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Section 1B

Homework 6

1.
 - a. No, the schedule is not serial
 - b. Yes, it is conflict serializable
 $\omega_3(A)c_3r_1(A)\omega_1(B)c_1r_2(B)\omega_2(C)c_2r_4(B)c_4$
 - c. Yes, it is recoverable
 - d. No, it is not cascadeless. We make c_3 come after $\omega_3(A)$ to make it cascadeless.
2.
(a, b2, c2, d1), (a, b3, c3, d1), (a, b1, c1, d2),
(a, b3, c3, d2), (a, b1, c1, d3), (a, b2, c2, d3)
3.
The relation is not 4NF

 $R(A,B,C,D,E,F) \rightarrow R1(A,B,E) R2(A,B,C,D,F)$
 $R1(A,B,E) \rightarrow R3(A,B) R4(A,E)$
 $R2(A,B,C,D,F) \rightarrow R5(A,B,C) R6(A,B,D,F)$
 $R5(A,B,C) \rightarrow R3(A,B) R7(A,C)$
 $R6(A,B,D,F) \rightarrow R3(A,B) R8(A,D,F)$

 $R3(A,B), R4(A,E), R7(A,C), R8(A,D,F)$