Problem 3. 2 weeks

For your database prepare the following use case scenarios:

- Create a stored procedure that inserts data in tables that are in a many to many relation. If any part of the operation fails, it must be all rolled back. (grade: 3)
- Create a stored procedure that inserts data in tables that are in a many to many relation. If any part of the operation fails then it must try to recover as much as possible from the entire operation. For example, if one wants to create a record regarding publishers and books and succeeds creating the publisher but fails with the book, then it should roll back the creation of the book, but not of the publisher. (grade: 5)
- Create four scenarios that reproduce the following concurrency issues: dirty reads, non-repeatable reads, phantom reads and a deadlock. You may do this either through stored procedures or through stand alone queries. Also, for each of the scenarios you have created, must also find solutions to solve / workaround the concurrency issues. (grade: 8)
- Create a deadlock scenario using a .NET application, with multithreading. It must run two different stored procedures / queries in two different threads. The execution that fails because of the deadlock must be retried. Is up to you to decide the number of retries until the execution is considered to have failed and aborted. (grade: 10)

Observations: *As a general note, no IDs shall be used as input parameters for your stored procedures and all parameters must be validated (try to use functions when needed). Also, for all your scenarios you must setup a logging system, so you can track the actions during your implemented operations. For error detection it is recommended to use the try-catch clause, both in your windows application as well in your SQL code.*

When you present your laboratory you must prepare test cases that cover both the happy and the error flows (this is applicable for the stored procedures). Be prepared to explain in detail your scenarios and your implementations.

Prerequisites:

- Lecture #2 and seminar #3
- http://msdn.microsoft.com/en-us/library/ms173763.aspx
- http://msdn.microsoft.com/en-us/library/ms174377.aspx
- http://www.albahari.com/threading/