

B561 – Advanced Database Concepts – Fall 2011

Assignment 4

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There are two objects (A,B), thus we need two lock managers.

There are three transactions (X1,X2,X3)

I assume a **Strict, 2PL protocol**.

<b>A</b>			<b>B</b>		
Time	Granted	Waiting	Time	Granted	Waiting
t1	S(X1)	∅	t1	∅	∅
t2	S(X1)	∅	t2	U(X2)	∅
t3	S(X1)	∅	t3	U(X2)	∅
t4	S(X1)S(X2)	∅	t4	U(X2)	∅
t5	S(X1)S(X2)U(X3)	∅	t5	U(X2)	∅
t6	S(X1)S(X2)U(X3)	∅	t6	U(X2)	∅
t7	S(X1)S(X2)U(X3)	∅	t7	X(X2)	∅
t8	S(X1)S(X2)U(X3)	∅	t8	X(X2)	∅
t9	S(X1)S(X2)U(X3)	∅	t9	X(X2)	U(X1)
t10	S(X1)S(X2)U(X3)	∅	t10	X(X2)	U(X1)
t11	S(X1)S(X2)	X(X3)	t11	X(X2)	U(X1)
t12	S(X1)S(X2)	X(X3)	t12	X(X2)	U(X1)
t13	S(X1)	X(X3)	t13	U(X1)	∅
t14	S(X1)	X(X3)	t14	X(X1)	∅
t15	X(X3)	∅	t15	∅	∅
t16	∅	∅	t16	∅	∅

Notes:

At time t9, transaction X1 gets on the waiting list on object B because a U lock cannot coexist with an X lock. The transaction resumes at time t13, once X2 commits.

At time t11, transaction X3 gets on the waiting list on object A because an X lock cannot coexist with an S lock. The transaction resumes at time t15, once X1 commits.