

Subject : DBMS

Topic:2PL

NISHA C.D,Assistant professor
Department of Computer Science

2PL

Two-Phase Locking protocol

This protocol requires that each transaction in a schedule will be two phased.

1. Growing phase
2. Shrinking phase

In growing phase transactions can only obtain locks but cannot release any lock

In shrinking phase transaction can only release locks but cannot obtain any lock.

Transaction can perform read or write operation both in growing or shrinking phase.

T1

X(A)

S(B)

R(A)

W(A)

R(B) GROWING PHASE

S(A)

R(A)

U(A)*LOCK POINT

SHRINKING PHASE

Advantages of 2PL protocol

Always achieve serializability

T1	T2
X(A) R(A) W(A) S(B) R(B) U(A)	S(A) R(A)

It will also maintain consistency

Drawbacks of 2PL

It may not free from irrecoverability

It may not free from cascading rollback

It may not free from deadlock

It may not free from starvation

It may not free from irrecoverability

T1	T2
<p>X(A) R(A) W(A) U(A)</p> <p>*FAILURE</p>	<p>S(A) R(A) COMMIT</p>

May not free from cascading rollback

T1	T2	T3	T4
X(A) R(A) W(A) U(A) FAILURE	S(A) R(A)	S(A) R(A)	S(A) R(A)

May not free from deadlock

T1	T2
X(A)	X(B)
X(B)	X(A)

May not free from starvation

T1	T2	T3	T4
X(A)	S(A) U(A)	S(A) U(A)	S(A) U(A)

Strict 2PL

It should satisfy the basic 2 PL and all exclusive locks should hold until commit.

Rigorous 2PL

It should satisfy the basic 2PL and all shared exclusive locks should hold until commit or abort

Conservative 2PL

Which requires the transaction to obtain all the locks before it starts and realise all the locks after it commits