Exercise 3: Library Design

Context
The goal of this exercise is to practice good library design. The right abstractions have to be found. Design by Contract has to be applied to a non-contracted library. Your solution has to use Command-Query separation and Option-Operand separation to facilitate access to a reusable component.

Problem Description
MySQL is a well known open-source SQL database. The application provides an API for the C language to access the database. Bindings for other languages are also available. The C API defines a set of 70 functions. Some of these function are concerned with connecting to the database, others with operations on the database (including transactions). Functions are also provided to access query results and traverse the fields. Finally, error handling is also done through the API.

The library is not object-oriented. It is difficult to understand and use.

Deliveries
Develop a set of deferred classes in Eiffel that give a good object-oriented view onto the library. You do not have to provide an implementation that calls the C functions (though you may do this). Provide a printout of the final interface and a short overview of your design.

Remark
Wrappers for OO-languages like C++ or Python exist. Although they sometimes go into the right direction and implement good ideas, they lack the quality necessary for a reusable component. The same is true for the Eiffel library that is listed in the API.

Resources
- MySQL website: http://www.mysql.com
- The official documentation to the MySQL library is available at http://dev.mysql.com/doc/refman/5.0/en/c.html