Reasoning with Transactions

Introduction

The goal of this activity is for you to practice the technique of reasoning with transactions.

This technique is often applied in real-world software development by database designers when they want to explore and analyse collections of transaction in order to understand, e.g., whether they could interfere with each other, thereby leading, potentially, to performance problems and even outright error.

Questions

Let transactions T1 and T2 be defined as follows:

Transaction 1
$read\_item(X)$;
$X := X * N$;
$write\_item(X)$;
$read\_item(Y)$;
$Y := Y + N$;
$write\_item(Y)$

Transaction 2
$read\_item(X)$;
$X := X + M$;
$write\_item(X)$;

1. What is the total number of possible schedules for T_1 and T_2.

2. List them.

3. Determine which are conflict serializable and which are not.