

T_1 : $R_1(X)$ $R_1(Y)$ $W_1(X)$ commit_1

T_2 : $R_2(X)$ $W_2(X)$ $W_2(Y)$ commit_2



DB: $R_1(X)$ $R_2(X)$ $W_2(X)$ $R_1(Y)$ $W_1(X)$ $W_2(Y)$ commit_1 commit_2

T_1 : $R_1(X)$ $R_1(Y)$ $W_1(X)$ commit_1

T_2 : $R_2(X)$ $W_2(X)$ $W_2(Y)$ commit_2



DB: $R_1(X)$ $R_2(X)$ ~~$W_2(X)$~~ $R_1(Y)$ $W_1(X)$ $W_2(Y)$ commit_1 commit_2

Unsafe! Not serializable

Problem: transactions may “interfere”.

Here, T_2 changes x , hence T_1 should have either run first (read and write) or after (reading the changed value).

T_1 : $R_1(X)$ $R_1(Y)$ $W_1(X)$ commit_1

T_2 : $R_2(X)$ $W_2(X)$ $W_2(Y)$ commit_2



DB: $R_2(X)$ $W_2(X)$ $R_1(X)$ $W_1(X)$ $W_2(Y)$ $R_1(Y)$ commit_2 commit_1

Data manager interleaves operations to improve concurrency but schedules them so that it looks as if one transaction ran at a time.

This schedule “looks” like T_2 ran first.