

Assignment 4

Reading –Read Sections 6.1 and 6.2 of the revised Chapter 6 of the textbook that was handed out in class.

Problem 1 (this replaces problem 2 in Assignment 3)

For each of the following histories, list all serial histories that are equivalent to it:

- $H = w_0[x] w_0[y] w_0[z] c_0 r_1[y] r_2[x] r_3[y] w_1[y] w_3[z] r_2[z] w_2[y] c_2 c_1 c_3$
- $H = w_0[x] w_0[y] w_0[z] c_0 r_1[y] r_2[x] r_3[y] w_1[y] w_3[z] r_2[z] c_3 w_2[z] c_2 c_1$
(same as (a), except for the last write operation and the timing of c_3)
- $H = w_0[x] w_0[y] w_0[z] c_0 r_1[y] r_2[x] r_3[y] w_1[y] w_3[x] c_3 r_2[z] w_2[y] c_2 c_1$
(same as (a), except for the third-to-last write operation and timing of c_3)

Problem 2

For each history in Problem 1, determine whether it is recoverable, avoids cascading aborts, and is strict. If it fails any of these conditions, explain why.

Problem 3

Consider a system that makes the following guarantee: While a transaction T is active (i.e., after it executes Start and before it finishes executing Commit or Abort), any data item written by T is not read or written by any other transaction.

- Are executions of this system recoverable?
- Do they avoid cascading aborts?
- Are they strict?
- Are they serializable?