



# National University of Computer and Emerging Sciences

**Program:** BS(SE)

**Section:** \_\_\_\_\_

**Date:** April 30, 2024

**Student Name:** \_\_\_\_\_

**Roll No .** \_\_\_\_\_

**Total Marks:** 15 marks

**Time Allowed:** 15 minutes

**Instructor:** Bilal Khalid Dar

**Student Signature:** \_\_\_\_\_

## Important Instructions for attempting Quiz

### READ ALL QUESTIONS AND INSTRUCTIONS CAREFULLY

- Carrying of Mobile phone, digital dairies, digital watch or any electronic device is not allowed.
- Use only Black/Blue color pen. Sharing of anything is forbidden.
- CUTTING IS NOT ALLOWED. Write your answer in provided space
- All questions are self-explanatory and require no further explanations during exam time
- **RETURN the Quiz paper after completion.**

### Quiz – A

**Perform 2 Phase Locking to Schedule the following transactions.**

Time	T1	T2	A	B
1	Start transaction T1		10	100
2	Read the value of item A			
3	Perform operations $A = A + 20$			
4	Read the value of item B	Start transaction T2		
5	Perform operations $B = A + B$	Read the value of item B		
6	..	Perform operations $B = B - 10$		
7	..	Read the value of item A		
8	..	Perform operations $A = A + 20 + B$		
9	..	Commit transaction T2		
11	Roll Back transaction T1			

### Solution

Time	T1	T2	A	B
1	Start transaction T1		10	100
	WriteLock (A)		10	100
2	Read the value of item A		10	100
3	Perform operations $A = A + 20$		10	100
	Write A		30	100
	Write Lock (B)		30	100
4	Read the value of item B	Start transaction T2	30	100
	Perform operations $B = A + B$	Write Lock (B)	30	100
5	Write B	wait	30	130

Time	T1	T2	A	B
6	..		30	<b>130</b>
7	..	wait	30	<b>130</b>
8	..	wait	30	<b>130</b>
9	..	wait	30	<b>130</b>
11	Roll Back transaction T1 / unlock (A,B)	wait	10	100
		Read the value of item B	10	100
		Perform operations B = B - 10	10	100
		Write B	10	90
		Write Lock (A)	10	90
		Read the value of item A	10	90
		Perform operations A = A + 20 + B	120	90
		Write A	120	90
		Commit transaction T2 / unlock (A,B)	120	90



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### Quiz – B

Perform 2 Phase Locking to Schedule the following transactions.

### Solution

Time	T1	T2	A	B
1		Start transaction T2	10	100
		Write Lock B	10	100
2		Read the value of item B	10	100
3		Perform operations $B = B - 10$	10	100
	Start transaction T1	Write B	10	90
	Write Lock A	Write Lock A	10	90
4	Wait	Read the value of item A	10	90
5	Wait	Perform operations $A = A + 20 + B$	10	90
	Wait	Write A	120	90
6	Wait	..	120	90
7	Wait	..	120	90
8	Wait	..	120	90
9	Wait	..	120	90
11	Wait	Roll Back transaction T2 / unlock (A,B)	10	100
	Read the value of item A		10	100
	Perform operations $A = A + 20$		10	100
	Write A		30	100
	WriteLock B		30	100
	Read the value of item B		30	100
	Perform operations $B = A + B$		30	100

Time	T1	T2	A	B
	Write B		30	130
	Commit transaction T1 / unlock (A,B)		30	130