

## Worksheet 10

Question 1: For each of the schedules, answer the following questions:

- i. What is the precedence graph for the schedule?
- ii. Is the schedule serializable? If so, what are all the equivalent serial schedules?

A.

$T_1$	$T_2$
Read (A) Write (A)	
	Read (B) Write (B)
Read (C) Write (C)	

B.

$T_1$	$T_2$
Read(X) $X = X - N$	
	Read(X) $X = X + M$
Write(X) Read(Y)	
	Write(X)
$Y = Y + N$ Write(Y)	

C.

$T_1$	$T_2$
Read(X) $X = X - N$ Write(X)  Read(Y) $Y = Y + N$ Write(Y)	Read(X) $X = X + M$ Write(X)

D.

$T_1$	$T_2$	$T_3$
Read(X)  Read(Y)  Write(X)	Read(Y) Write(Y) Write(Z)	Read(Z) Write(Z)  Write(X)

E.

$T_1$	$T_2$	$T_3$
Read(A)  Write(A)  Write(C)	Read(B)  Read(C) Read(B) Write (B)	Read(B)

Question 2: (Optional) Match the following schedules with terms in box on the right (i – viii). Note that:

- i. There may be more than one matches
- ii. There may be some terms that do not have any match with the given schedules.

Your answer:

1	Transaction A	Time	Transaction B
	read (X)	t1	
	X = X + 1	t2	
		t3	read (X)
	write (X)	t4	
		t5	write (X)

Your answer:

2	Transaction A	Time	Transaction B
		t1	read (X)
		t2	X = X - 1
		t3	write (X)
	read (X)	t4	
	write (X)	t5	
		t6	ROLLBACK

Your answer:

3	Transaction A	Time	Transaction B
	read (X)	t1	
		t2	read (X)
	X = X + 1	t3	
	write (X)	t4	
		t5	read (X)

Your answer:

4	Transaction A	Time	Transaction B
	read (X)	t1	
	X = X + 1	t2	
		t3	read (Y)
	write (X)	t4	
		t5	read (Y)

#### TERMS:

- i. Serializable schedule
- ii. Dirty Read conflict
- iii. Unrepeatable read
- iv. Phantom read
- v. Serial schedule
- vi. Lost update conflict
- vii. Non-serial schedule
- viii. Use of UNDO logs