

# CSE5024Advanced Database Systems

## Tutorial 4

**1. [Simple Recovery]** Assume the recovery manager (RM) utilizes the **simple recovery algorithm (without checkpointing)**, for the following execution history.

- (i) Fill in the blanks of the log.
- (ii) Describe the steps on how the RM recovers from system failure.
- (iii) What will be the final values of x and y after the recovery process?

Answer for (i)

Execution History		Log	
Initial values: $x= 10, y=15$			
T1	T2		
	Start	a	<T2, Start>
	Write(x, 15)	b	<T2, x, 10, 15>
	Write(y, 20)	c	
	Commit	d	
Start		e	
Write(x, 20)		f	
<System Restart>			

**2. [Checkpointing]** Assume the recovery manager (RM) utilizes the **Cache-Consistent Checkpointing**, for the following execution history.

- (i) Fill in the blanks of the log.
- (ii) Explain the detailed steps of the recovery process. Which part of the log will be scanned?

(iii) What will be the final values of x and y after the recovery process?

Answer for (i)

Execution History				Log	
T1	T2	T3	T4		
	Start			a	<T2, Start>
	Write(x, 15)			b	<T2, x, 10, 15>
	Write(y, 20)			c	
	Commit			d	
Start				e	
Write(x, 20)				f	
			Start	g	
<cache-consistent-checkpoint>				h	
Commit				i	
		Start		j	
		Write(y, 5)		k	
			Write(x,30)	l	
		Commit		m	
<System Restart>					