National University of Computer and Emerging Sciences, Lahore Campus

Course:	Advanced Database Concepts	Course Code:	CS451
Program:	BS(Computer Science)	Semester:	Spring 2017
Out Date:	7-Feb-2017	Total Marks:	
Due Date:	Mon 13-Feb-2017 (start of class)	Weight:	
Section	A	Page(s):	1
Assignment:	2 (Concurrency Control Techniques)		

Instruction/Notes:

Question 1:

a) **S1:** slock1(A); r1(A); xlock2(B); r2(B); w2(B); xlock1(B); c2; ulock2(B); w1(B); c1; ulock1(A); ulock1(B);

Discuss if the above schedule is valid according to the following 2PL locking techniques, if it does not, explain why:

1. Basic two phase locking
2. Conservative two phase locking
3. Strict two phase locking
4. Rigorous two phase locking

b) Write down example schedule for each of the above locking techniques, the schedule must have a deadlock, then resolve the deadlock using wait die as well as wound wait technique.

Question 2:

a) Now consider the following schedule:

S2: r1(A); r2(B); w2(B); w2(A); c2; w1(B); c1

Discuss if the above schedule is valid according to the following techniques, if it does not, explain why:

1. Basic timestamp ordering
2. Strict timestamp ordering
3. Timestamp ordering using Thomas write rule
4. Multi-version timestamp ordering
5. Optimistic concurrency control technique

b) Now for each of the above mentioned techniques write down a schedule that satisfies the condition of the concurrency control technique.