

26/06/23
Monday

Tutorial - 2

① Determine if the following schedule is recoverable? Is the schedule cascadeless? Justify your answer.

$\Rightarrow r_1(x), r_2(z), r_1(z), r_3(x), r_3(y),$
 $w_1(x), c_1, w_3(y), c_3, r_2(y), w_2(z),$
 $w_2(y), c_2.$

Yes the schedule is recoverable as the order of commit is same as the order of write $T_1 \rightarrow T_3 \rightarrow T_2$. Hence recoverable.

Cascadeless as a commit has been done for each transactions write operation.

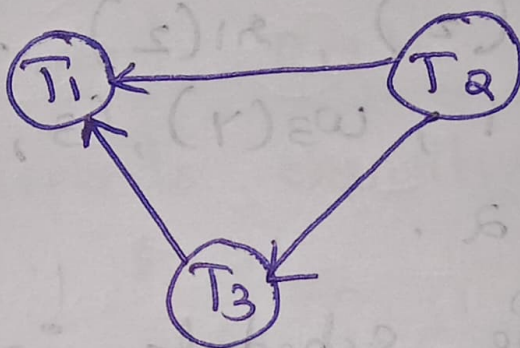
② Check if the following schedules are conflict serializable using precedence graph, if so give the equivalent serial schedule

$r_3(x), r_2(x), w_3(x), r_1(x), w_1(x)$

$r_3(x) \rightarrow w_1(x) \quad [T_3 \rightarrow T_1]$

$r_2(x) \rightarrow w_3(x) \quad [T_2 \rightarrow T_3]$

$r_2(x) \rightarrow w_1(x) \quad [T_2 \rightarrow T_1]$



Yes conflict serializable.

equivalent serial schedule = $T_2 \rightarrow T_3 \rightarrow T_1$

③ Determine if the following schedule is serializable or not

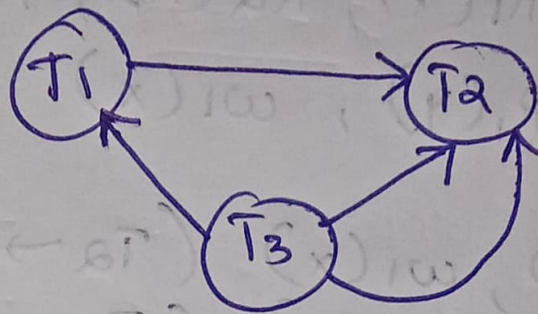
$r_1(x) \quad r_2(z) \quad r_1(z) \quad r_3(x) \quad r_3(y) \quad w_1(x)$
 $w_3(y) \quad r_2(y) \quad w_2(z) \quad w_2(y)$

$\Rightarrow r_1(z), w_2(z) \quad (T_1 \rightarrow T_2)$

$r_3(x), w_1(x) \quad (T_3 \rightarrow T_1)$

$r_3(y), w_2(y) \quad (T_3 \rightarrow T_2)$

$w_3(y), w_2(y) \quad (T_3 \rightarrow T_2)$

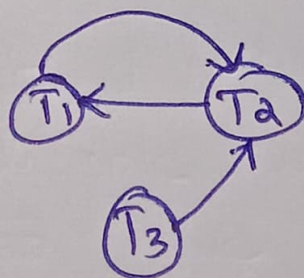


It is conflict serialisation and
order is $T_3 \rightarrow T_1 \rightarrow T_2$

④ check whether the given schedules
are conflict serializable or not

$S_1: R_1(x) R_2(x) R_1(y) R_2(y)$
 $R_3(y) w_1(x) w_2(y)$

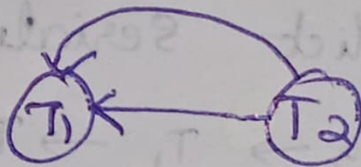
$\Rightarrow R_2(x), w_1(x) (T_2 \rightarrow T_1)$
 $R_1(y), w_2(y) (T_1 \rightarrow T_2)$
 $R_3(y), w_2(y) (T_3 \rightarrow T_2)$



not conflict
serialisable since
there is a
loop from T_1 to T_2

$S_2 : R_1(x), R_2(x), R_2(y), w_2(y),$
 $R_1(y), w_1(x)$

$\Rightarrow R_2(x), w_1(x) (T_2 \rightarrow T_1)$
 $w_2(y), R_1(y) (T_2 \rightarrow T_1)$



It is conflict-serializable
 and order is T_2, T_1