

# Solutions

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**Answer 12.1.** The answer to each question is given below.

1. The following schedule results in a write-read conflict:  
T2:R(X), T2:R(X), T2:W(X), T1:R(X) ...  
T1:R(X) is a dirty read here.
2. The following schedule results in a read-write conflict:  
T2:R(X), T1:R(X), T1:W(Y), T1:W(X), T2:R(X) ...  
Now, T2 will get an unrepeatable read on X.
3. The following schedule results in a write-write conflict:  
T1:R(X), T2:R(X), T2:R(X), T1:W(Y), T2:W(X), T1:W(X), T2:W(Y) ...  
Now, the last values of X and Y are neither completely from T1 nor completely from T2. This is write-write conflict.
4. Strict 2PL resolves these conflicts as follows:
  - (a) Here, T1 could not get a shared lock on X because T2 would be holding an exclusive lock on X. Thus, T1 would have to wait until T2 was finished.
  - (b) Here, T1 could not get an exclusive lock on X because T2 would already be holding a shared or exclusive lock on X.
  - (c) Here, T2 could not get an exclusive lock on X since T1 would already be holding a shared lock on X.