Ensuring Consistency under the Snapshot Isolation

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Abstract : By running transactions under the Snapshot isolation we can achieve a good level of concurrency, specially in databases with high-intensive read workloads. However, Snapshot is not immune to all the problems that arise from competing transactions and therefore no serialization warranty exists. We propose in this paper a technique to obtain data consistency with Snapshot by using some special triggers that we named Daemon Triggers. Besides keeping the benefits of the Snapshot isolation, the technique is specially useful for those database systems that do not have an isolation level that ensures serializability, like Firebird and Oracle. We describe all the anomalies that might arise when using the Snapshot isolation and show how to preclude them with Daemon Triggers. Based on the methodology presented here, it is also proposed the creation of a new isolation level: Daemon Snapshot.

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