

Homework 11

Use the classicmodels database.

Problem 1:

Define a function that takes a partial name of a customer and a year. The function returns an evaluation of the customer based on the volume of orders that went through. The function calculates the volume of orders that were cancelled, on hold, or disputed from this customer (vol_bad) and the given year. It compares this to the volume of orders that were shipped, resolved, or in process (vol_good) in this year. The program then assigns a traffic light value according to the following criteria:

Criterion	Value
There is a good volume and no bad volume	green
There is a good volume and it is ten times the bad volume	green
There is a good volume and it is five times or more the bad volume	yellow
There are no orders	yellow
Otherwise	red

List the traffic light values for all customers in the database for the year 2003.

Problem 2:

Write the schedule of the examples for the Lost Update Problem and the Inconsistent Read Problem from the lectures in the format used for expressing conflict serializability. (See below for examples)

Problem 3:

Conflict serializability can be determined by using the three commutation rules.

- Algebraic notation:
 - C1 $r_i(x)r_j(y) \sim r_j(y)r_i(x)$ if $i \neq j$
 - C2 $r_i(x)w_j(y) \sim w_j(y)r_i(x)$ if $i \neq j$ and $x \neq y$
 - C3 $w_i(x)w_j(y) \sim w_j(y)w_i(x)$ if $i \neq j$ and $x \neq y$

Determine whether the following schedules are equivalent to a serial schedule (where all operations of a transaction are grouped together):

1. $r_1(x)r_2(x)w_1(x)w_2(x)$

2. $r_1(x)r_2(y)r_1(z)r_2(z)w_1(x)w_2(z)$.

You need to apply one rule at a time or explain why you are stuck.