

Programming Applications with Databases

Exercise Set 5

1. Explain shortly *savepoints* concept in DBMS. Using the example presented at <https://learn.microsoft.com/en-us/sql/t-sql/language-elements/save-transaction-transact-sql> create a new one based on *AdventureWorksLT* database. Propose the use case and implement including the context where the stored procedure is executed.
[2p]
2. Create three examples showing the anomalies of dirty read, non-repeatable read, and phantom read, respectively. Execute the example with the lowest isolation level applied, so all anomalies will be allowed by the database engine.
[2p]
3. Execute samples 1 and 2 from the example *02-poziomy-izolacji-blokady.sql* from the attached materials. Present and explain the locks on the high level.
[2p]
4. Execute the example *03-zakleszczenie.sql* from the attached materials several times on different isolation levels. Check when the deadlock occurs and explain why it happens.
[2p]
5. Explain the locking hints concept. Prepare a small example where the current level of transaction isolation is serializable and `SELECT ... WITH (NOLOCK)` is executed. Show the difference in applied locks where `NOLOCK` is introduced and where it is not introduced.
[2p]

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