) values({batch_id},{product_id},{q uantity},{production_date},{expiry _date})	W(D)
		select * from product_rawmaterial where product_id='{}	R(E)
		select * from raw_material where raw_id='{j[1]}	R(B)
UPDATE collective,raw_material SET balance = balance + (100* rate) WHERE collective_id = 1 and	W(C)		

aw_material.raw_id='ame';			
		update raw_material set amount=amount-{amount} where raw_id='{j[1]}	W(B)

### Non-Conflict Serializable

T1		T2	
insert into collective_rawmaterial values(1,'ame','2023-04-23',100)	W(A)		
		insert into batch (batch_id,product_id,quantity,prod uction_date,expiry_date) values({batch_id},{product_id},{q uantity},{production_date},{expiry _date})	W(D)
		select * from product_rawmaterial where product_id='{}	R(E)
		select * from raw_material where raw_id='{j[1]}	R(B)
UPDATE raw_material SET amount = amount + 100 WHERE raw_id = 1;	W(B)		

		update raw_material set amount=amount-{amount} where raw_id='{j[1]}	W(B)
UPDATE collective,raw_material SET balance = balance + (100* rate) WHERE collective_id = 1 and aw_material.raw_id='ame';	W(C)		

(this would give different answer, for the order in which the queries are used, thus we add locks)

#### Using locks:

T1		T2	
X(A)			
insert into collective_rawmaterial values(1,'ame','2023-04-23',100)	W(A)		
		X(D)	
		insert into batch (batch_id,product_id,quantity,prod uction_date,expiry_date) values({batch_id}','{product_id}','{q uantity}','{production_date}','{expiry _date}')	W(D)
		X(E)	
		select * from product_rawmaterial where product_id='{}	R(E)
		X(B)	
		select * from raw_material where raw_id='{j[1]}	R(B)

X(B)- (would till T2 releases it)			
UPDATE raw_material SET amount = amount + 100 WHERE raw_id = 1;	W(B)		
		update raw_material set amount=amount-{amount} where raw_id='{j[1]}	W(B)
		U(B)	
		U(E)	
		U(D)	
X(C)			
UPDATE collective,raw_material SET balance = balance + (100* rate) WHERE collective_id = 1 and aw_material.raw_id='ame';	W(C)		
U(C)			
U(B)			
U(A)			

## products/ret\_order

3 company is supplying products to retailer1 and retailer 2

A: retailer\_warehouse

B: batch

C: warehouse

D: retailer\_warehouse

E: warehouse\_batch

## conflict serializable

T1		T2	
select * from retailer_warehouse where store_id=28	R(A)		
select distinct * from (select * from batch where product_id='gh05') as t1 inner join (select * from batch where batch_id in ( select batch_id from warehouse_batch wb,( select warehouse_id from warehouse where warehouse_id not in (select warehouse_id from retailer_warehouse)) a where wb.warehouse_id=a.warehouse_id)) t2 on t1.batch_id=t2.batch_id	R(D)		
	R(C)		
	R(E)		
	R(B)		
		select * from retailer_warehouse where store_id=29	R(A)
update batch set quantity=900 where batch_id=310	W(B)		
insert into batch(batch_id,product_id,quantity,pr oduction_date,expiry_date) values(311,"gho05",100,"2023-04-23" ,"2023-10-23")	W(B)		
insert into warehouse_batch values(168,311)	W(E)		

		select distinct * from (select * from batch where product_id='gh05') as t1 inner join (select * from batch where batch_id in (select batch_id from warehouse_batch wb,(select warehouse_id from warehouse where warehouse_id not in (select warehouse_id from retailer_warehouse)) a where wb.warehouse_id=a.warehouse_id)) t2 on t1.batch_id=t2.batch_id	R(D)
			R(C)
			R(E)
			R(B)
		update batch set quantity=800 where batch_id=310	W(B)
		insert into batch(batch_id, product_id,quantity,production_date,expiry_date) values(312,"gho05",100,"2023-04-23","2023-10-23")	W(B)
		insert into warehouse_batch values(169,312)	W(E)

### Non-Conflict Serializable

T1		T2	
select * from retailer_warehouse where store_id=28	R(A)		
		select * from retailer_warehouse where store_id=29	R(A)
select distinct * from (select * from batch where product_id='gh05') as t1 inner join (select * from batch where batch_id in (select batch_id from warehouse_batch wb,(select warehouse_id from warehouse where warehouse_id not in (select warehouse_id from retailer_warehouse)) a where wb.warehouse_id=a.warehouse_id))	R(D)		
	R(C)		



t2 on t1.batch_id=t2.batch_id	R(E)		
	R(B)		
		select distinct * from (select * from batch where product_id='gh05') as t1 inner join (select * from batch where batch_id in ( select batch_id from warehouse_batch wb,( select warehouse_id from warehouse where warehouse_id not in (select warehouse_id from retailer_warehouse)) a where wb.warehouse_id=a.warehouse_id)) t2 on t1.batch_id=t2.batch_id	R(D)
			R(C)
			R(E)
			R(B)
		update batch set quantity=900 where batch_id=310	W(B)
update batch set quantity=900 where batch_id=310	W(B)		
insert into batch(batch_id,product_id,quantity,production_date,expiry_date) values(311,"gho05",100,"2023-04-23","2023-10-23")	W(B)		
insert into warehouse_batch values(168,311)	W(E)		
		insert into batch(batch_id,product_id,quantity,production_date,expiry_date) values(311,"gho05",100,"2023-04-23","2023-10-23")	W(B)

		insert into warehouse_batch values(169,311)	W(E)
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(this would give different answer, for the order in which the queries are used, thus we add locks)

### Using locks:

T1		T2	
S(A)			
select * from retailer_warehouse where store_id=28	R(A)		
		S(A)	
		select * from retailer_warehouse where store_id=29	R(A)
S(D),S(C),X(B),X(E)			
select distinct * from (select * from batch where product_id='gh05') as t1 inner join (select * from batch where batch_id in ( select batch_id from warehouse_batch wb,( select warehouse_id from warehouse where warehouse_id not in (select warehouse_id from retailer_warehouse)) a where wb.warehouse_id=a.warehouse_id)) t2 on t1.batch_id=t2.batch_id	R(D)		
	R(C)		
	R(E)		
	R(B)		
		S(D),S(C),X(E),X(B)	
		select distinct * from (select * from batch where product_id='gh05') as t1 inner join (select * from batch where	R(D)

		batch_id in ( select batch_id from warehouse_batch wb,( select warehouse_id from warehouse where warehouse_id not in (select warehouse_id from retailer_warehouse)) a where wb.warehouse_id=a.warehouse_id)) t2 on t1.batch_id=t2.batch_id	R(C)
			R(E)
			R(B)
		update batch set quantity=900 where batch_id=310	W(B)
update batch set quantity=900 where batch_id=310	W(B)		
insert into batch(batch_id,product_id,quantity,production_date,expiry_date) values(311,"gho05",100,"2023-04-23","2023-10-23")	W(B)		
insert into warehouse_batch values(168,311)	W(E)		
U(A),U(B),U(E),U(D),U(C)			
		insert into batch(batch_id,product_id,quantity,production_date,expiry_date) values(311,"gho05",100,"2023-04-23","2023-10-23")	W(B)
		insert into warehouse_batch values(169,311)	W(E)
		U(A),U(B),U(E),U(D),U(C)	