

Transaction Processing

Exercise 3

Assignment 1: Explain the criteria of correctness and formally define view and conflict serializability. Hereby, consider the complexity to check the serializability. In what context are the mentioned concepts.

Assignment 2: Consider the following schedules s_1 to s_{10} :

$$\begin{aligned}s_1 &:= r_1(x)w_1(x)r_2(x)r_3(z)w_3(x)r_1(z) \\s_2 &:= w_2(x)w_2(y)r_1(x)r_1(y)w_1(y)r_2(y) \\s_3 &:= r_1(x)w_1(x)r_2(y)w_2(y)r_1(y)r_2(x) \\s_4 &:= w_1(y)w_2(y)r_2(y)r_1(x)w_3(z) \\s_5 &:= r_1(x)w_1(x)r_2(y)r_3(y)w_2(x)w_3(x) \\s_6 &:= w_2(x)w_1(x)w_1(y)w_2(y)w_1(y)w_3(z) \\s_7 &:= w_2(x)w_2(y)r_1(x)r_1(y)w_1(y)w_3(z) \\s_8 &:= w_1(x)r_2(x)w_2(z)r_3(z)w_3(y)w_1(y) \\s_9 &:= w_2(x)r_2(y)r_1(x)r_1(y)w_1(y)r_2(y) \\s_{10} &:= r_1(x)w_1(x)w_2(x)w_3(z)r_3(y)r_3(x)\end{aligned}$$

Test the schedules for VSR and CSR (conflict equivalent to serial schedule + conflict graph)! If possible, construct a serial schedule using the conflict graph and topological sorting.

Assignment 3: Explain the following properties:

1. Prefix-closure
2. Commit-closure
3. Prefix-Commit-closure

Which of the both concepts view and conflict serializability fulfills these properties?