

FairDB status

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Introduction

The FairDB Virtual Database [1] provides the user with a well-defined and uniform API for database manipulation extending the FairRoot framework [2][3] initialization scheme to any SQL-Databases systems. This report describes recent developments of the FairDB core functionality.

Error handling

Errors coming from the virtual database itself are treated using standard C++ exceptions and are automatically logged by the central logger manager class FairDbExceptionLog. All virtual database internal errors or information messages are timestamped and shows the relevant classname , function name and line in the source code where precisely the error occurred. Figure 1 shows an logging output for internally generated SQL statements.

Logging

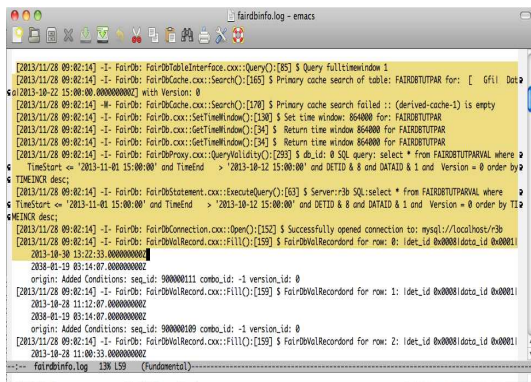


Figure 1: Logging for SQL Statements

Rollback

FairDB implements a dedicated rollback operation which, when applied, let the database ignore all changes that occurred after the defined rollback date. In fact the database backs out the changes of the wrong transaction and restores the data consistency that existed when the unit of work was initiated. In figure 2 the state of the database is first moved from a starting point of consistency (A) to another point of consistency (B) at the end of the transaction. If during the transactional process a failure occurs or if the ending point of

consistency is questionable (for example because of wrong data input) it is useful to apply a rollback which can be seen as the exact reverse transaction.

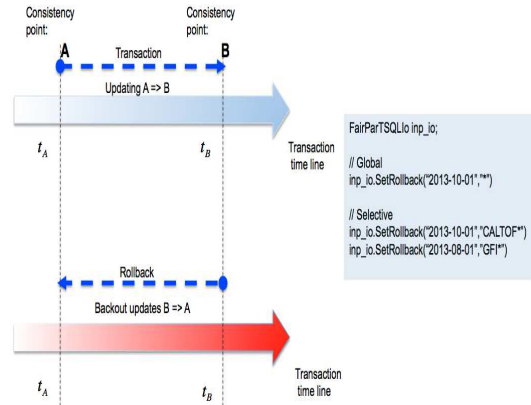


Figure 2: Rollback Mechanism

The R3B condition database

The R3B collaboration is currently implementing its condition database based on FairDB. The database should store together detector hardware components, slow control and analysis parameters in one repository. A complete parameter implementation for the CALIFA as well as the time calibration parameter of the NeuLand detector are available in the R3BROOT framework.

ROOT 6 compliance

The FairDB Virtual Database has been successfully ported to the new ROOT version 6. Modifications for the dedicated CINT constructs has been moved to the new Cling standard in a backwards compatible way so that FairDB can run on any ROOT versions.

References

- [1] FairRoot Virtual Database (User Manual).
- [2] The FAIR simulation and analysis framework 2008 J. Phys.: Conf. Ser. 119 032011
- [3] R. Brun, F. Rademakers, P. Canal, I. Antcheva, D. Buskulic, O. Couet, A. and M. Gheata *ROOT User Guide* CERN, Geneva 2005.

