Isolationsstufen

```
connect to VSISP user vsisp03
update command options using c off
values current isolation
db2 => values current isolation
1 -- 1 record(s) selected.
-- 2. creates the OPK table with five data sets
CREATE TABLE OPK (id int. name varchar(255)):
INSERT INTO OPK VALUES (1,'name1');
INSERT INTO OPK VALUES (2,'name2');
INSERT INTO OPK VALUES (3,'name3');
INSERT INTO OPK VALUES (4,'name4');
INSERT INTO OPK VALUES (5,'name5');
SELECT * FROM OPK;
3. update command options using c off
list command options
SELECT appl id FROM TABLE (SNAPSHOT APPL INFO(CURRENT SERVER, -2)) AS t
select * from opk where id = 1
attach to vsisls4 user vsisp03
get snapshot for locks for application applid ....
db2 => get snapshot for locks for application applid 134.100.11.71.38534.09051810203
      Application Lock Snapshot
Snapshot timestamp
                                = 05/18/2009 15:49:23.503264
Application handle
                              = 8651
Application ID
                             = 134.100.11.71.38534.09051810203
Sequence number
                               = 00031
Application name
                              = db2bp
CONNECT Authorization ID
                                     = VSISP03
Application status
                              = UOW Waiting
Status change time
                              = Not Collected
Application code page
                                = 1208
Locks held
                            = 2
Total wait time (ms)
                               = Not Collected
List Of Locks
Lock Name
                     = 0x53514C4332473133B7F3CE3241
Lock Attributes
                     = 0x000000000
Release Flags
                     = 0x40000000
Lock Count
                     = 1
```

Hold Count = 0Lock Object Name = 0

Object Type = Internal Plan Lock

Mode = S

Lock Name = 0x0000110100000000000000054

Lock Attributes = 0x00000000Release Flags = 0x40000000

Lock Count = 1
Hold Count = 0
Lock Object Name = 273
Object Type = Table

Tablespace Name = SYSCATSPACE

Table Schema = SYSIBM

Table Name = SYSUSERAUTH

Mode = IS

4. set current isolation = RS select * from opk where id = 1

db2 => get snapshot for locks for application applid 134.100.11.71.38534.09051810203

Application Lock Snapshot

Snapshot timestamp = $05/18/2009 \ 15:51:25.700863$

Application handle = 8651

Application ID = 134.100.11.71.38534.09051810203

Sequence number = 00032Application name = db2bp

CONNECT Authorization ID = VSISP03
Application status = UOW Waiting
Status change time = Not Collected

Application code page = 1208

Locks held = 4

Total wait time (ms) = Not Collected

List Of Locks

Lock Name = 0x02001103040020BA000000052

Lock Attributes = 0x00000000Release Flags = 0x00000001

Lock Count = 1Hold Count = 0

Lock Object Name = 3122659332

Object Type = Row

Tablespace Name = USERSPACE1

Table Schema = VSISP03 Table Name = OPK

Mode =NSLock Name = 0x53514C4332473133B7F3CE3241 Lock Attributes = 0x000000000Release Flags = 0x40000000Lock Count **Hold Count** =0=0Lock Object Name Object Type = Internal Plan Lock Mode Lock Name = 0x02001103000000000000000054Lock Attributes = 0x000000000= 0x00000001Release Flags = 1Lock Count Hold Count = 0Lock Object Name = 785Object Type = Table Tablespace Name = USERSPACE1 Table Schema = VSISP03 Table Name = OPK= ISMode Lock Name Lock Attributes = 0x000000000Release Flags = 0x40000000Lock Count = 1= 0**Hold Count** Lock Object Name = 273Object Type = Table Tablespace Name = SYSCATSPACE Table Schema = SYSIBMTable Name = SYSUSERAUTH

Sperrkonflikte

= IS

Mode

5. Session A (RS)	Session B(CS)
connect to VSISP user vsisp03 update command options using c off	connect to VSISP user vsisp03
Set isolation = RS	
db2 => select * from opk where id > 2 ID NAME 3 name3 4 name4 5 name5	
	db2 => insert into opk values (6,'name6')

	DB20000I The SQL command completed successfully.
db2 => select * from opk where id > 2 ID NAME 3 name3 4 name4 5 name5 6 name6	

6. Session A (RR)	Session B(CS)
connect to VSISP user vsisp03 update command options using c off	connect to VSISP user vsisp03
Set isolation = RR	
db2 => select * from opk where id > 2 ID NAME 3 name3 4 name4 5 name5 6 name6	
db2 => get snapshot for locks for application applid 134.100.11.71.38534.09051810203	db2 => insert into opk values (7,'name7') hangs due to S lock on Table OPK
Application Lock Snapshot	
Snapshot timestamp = 05/18/2009 16:06:13.204405	
Application handle = 8651 Application ID = 134.100.11.71.38534.09051810203 Sequence number = 00033 Application name = db2bp CONNECT Authorization ID = VSISP03 Application status = UOW Waiting Status change time = Not Collected Application code page = 1208 Locks held = 3 Total wait time (ms) = Not Collected	
List Of Locks Lock Name = 0x53514C4332473133B7F3CE3241 Lock Attributes = 0x00000000 Release Flags = 0x40000000	

Lock Count = 1**Hold Count** = 0Lock Object Name = 0Object Type = Internal Plan Lock Mode = SLock Name 0x020011030000000000000000054Lock Attributes = 0x00000010Release Flags = 0x00000002Lock Count = 1**Hold Count** = 0Lock Object Name = 785Object Type = Table Tablespace Name = USERSPACE1 Table Schema = VSISP03 Table Name = OPKMode = \mathbf{S} Lock Name 0x000011010000000000000000054 = 0x000000000Lock Attributes Release Flags = 0x40000000Lock Count = 1= 0**Hold Count** Lock Object Name = 273Object Type = Table Tablespace Name = SYSCATSPACE Table Schema = SYSIBM Table Name = SYSUSERAUTH Mode = IScommit DB20000I The SQL command completed successfully. db2 => select * from opk ID **NAME** 1 name1 2 name2 3 name3 4 name4 5 name5 6 name6 7 name7

7. Session A (RR)	Session B (CS)
connect to VSISP user vsisp03	connect to VSISP user vsisp03

update command options	s using c off	update command options using c off
Set isolation = RR		Set isolation = CS
select * from OPK where id=1		Update OPK set name = '13name' where id = 13
0x53514C4332473133B Lock Attributes Release Flags Lock Count Hold Count Lock Object Name	614.09051810383 = 3 = 7F3CE3241 = 0x000000000 = 0x40000000 = 1 = 0 = 0 = Internal Plan Lock	waits for session A
Lock Name 0x02001103000000000000000000000000000000	= 000000054 = 0x00000010 = 0x00000001 = 1 = 0 = 785 = Table = USERSPACE1 = VSISP03 = OPK	
0x000011010000000000000000000000000000	= 0x00000000 = 0x40000000 = 1 = 0 = 273 = Table = SYSCATSPACE = SYSIBM = SYSUSERAUTH	
aammit		Insert actually happens
commit		misert actually happens

8. CREATE TABLE mpk (id int NOT NULL, name varchar(255)); ALTER TABLE mpk ADD PRIMARY KEY (id); INSERT INTO mpk VALUES (1, 'name1') INSERT INTO mpk VALUES (2, 'name2') INSERT INTO mpk VALUES (3, 'name3') INSERT INTO mpk VALUES (4, 'name4') INSERT INTO mpk VALUES (5, 'name5') commit

9. Session A	Session B
connect to VSISP user vsisp03 update command options using c off	connect to VSISP user vsisp03 update command options using c off
Set isolation = RR	Set isolation = CS
select * from mpk where id=1	Update mpk set name = 'Session B' where id = 5
get snapshot for locks for application applid 134.100.11.71.38534.09051810203	waits for session A
Application Lock Snapshot	
Snapshot timestamp = 05/18/2009 16:14:02.265443	
Application handle = 8651 Application ID = 134.100.11.71.38534.09051810203 Sequence number = 00035 Application name = db2bp CONNECT Authorization ID = VSISP03 Application status = UOW Waiting Status change time = Not Collected Application code page = 1208 Locks held = 4 Total wait time (ms) = Not Collected List Of Locks Lock Name = 0x02001804040020BB0000000052 Lock Attributes = 0x000000010 Release Flags = 0x000000001	
Lock Count = 1 Hold Count = 0 Lock Object Name = 3139436548 Object Type = Row Tablespace Name = USERSPACE1 Table Schema = VSISP03	

		con
commit		
	<u> </u>	
Mode	= IS	
Table Name	= MPK	
Table Schema	= VSISP03	
Tablespace Name	= USERSPACE1	
Lock Object Name Object Type	= 1048 = Table	
Hold Count	=0	
Lock Count	= 1	
Release Flags		
Lock Attributes		
0x02001804000000		
Lock Name	=	
Mode	= IS	
	= SYSUSERAUTH	
Table Schema		
Tablespace Name		
Object Type		
Lock Object Name		
Hold Count	-1 = 0	
Release Flags Lock Count	= 0x4000000 = 1	
Lock Attributes		
0x000011010000000	000000000054	
Lock Name	=	
Mode	= S	
	= Internal Plan Lock	
Lock Object Name		
Hold Count	= 0	
Lock Count		
Release Flags	=0x40000000	
Lock Attributes		
0x53514C43324731		
Lock Name	=	
Mode	= S	
3.6 1	= MPK	

Deadlocks

10.

A (RR)	B (CS)	
Select * from opk where id = 1	Select * from opk where id = 2	
db2 => get snapshot for locks for application applid 134.100.11.71.38534.0905181 0203	db2 => get snapshot for locks for application applid 134.100.11.71.51614.0905181 0383	
Sequence number Application name CONNECT Authorization ID VSISP03 Application status Status change time Application code page Locks held Technique 100020 = db2bp = UOW Waiting = Not Collected = 1208 = 3	Sequence number = 00022 Application name = db2bp CONNECT Authorization ID = VSISP03 Application status = UOW Waiting Status change time = Not Collected Application code page = 1208 Locks held = 2	
Total wait time (ms) = Not Collected List Of Locks Lock Name = 0x53514C4332473133B7F3CE3241 Lock Attributes = 0x000000000 Release Flags = 0x40000000 Lock Count = 1 Hold Count = 0 Lock Object Name = 0 Object Type = Internal Plan Lock Mode = S	Total wait time (ms) = Not Collected List Of Locks Lock Name = 0x53514C4332473133B7F3CE3241 Lock Attributes = 0x000000000 Release Flags = 0x40000000 Lock Count = 1 Hold Count = 0 Lock Object Name = 0 Object Type = Internal Plan Lock Mode = S	
Lock Name = 0x020011030000000000000000054 = Lock Attributes = Release Flags = 0x00000001 = Lock Count = Hold Count = Lock Object Name = Object Type = Tablespace Name = Table Schema = Table Name = Mode =	Lock Name = 0x000011010000000000000000054 = Lock Attributes = Release Flags = 0x40000000 Lock Count = Hold Count = Lock Object Name = Cobject Type = Tablespace Name = SYSCATSPACE Table Schema = Table Name = Mode =	
Lock Name = 0x00001101000000000000000000000000000		

Lock Attributes	=0x00000000	
Release Flags	=0x40000000	
Lock Count	= 1	
Hold Count	=0	
Lock Object Name	= 273	
Object Type	= Table	
Tablespace Name	= SYSCATSPACE	
Table Schema	= SYSIBM	
Table Name	= SYSUSERAUTH	
Mode =	= IS	
		update opk set name='neuer name' where id = 1
		hangs because of locks hold by session A
update opk set name =	'session A' where id = 2	
commit		
		commit
		B (RS)

11.

A (RR)	B (RS)
Select * from opk where id =1	
	Select * from opk where id = 2
	update opk set name = 'session B' where id = 1
update opk set name = 'session A' where id = 2	
DB21034E The command was processed as an SQL statement because it was not a valid Command Line Processor command. During SQL processing it returned: SQL0911N The current transaction has been rolled back because of a deadlock or timeout. Reason code "2". SQLSTATE=40001	
	commit
commit	

 $db2 \Rightarrow$ select * from opk where id < 3

ID NAME

1 session B

2 name2

2 record(s) selected.