

18.8

You have the choice of running a single transaction to transfer |\$300 from one of your savings accounts to another savings account at the same bank or of running two transactions, one to withdraw |\$300 from one account and a second to deposit |\$300 in the other. In the first choice the transfer is made atomically; in the second it is not. Describe a scenario in which after the transfer, the sum of the balances in the two accounts is different (from what it was when both transactions started) at the instant the transfer is complete. Hint: Other transactions might be executing at the same time that you are doing the funds transfer.

18.10

Isolation is a sufficient but not necessary condition to achieve correctness. Consider an application that reserves seats for a concert. Each reservation transaction (1) reads the list of seats that have not yet been reserved, (2) presents them to a potential customer who selects one of them, and (3) marks the selected seat as reserved. An integrity constraint asserts that the same seat cannot be reserved by two different customers. Describe a situation in which two such transactions that reserve two different seats execute in a nonisolated fashion but are nevertheless correct.

18.11

Assume a schedule consists of consistent transactions that execute in an isolated fashion except for one transaction that performs a single update that is lost (as in Figure 18.2). Show that the final state of the database satisfies all integrity constraints but nevertheless is incorrect.