SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING-IOT Including CS&BCT

COURSE NAME : 19SB504   DATABASE MANAGEMENT SYSTEMS

III YEAR / V SEMESTER

Unit IV-   **TRANSACTIONS MANAGEMENT**
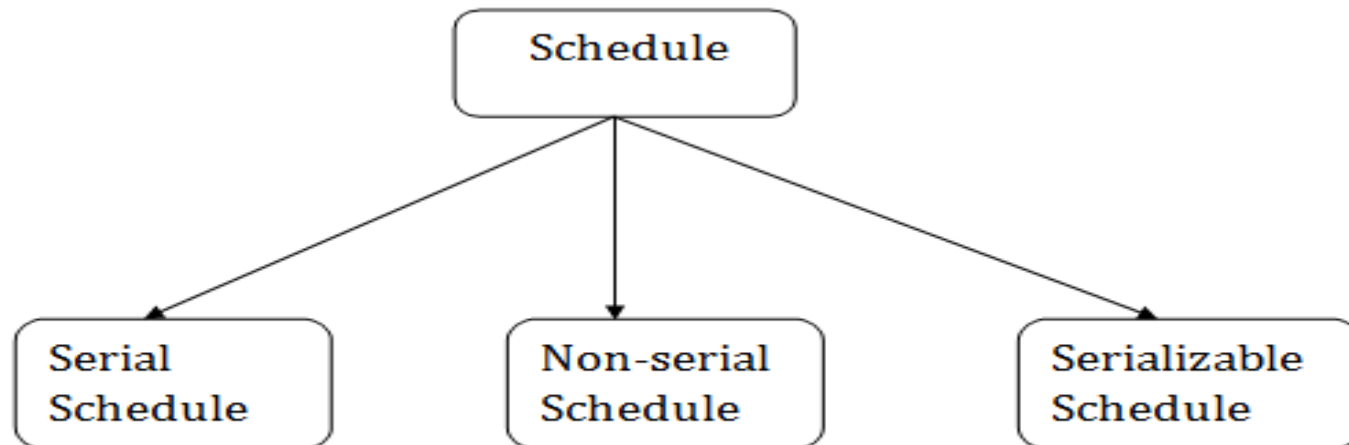Topic : **SCHEDULES**

24-11-2023

SCHEDULES

A **series of operation** from **one transaction to another transaction** is known as schedule.

It is used to **preserve the order of the operation** in each of the individual transaction.

SCHEDULES

1. Serial Schedule

The serial schedule is a **type of schedule** where one transaction is **executed completely** before **starting another transaction.**

In the serial schedule, when the first transaction completes its cycle, then the next transaction is executed.

SCHEDULES

For example: Suppose there are **two transactions T1** and **T2** which have some operations. If it has **no interleaving of operations**, then there are the following two possible outcomes:
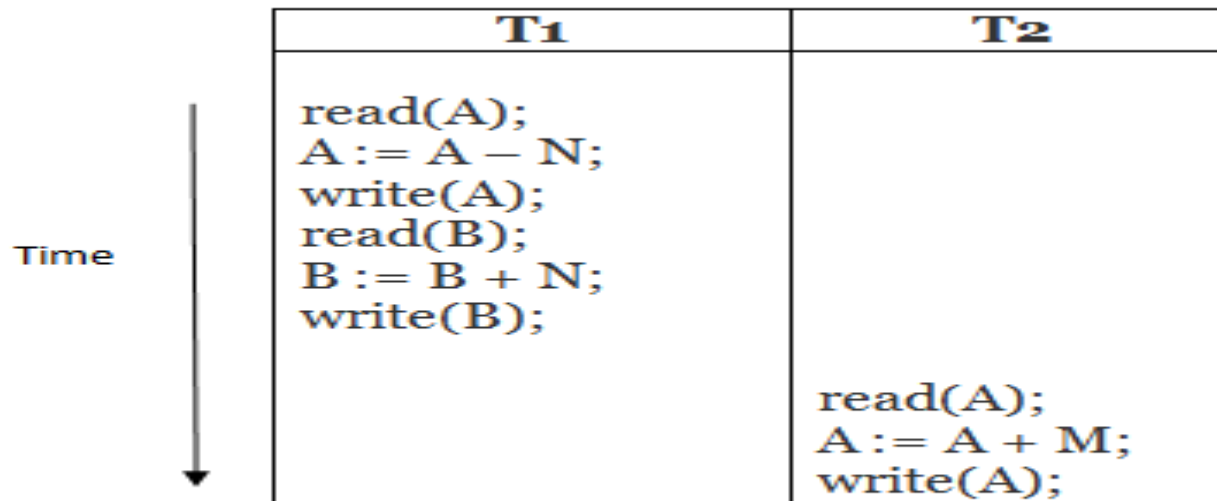
1. Execute all the operations of **T1** which was followed by all the operations of **T2**.

2. Execute all the operations of **T2** which was followed by all the operations of **T1.**

SCHEDULES

Execute all the operations of **T1** which was followed by all the operations of **T2.**

(a)

T1	T2

read(A);
A := A − N;
write(A);
read(B);
B := B + N;
write(B);	

	read(A);
	A := A + M;
	write(A);

Time →

Schedule A

SCHEDULES

Execute all the operations of **T2** which was followed by all the operations of **T1.**

(b)

T1	T2

	read(A);
	A := A + M;
	write(A);

read(A);
A := A - N;
write(A);
read(B);
B := B + N;
write(B);	

Time ↓

Schedule B

SCHEDULES

2. Non-serial Schedule

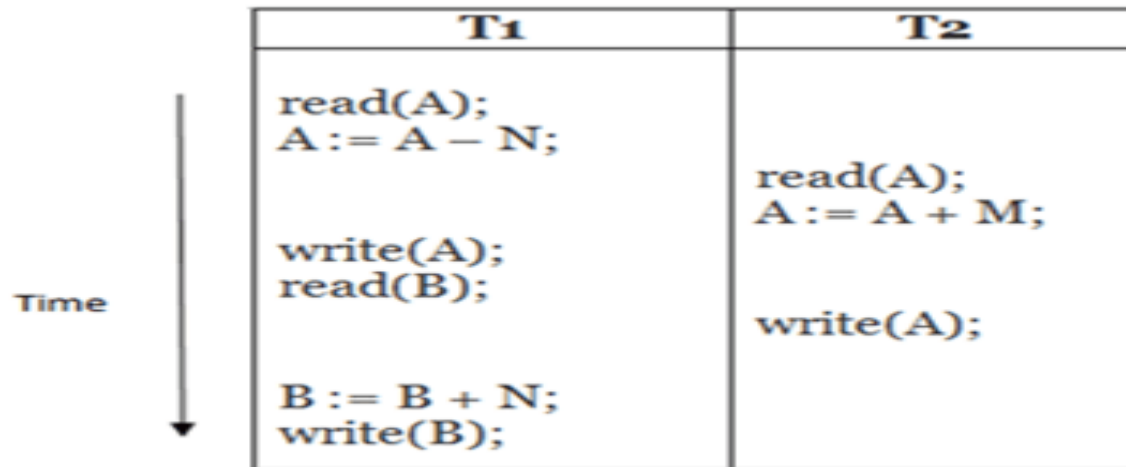If **interleaving of operations is allowed**, then there will be non-serial schedule.

It contains many possible orders in which the system can execute the **individual operations** of the transactions.

SCHEDULES

In the given figure (c) and (d), Schedule C and Schedule D are the non-serial schedules. It has interleaving of operations.
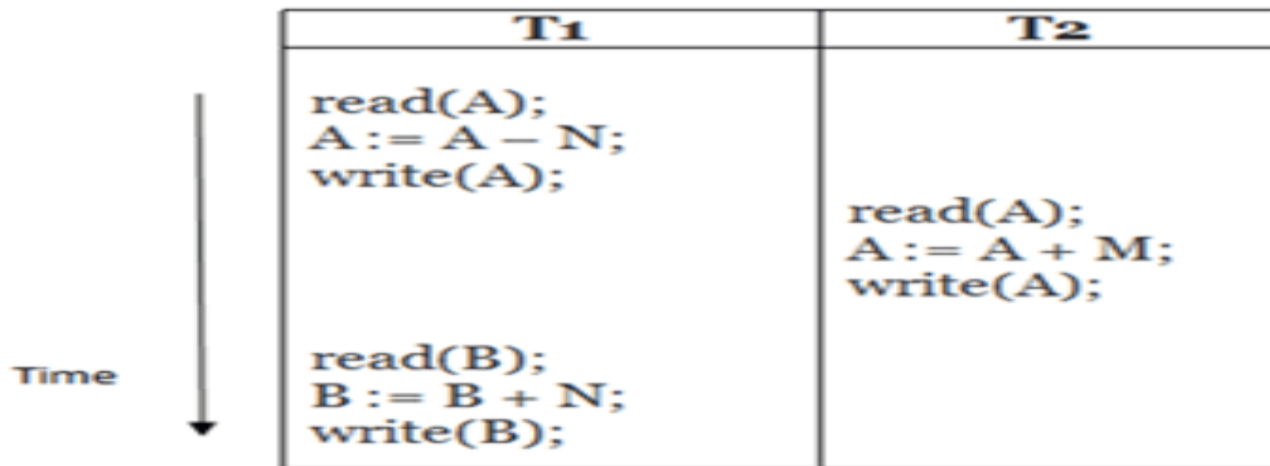
(c)

T1	T2
read(A); A := A − N;	
	read(A); A := A + M;
write(A); read(B);	
	write(A);
B := B + N; write(B);	

Time

Schedule C

SCHEDULES

(d)

T1	T2

read(A);
A := A − N;
write(A);	

	read(A);
	A := A + M;
	write(A);

read(B);
B := B + N;
write(B);	

Time ↓

Schedule D

SCHEDULES

3.Serializable schedule

The serializability of schedules is used to **find non-serial schedules** that allow the transaction to **execute concurrently without interfering with one another.**

It identifies which schedules are correct when executions of the transaction have interleaving of their operations.

A non-serial schedule will be serializable if its result is equal to the result of its transactions executed serially.

T1	T2
R1(A)	
W1(A)	
	R2(A)
	W2(A)
R1(B)	
W1(B)	
	R2(B)
	W2(B)

S1 (Schedule 1)

T1	T2
R1(A)	
W1(A)	
R1(B)	
W1(B)	
	R2(A)
	W2(A)
	R2(B)
	W2(B)

S2 (Schedule 2)

TRANSACTIONS MANAGEMENT/
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SYSTEMS/Mr.R.Kamalakkannan/CSE-
IOT/SNSCE

Thank You…….