SQL Transactions workshop at IT College on 16 May 2014 10:00-

Database products are among the most advanced software providing the reliable storage and fast data access services for any business applications. However, the reliability doesn't come for free – to avoid *losing or messing with data* the database services need to be accessed using transactions i.e. application developers need to design the transactions for the used database product.   Since the database products behave differently from each other, and from SQL standard and textbooks, developers need to understand the behavior of the used product and know the special features of the transaction protocol supported by the product.

For easy experimenting with the transactional use of the mainstream DBMS products, DBTech VET project has built a virtual database laboratory consisting of Debian Linux and the readily installed DBMS products DB2 Express-C, Oracle XE, MySQL/InnoDB (or MariaDB), PostgreSQL and Pyrrho, with typical programming languages and developer tools. The laboratory is freely downloadable from www.dbtechnet.org/download/DebianDBVM06.zip and can be imported into a virtual machine in VirtualBox or VMware software.

In the workshop we use the handbook "SQL Transactions – Theory and hands-on exercises" available for free from www.dbtechnet.org/download/SQL-Transactions_handbook_EN.pdf . Scripts for the exercises have been adopted for all supported DBMS products are available in the virtual machine.

Workshop agenda:

Introduction of DBTechNet http://www.dbtechnet.org   and DBTech VET project
Introduction and demonstration on use of the **Database Laboratory** - Quick Start Guide
Concepts of Client/Server architecture
Diagnostics and SQL exception handling
Transaction protocol needed for reliable database accessing
"Big Pictures" of the server-side transaction processing and recovery
Experimenting with selected transactions in **single-user environment**

[Break]
Concurrency problems in **multi-user environment**
- lost update, dirty read, non-repeatable read, phantom/phantom read, ghosts
Isolation levels of SQL standard and database products
Concurrency control mechanisms used by the products
- multi-granular locking, row-stamping and multi-versioning
Experimenting with selected transactions in multi-user environment
SQL stored routines and triggers in the context of transactions
-   www.dbtechnet.org/papers/SQL_StoredRoutines.pdf
Best practices in transaction programming
Presentation copies at www.dbtechnet.org/download/SQL-Transactions_Intro.pdf
Workshop evaluation at <webform> has timeout

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Recommended reading after basics of SQL transactions :

www.dbtechnet.org/papers/SQL_ConcurrencyTechnologies.pdf
www.dbtechnet.org/papers/RVV_Paper.pdf