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CSC-436  
4/16/23

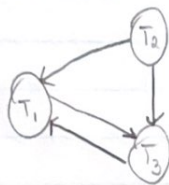
HW - 10

- 1) if  $T_j$  executes a  $r$  after  $T_i$  executes  $w \sim T_i \rightarrow T_j$
  - 2) if  $T_j$  executes a  $w$  after  $T_i$  executes  $r \sim T_i \rightarrow T_j$
  - 3) if  $T_j$  executes a  $w$  after  $T_i$  executes  $w \sim T_i \rightarrow T_j$
- $\sim$  is serializable if graph has no cycles

$T_1: r_1(x), w_1(x)$   
 $T_2: r_2(x)$   
 $T_3: r_3(x), w_3(x)$

①

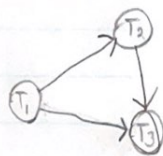
a)  $r_2(x); r_1(x); r_3(x); w_1(x); w_3(x)$



T	1	2	3
$r_1(x)$		$r_2(x)$	
$w_1(x)$			$r_3(x)$
			$w_3(x)$

Not  
serializable  
(cycle present)

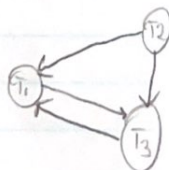
b)  $r_2(x); w_1(x); r_3(x); r_2(x); w_3(x)$



T	1	2	3
$r_1(x)$			
$w_1(x)$			
		$r_2(x)$	
			$w_3(x)$

Serializable

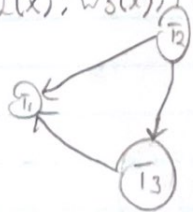
c)  $r_3(x); r_2(x); r_1(x); w_3(x); w_1(x)$



T	1	2	3
			$r_3(x)$
		$r_2(x)$	
$r_1(x)$			
$w_1(x)$			$w_3(x)$

Not  
serializable  
(cycle present)

d)  $r_3(x); r_2(x); w_3(x); r_1(x); w_1(x)$



T	1	2	3
			$r_3(x)$
		$r_2(x)$	
$r_1(x)$			$w_3(x)$
$w_1(x)$			

Serializable

②

$r_3(x) \sim \text{read\_TS}(0) < \text{read\_TS}(3)$   
execute write  $\sim$  set write-TS to 3

$r_2(x) \sim \text{read\_TS}(0) < \text{read\_TS}(2)$   
execute write  $\sim$  set write-TS to max of 3

$w_3(x) \sim \text{write\_TS}(3) > \text{write\_TS}(3)$   
execute read  $\sim$  set read-TS(2) to 3

$r_1(x) \sim \text{read\_TS}(3) > \text{read\_TS}(1)$

→ reject request  
abort