

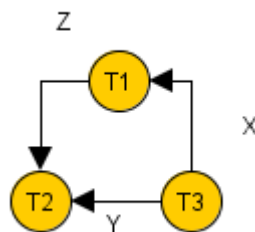
## Serializability Homework

### Exercise 17.23

- $S_1$ :

T1	T2	T3
rX		
	rZ	
rZ		
		rX
		rY
wX		
		wY
	rY	
	wZ	
	wY	

- Serializability Graph:

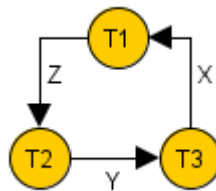


- Serializable?: **Yes**
- Equivalent Serial Schedule: **T3, T1, T2**

- $S_2$ :

T1	T2	T3
rX		
	rZ	
		rX
rZ		
	rY	
		rY
wX		
	wZ	
		wY
	wY	

- Serializability Graph:



- Serializable?: **No**
- Equivalent Serial Schedule: **No such schedule**

### Exercise 17.24

- S<sub>1</sub>:

T1	T2	T3
rX		
	rZ	
		rX
		rY
wX		
c		
		wY
		c
	rY	
	wZ	
	wY	
	c	

- Recoverability Condition: **Strict**
- Explanation: **No transaction reads or writes a value written by an uncommitted transaction.**

- S<sub>2</sub>:

T1	T2	T3
rX		
	rZ	
rZ		
		rX
		rY
wX		
		wY
	rY	
	wZ	
	wY	
c		
	c	
		c

- Recoverability Condition: **Non-recoverable**
- Explanation: **Transaction 2 reads value Y, a value written by transaction 3, and then**

**commits before transaction 3 commits.**

- S<sub>3</sub>:

<b>T1</b>	<b>T2</b>	<b>T3</b>
rX		
	rZ	
		rX
rZ		
	rY	
		rY
wX		
c		
	wZ	
		wY
	wY	
		c
	c	

- Recoverability Condition: **Cascadeless**
- Explanation: **No transaction reads a value that was written by an uncommitted transaction. The schedule is not strict because transaction 2 writes to Y, which transaction 3 previously wrote, before transaction 3 commits.**