Exercises
(Course: Database Management Systems)
Chapter 5
Concurrency Control Techniques

1. Consider the schedule shown in the following figure.
Draw the wait-for graph before and after the last action *write_lock*(*A*) of transaction T3.

T1	T2	T3	T4
read_lock(A) read_item(A) read_lock(B)	 write_lock(B) write_item(B) write_lock(C)	 read_lock(C) read_item(C)	 write_lock(B)
		write_lock(A)	

2. Consider the set of transactions accessing database element A shown in the following figure. These transactions are operating under an ordinary timestamp-based scheduler. Explain why the transaction T3 has to be aborted. What happens if these transactions are operating under a multiversion timestamp-based scheduler?

(Note: In the figure *r* means read and *w* means write.)

T1	T2	T3	T4	A
150	200	175	225	RT=0 WT=0
r1(A)				RT=150

w1(A)				WT=150
	r2(A)			RT=200
	w2(A)			WT=200
		r3(A)		
		Abort		
			r4(A)	RT=225

3. Consider the relation Movie(title, year, length, studioName)

Transaction T1 consists of the query:

SELECT * FROM Movie

WHERE title = 'King Kong'

Transaction T2 consists of the query:

UPDATE Movie SET year = 1939

WHERE title = 'Gone with the wind'

Assume that there are two records in relation Movie with the title 'King Kong' and there is one record with the title 'Gone with the wind'.

Suggest the collection of locks for this situation (Multiple Granularity Locking).