

**Get exclusive content straight to your feed.**

ติดตาม 7.3 หนี

f (<https://www.facebook.com/myreadingroom.co.in/>) **Twitter** (<https://twitter.com/Thirupataiahch>)**G+** (<https://plus.google.com/u/0/b/116427336141789177420/116427336141789177420>)**My READING ROOM**
....where information is alive

(/)

Notes and Study Materials

You are here: Home (/) / Notes and Study Materials (/notes-and-studymaterial.html)
Shares
/ DBMS (/notes-and-studymaterial/65-dbms.html) / Concurrency Problems



Concurrency Problems

THIRU DBMS (/NOTES-AND-STUDYMATERIAL/65-DBMS.HTML)

3 COMMENTS ([HTTP://WWW.MYREADINGROOM.CO.IN/NOTES-AND-STUDYMATERIAL/65-DBMS/532-CONCURRENCY-PROBLEMS.HTML#DISQUS_THREAD](http://www.myreadingroom.co.in/notes-and-studymaterial/65-dbms/532-concurrency-problems.html#disqus_thread))

3 Comments (http://www.myreadingroom.co.in/notes-and-studymaterial/65-dbms/532-concurrency-problems.html#disqus_thread)

Concurrency Control Problems

น้ำตาลลิน

Lin Sweet Creation





Get exclusive content straight to your feed.

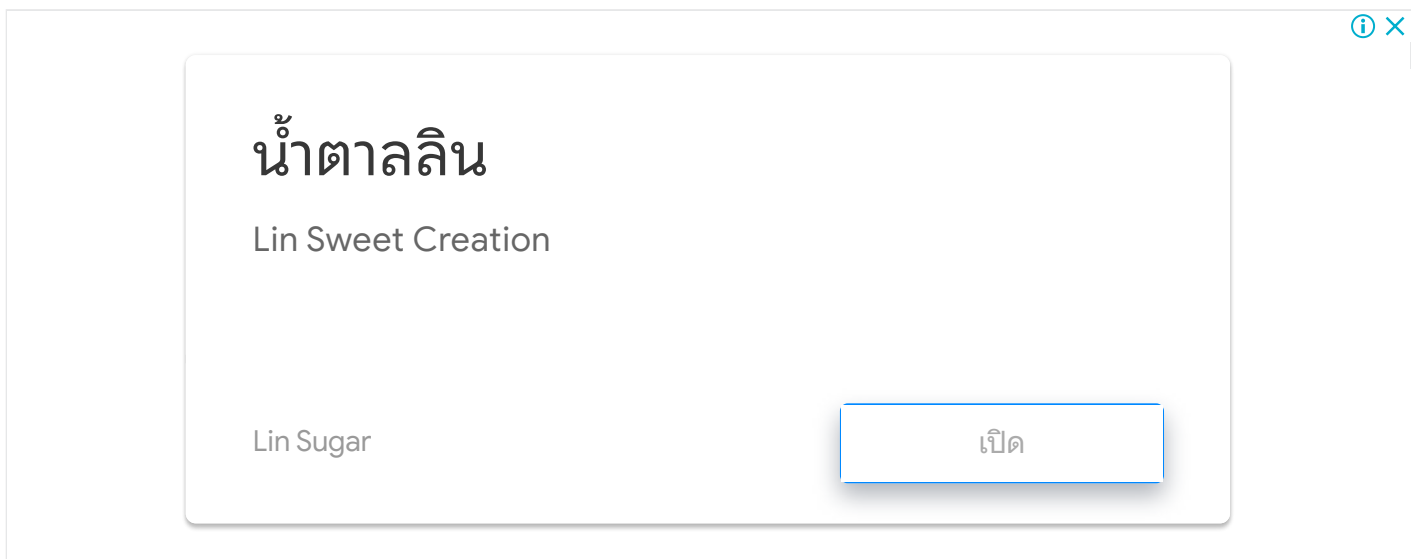
The coordination of the simultaneous execution of transactions in a multiuser database system is known as concurrency control. The objective of concurrency control is to ensure the serializability of transactions in a multiuser database environment. Concurrency control is important because the simultaneous execution of transactions over a shared database can create several data integrity and consistency problems. The three main problems are lost updates, uncommitted data, and inconsistent retrievals.

1. Lost Updates:

The lost update problem occurs when two concurrent transactions, T1 and T2, are updating the same data element and one of the updates is lost (overwritten by the other transaction). Consider the following PRODUCT table example.

One of the PRODUCT table's attributes is a product's quantity on hand (PROD_QOH). Assume that you have a product whose current PROD_QOH value is 35. Also assume that two concurrent transactions, T1 and T2, occur that update the PROD_QOH value for some item in the PRODUCT table.

The transactions are as follows.



Two concurrent transactions update PROD_QOH:



T1: Purchase 100 units $\text{PROD_QOH} = \text{PROD_QOH} + 100$
 T2: Sell 30 units $\text{PROD_QOH} = \text{PROD_QOH} - 30$

Get exclusive content straight to your feed.

The Following table shows the serial execution of those transactions under normal circumstances, yielding the correct answer $\text{PROD_QOH} = 105$.

TIME	TRANSACTION	STEP	STORED VALUE
1	T1	Read PROD_QOH	35
2	T1	$\text{PROD_QOH} = 35 + 100$	
3	T1	Write PROD_QOH	135
4	T2	Read PROD_QOH	135
5	T2	$\text{PROD_QOH} = 135 - 30$	
6	T2	Write PROD_QOH	105

But suppose that a transaction is able to read a product's PROD_QOH value from the table before a previous transaction (using the same product) has been committed.

The sequence depicted in the following Table shows how the lost update problem can arise.

Note that the first transaction (T1) has not yet been committed when the second transaction (T2) is executed. Therefore, T2 still operates on the value 35, and its subtraction yields 5 in memory. In the meantime, T1 writes the value 135 to disk, which is promptly overwritten by T2. In short, the addition of 100 units is "lost" during the process.

TIME	TRANSACTION	STEP	STORED VALUE
1	T1	Read PROD_QOH	35
2	T2	Read PROD_QOH	35
3	T1	$\text{PROD_QOH} = 35 + 100$	
4	T2	$\text{PROD_QOH} = 35 - 30$	
5	T1	Write PROD_QOH (Lost update)	135
6	T2	Write PROD_QOH	5

2. Uncommitted Data:



To illustrate that possibility, let's use the same transactions described during the lost updates discussion. T1 has two atomic parts to it, one of which is the update of the inventory, the other possibly being the update of the invoice total (not shown). T1 is forced to roll back due to an error during the updating of the invoice's total; hence, it rolls back all the way, undoing the inventory update as well. This time, the T1 transaction is rolled back to eliminate the addition of the 100 units. Because T2 subtracts 30 from the original 35 units, the correct answer should be 5.

Transaction	Operation
T1: Purchase 100 units	$\text{PROD_QOH} = \text{PROD_QOH} + 100$ (Rolled back)
T2: Sell 30 units	$\text{PROD_QOH} = \text{PROD_QOH} - 30$

Shares

The following Table shows how, under normal circumstances, the serial execution of those transactions yields the correct answer.

TIME	TRANSACTION	STEP	STORED VALUE
1	T1	Read PROD_QOH	35
2	T1	$\text{PROD_QOH} = 35 + 100$	
3	T1	Write PROD_QOH	135
4	T1	*****ROLLBACK*****	35
5	T2	Read PROD_QOH	35
6	T2	$\text{PROD_QOH} = 35 - 30$	
7	T2	Write PROD_QOH	5

The following Table shows how the uncommitted data problem can arise when the ROLLBACK is completed after T2 has begun its execution.

TIME	TRANSACTION	STEP	STORED VALUE
1	T1	Read PROD_QOH	35
2	T1	$\text{PROD_QOH} = 35 + 100$	
3	T1	Write PROD_QOH	135
4	T2	Read PROD_QOH (Read uncommitted data)	135
5	T2	$\text{PROD_QOH} = 135 - 30$	
6	T1	*****ROLLBACK*****	35
7	T2	Write PROD_QOH	105

3. Inconsistent Retrievals:

Get exclusive content straight to your feed.

Inconsistent retrievals occur when a transaction accesses data before and after another transaction(s) finish working with such data. For example, an inconsistent retrieval would occur if transaction T1 calculated some summary (aggregate) function over a set of data while another transaction (T2) was updating the same data. The problem is that the transaction might read some data before they are changed and other data after they are changed, thereby yielding inconsistent results.

To illustrate that problem, assume the following conditions:

Shares

1. T1 calculates the total quantity on hand of the products stored in the PRODUCT table.
2. At the same time, T2 updates the quantity on hand (PROD_QOH) for two of the PRODUCT table's products.

The two transactions are shown in the following Table:

TRANSACTION T1		TRANSACTION T2	
SELECT	SUM(PROD_QOH)	UPDATE	PRODUCT
FROM	PRODUCT	SET	PROD_QOH = PROD_QOH + 10
		WHERE	PROD_CODE = '1546-QQ2'
		UPDATE	PRODUCT
		SET	PROD_QOH = PROD_QOH - 10
		WHERE	PROD_CODE = '1558-QW1'
		COMMIT;	

While T1 calculates the total quantity on hand (PROD_QOH) for all items, T2 represents the correction of a typing error: the user added 10 units to product 1558-QW1's PROD_QOH but meant to add the 10 units to product 1546-QQ2's PROD_QOH. To correct the problem, the user adds 10 to product 1546-QQ2's PROD_QOH and subtracts 10 from product 1558-QW1's PROD_QOH. The initial and final PROD_QOH values are reflected in the following Table

	BEFORE	AFTER
PROD_CODE	PROD_QOH	PROD_QOH
11QER/31	8	8
13-Q2/P2	32	32
1546-QQ2	15	(15 + 10) → 25
1558-QW1	23	(23 - 10) → 13

The following table demonstrates that inconsistent retrievals are possible during the transaction execution, making the result of T1's execution incorrect. The "After" summation shown in Table 10.9 reflects the fact that the value of 25 for product 1546-QQ2 was read after the WRITE statement was completed. Therefore, the "After" total is $40 + 25 = 65$. The "Before" total reflects the fact that the value of 23 for product 1558-QW1 was read before the next WRITE statement was completed to reflect the corrected update of 13. Therefore, the "Before" total is $65 + 23 = 88$.

TIME	TRANSACTION	ACTION	VALUE	TOTAL
1	T1	Read PROD_QOH for PROD_CODE = '11QER/31'	8	8
2	T1	Read PROD_QOH for PROD_CODE = '13-Q2/P2'	32	40
3	T2	Read PROD_QOH for PROD_CODE = '1546-QQ2'	15	
4	T2	PROD_QOH = 15 + 10		
5	T2	Write PROD_QOH for PROD_CODE = '1546-QQ2'	25	
6	T1	Read PROD_QOH for PROD_CODE = '1546-QQ2'	25	(After) 65
7	T1	Read PROD_QOH for PROD_CODE = '1558-QW1'	23	(Before) 88
8	T2	Read PROD_QOH for PROD_CODE = '1558-QW1'	23	
9	T2	PROD_QOH = 23 - 10		
10	T2	Write PROD_QOH for PROD_CODE = '1558-QW1'	13	
11	T2	***** COMMIT *****		
12	T1	Read PROD_QOH for PROD_CODE = '2232-QTY'	8	96
13	T1	Read PROD_QOH for PROD_CODE = '2232-QWE'	6	102

The computed answer of 102 is obviously wrong because you know from the previous Table that the correct answer is 92. Unless the DBMS exercises concurrency control, a multiuser database environment can create havoc within the information system.

น้ำตาลลิน

Lin Sweet Creation

Lin Sugar

เปิด

You May Also Like:



Get exclusive content straight to your feed. Transaction Log (/notes-and-studymaterial/65-dbms/531-transactionlog.html)

Sheduler (/notes-and-studymaterial/65-dbms/533-sheduler.html)

Deadlocks in DBMS (/notes-and-studymaterial/65-dbms/537-deadlocks.html)

Concurrency Control with Locking (/notes-and-studymaterial/65-dbms/534-concurrency-control-with-locking.html)

Back to DBMS Questions (/notes-and-studymaterial/65-dbms/460-dbms-questions-and-answers.html)

Shares



**Instantly Check
Your Writing**

Ad Grammarly





ALSO ON HTTP://WWW.MYREADINGROOM.CO.IN

Get exclusive content straight to your feed.

What is Data Communication and ...

7 years ago · 2 comments
Here find What is Data Communication and Characteristics of Data ...

Levels of Data and Process Distribution

7 years ago · 4 comments
Here Find different levels of data and process distribution

Loop problem in Transparent Bridges

7 years ago · 1 comment
Here find details of Loop problem in Transparent Bridges

Why (Impo

6 years
Here y of Gate to trick

Shares





Sponsored

Get exclusive content straight to your feed.

If you own a mouse, you will never turn off your computer again.

PanzerRush

Pierce Brosnan's Wife Lost 120 Pounds - This Is Her Now

Noteabley

Play this game for 1 minute and see why everyone is addicted.

Navy.Quest

Shares

Top 15 Most Comfortable & Luxurious Airports In the World

Luxury Levels

Top Most Expensive Luxury Cars - Nobody in Chiang Mai Has One!

LuxuryLevels.com

This woman sticks a needle into a banana. The result will amaze you!

Good to know this



3 Comments

Get exclusive content straight to your feed.

1

Login

▼

G

Join the discussion...

LOG IN WITH

OR SIGN UP WITH DISQUS

?

Name

♡

3

Share

Best

Newest

Oldest

Shares

A

Akshay Bhardwaj

6 years ago

nice

0

0

Reply

•

Share

›



thiru_ch

Mod

→ Akshay Bhardwaj

6 years ago

Thank you Akshay

0

0

Reply

•

Share

›



Prateek Choudhary

4 years ago

Thank you for the detailed examples however I feel the field names could be made simpler in order to make the reading easy.

I found myself repeating the field names in my head a couple of times to keep track of what was happening.

0

1

Reply

•

Share

›

Subscribe

Privacy

Do Not Sell My Data



 Sponsored

Get exclusive content straight to your feed.
If you own a mouse, you will never turn off your computer again.

PanzerRush

Play this game for 1 minute and see why everyone is addicted.

Navy.Quest

Pierce Brosnan's Wife Lost 120 Pounds - This Is Her Now

Noteabley

Shares

หญิงชราวัย 96 ปี ขายบ้าน ผู้ซื้อเห็นข้างในและแทบไม่เชื่อสายตาตัวเอง

The Family Breeze

Top 15 Most Comfortable & Luxurious Airports In the World

Luxury Levels

These Twins Were Named "Most Beautiful In The World," Wait Till You See Them Today

LuxuryLevels.com

[back to top](#)[◀ Prev \(/notes-and-studymaterial/65-dbms/531-transactionlog.html\)](/notes-and-studymaterial/65-dbms/531-transactionlog.html)[Next ▶ \(/notes-and-studymaterial/65-dbms/533-sheduler.html\)](/notes-and-studymaterial/65-dbms/533-sheduler.html)

SEARCH

Advertisement





Get exclusive content straight to your feed.



FREE TRAINING

"HOW TO EARN A 6-FIGURE

SIDE-INCOME ONLINE"

SIGN UP FOR THE FREE TRAINING



Shares

(<https://bit.ly/2NZvrNY>)



น้ำตาลลิน

Lin Sweet Creation

Lin Sugar

เปิด

CAREER NEWS



 Social Media Marketing Jobs and Careers: Here's What You'll Need (/latest-career-news/5624-social-media-marketing-jobs-and-careers.html) **Get exclusive content straight to your feed.**

06 July 2017

Clinical Research Jobs & Career: The Insider's Guide to Science Graduates (/latest-career-news/5565-clinical-research-jobs-career-the-insider-s-guide.html)

20 June 2017

How to get into Cyber Security? Beginner's Guide on Cyber Security Jobs (/latest-career-news/5328-cyber-security-career.html)

25 April 2017

Freelance Jobs from Home: Simple Guidance for You in Freelance Jobs (/latest-career-news/5202-freelance-jobs-from-home-simple-guidance-for-you-in-freelance-jobs.html)

Shares
26 March 2017

LATEST JOB NOTIFICATIONS

Medical Services Recruitment Board Tamil Nadu Recruitment Notification: Apply for 1884 Assistant Surgeon (General) Jobs (/latest-job-news/6059-medical-services-recruitment-board-tamil-nadu-recruitment-notification-1884-assistant-surgeon-general-jobs.html)

25 September 2018

Jharkhand High Court Recruitment Notification: Apply for 73 Various Jobs (/latest-job-news/6058-jharkhand-high-court-recruitment-notification-73-various-jobs.html)

25 September 2018

Indo-Tibetan Border Police Recruitment Notification: Apply for 73 Head Constable Jobs (/latest-job-news/6057-indo-tibetan-border-police-recruitment-notification-73-head-constable-jobs.html)

24 September 2018

M.P. Power generating company limited Recruitment Notification: Apply for 100 Plant Assistant Jobs (/latest-job-news/6056-m-p-power-generating-company-limited-recruitment-notification-100-plant-assistant-jobs.html)

24 September 2018

Telangana State Public Service Commission (TSPSC) Recruitment Notification: Apply for 24 Professor Jobs (/latest-job-news/6055-telangana-state-public-service-commission-tspsc-recruitment-notification-24-professor-jobs.html)

12 September 2018



(<https://click.linksynergy.com/fs-bin/click?id=y9OqoBI7pS8&offerid=467035.264&subid=0&type=4>)
Get exclusive content straight to your feed.

Shares



The advertisement banner for ThaiBulkSMS features a blue background with a white curved design element. The main text in Thai reads "ส่งง่าย ส่งเร็ว ถึงตัว" (Easy to send, fast to reach, reaches the person). The ThaiBulkSMS logo is in the top right corner, with the tagline "High Quality SMS Solutions". The website "thaibulksms.com" is at the bottom left. A blue button at the bottom right says "เริ่มต้นทดลองใช้ฟรี" (Start free trial). A small image of a person's hands holding a smartphone is on the right side.

© 2016 Myreadingroom.co.in. All Rights Reserved.

