Deadlock:-

If a system is said to be deadlock state if exists a set of transaction {T0 T1 T2 T3 ….Tn} such that Each transaction in set is waiting for releasing any resource by any other transaction in that set.

Condition for deadlock

🡪Mutual Exclusion

Non Sharable

🡪No Preemption

Forcefully release of resource is allowed

🡪Circular Wait

Hold request in cycle

🡪Hold & Wait

Hold and wait the resources.

Two method to handle deadlock

1.Deadlock Prevention

2.Detect and recovery

🡪**Deadlock Prevention**

Technique based on Timestamp:

1.Wait and die method

If ( Ts(Ti)<Ts(Tj) ):

Ti wait

Else:

Tj Roll\_back

Here ti is old .

2. Wound Wait

If (ts(Ti)>ts(Tj)):

Ti waits

Else

Ti rollback

Here Ti is younger.

Tj is older.

Disadvantages

🡪Unncecesary roll back leads to starvation

2.Advance locking

Locking all the variables in the beginning

3.Ordering Data items

An order(1 2 3……..n) is assigned to every data items.Any transaction can occur in either ascending or descending order.

ordering data items on two phase locking

🡪Deadlock detect & Recovery

Detection

Detect using graph.

Same as serializability and used for operating system deadlock detection also

Recovery

Recover the deadlock using partial rollback and complete rollback.