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Topic: Schedule

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By Ms. Manisha Prasad

Head, Assistant Professor,

Department of Computer Science

Patna Women's College

Schedule

A series of operation from one transaction to another transaction is known as Schedule. A Schedule basically consists of the series or set of all the operations performed by participating transactions. It is used to preserve the order of the operation in each of the individual transaction. A schedule can either be :-

1) Serial Schedule
   or
2) Non Serial Schedule

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. **For example:** Suppose there are two transactions T1 and T2 which perform some operations. In case of serial schedule they can execute in one of the following manner :

1. Execute all the operations of T1 which will be followed by all the operations of T2.
   OR
2. Execute all the operations of T2 which will be followed by all the operations of T1.

Schedule A shows the serial schedule where T1 is followed by T2.

(a)

Time

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

Schedule A

Schedule B shows the serial schedule where T2 is followed by T1

(b)

Time

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

Schedule B

Non-serial Schedule

If interleaving of operations is allowed, then the Schedule will be a Non-serial schedule. Interleaving basically means that some operations of Transaction T1 may execute after which some operations of T2 may execute and the process continues till all the operations of participating Transactions are executed intermittently. It contains many possible orders in which the system can execute the individual operations of the transactions. In the given figure (c) and (d), Schedule C and Schedule D are the non-serial schedules. It has interleaving of operations.

(c)

Time

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

Schedule C

(d)

Time

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

Schedule D

Here,

Schedule A and Schedule B are serial schedule.

Schedule C and Schedule D are Non-serial schedule.