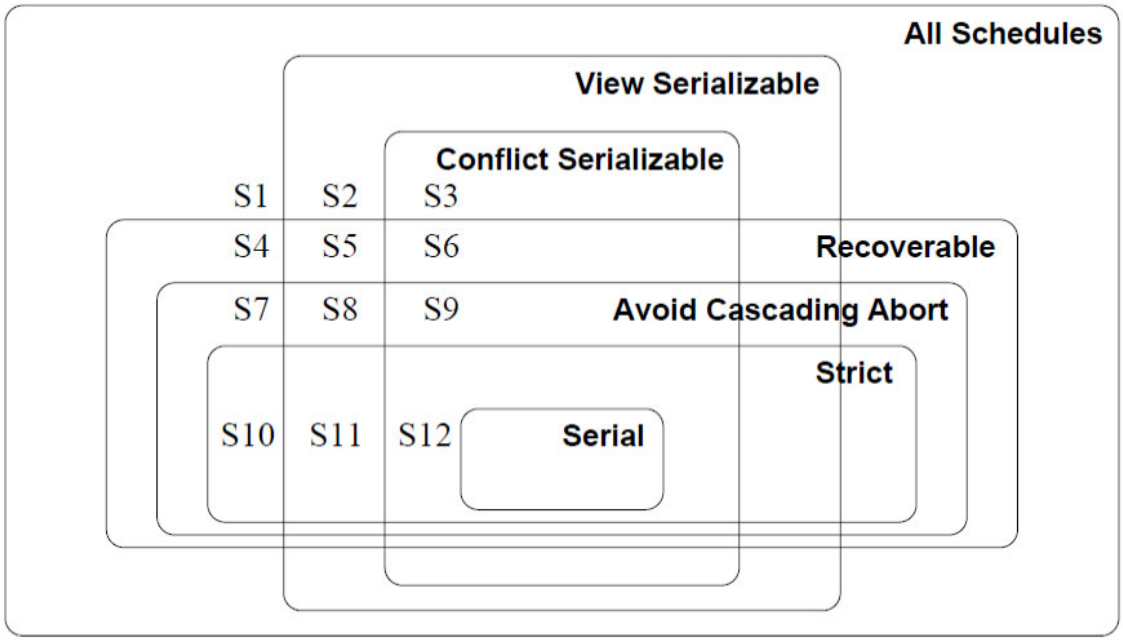
CS3223: Database Management Systems

Tutorial 8

(Week of 21 March 2022)

1. Consider the Venn Diagram for the various types of schedules. For each of the following schedules, figure out which region does it belong to? Justify/Explain your answers. Note that in the diagram, Avoid Cascading Abort is the same as Cascadeless.
    a. W1(X), R2(X), W1(X), C2, C1
    b. R1(X), R1(Y), W1(X), R2(Y), W3(Y), W1(X), R2(Y), C3, C2, C1
    c. W1(X), R2(Y), R1(Y), R2(X), C1, C2
    d. R1(X), R2(X), W1(X), C1, W2(X), C2



2. Give an example of a schedule with two or more transaction with the following three properties:
    - T1 commits before T2 starts.
    - The schedule is conflict serializable.
    - In any equivalent serial schedule, T2 must come before T1 (there may be other transactions between T2 and T1).

3. Consider the following two transactions:

T0:		T1:	
	read(A)		read(B)
	read(B)		read(A)
	if A = 0 then B ← B+1		if B = 0 then A ← A+1
	write(B)		write(A)

Let the consistency requirement be A = 0 OR B = 0, with A = B = 0 the initial values.

a) Show that every serial execution involving these two transactions preserves the consistency of the database.
b) Show a concurrent execution of T0 and T1 which produces a non-serializable schedule.
c) Is there a concurrent execution of T0 and T1 which produces a serializable schedule?

4. Consider the schedule S:

R2(B), W2(A), R1(A), R3(A), W1(B), W2(B), W3(B)

Is S view-serializable?