

oxdbi:

A database independent abstraction layer for the
Ox programming language*

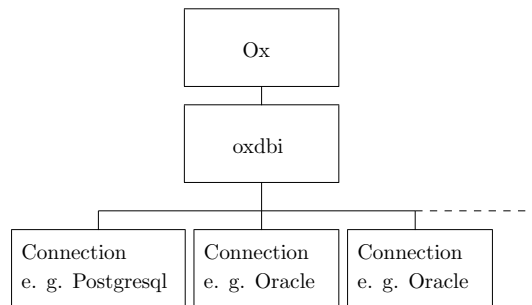
Max Bruche
m.e.bruche@lse.ac.uk

June 21, 2004

1 Description

oxdbi provides database independent access for the Ox programming language via a package called libdbi that allows (concurrent) access to multiple databases.

Drivers are used to connect the database independent abstraction layer to the different databases. At the moment drivers exist for MySQL, PostgreSQL, SQLite, mSQL and Oracle. Sources for the drivers can be obtained from the libdbi website.



libdbi must be installed on your system for oxdbi to work.

More about libdbi can be found on its homepage: <http://libdbi.sourceforge.net/>

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2 Installation

At the moment, this package has only been compiled and tested on a Linux system. If you would like to help port this to a different platform, please see below under “contributing”.

The simplest way to compile and install this package (under Linux/ Unix) is:

1. Install the libdbi package and its drivers. This might be packaged for your distribution, if it isn't check the libdbi homepage for details as to how to install it: <http://libdbi.sourceforge.net>. Note that you need to have libdbi installed in order to run oxdbi - oxdbi depends on libdbi!
2. Extract the source tarball: `tar xvzf oxdbi-VERSION_NUMBER.tar.gz`
3. 'cd' to the directory containing the package's source code and type './configure' `-prefix=PATH_TO_OX_INSTALL` to configure the package for your system, where `PATH_TO_OX_INSTALL` is the path to your installation of Ox. This is the top-level directory that contains the bin, lib, doc, packages and other subdirectories. The default is to assume that Ox is installed in `/opt/ox3.3`
Running 'configure' takes awhile. While running, it prints some messages telling which features it is checking for.
4. Type 'make' to compile the package. Note that in order to compile it, you will have to have the Ox development kit (available from Jurgen Doornik's website) installed in the dev subdirectory of your Ox directory, and libdbi installed on your system. The configure script will attempt to find them.
5. Type 'make install' to install the programs and any data files and documentation. This will be installed into `PATH_TO_OX_INSTALL/packages/oxdbi`

3 A step by step guide

3.1 Initialization and drivers

In order to use oxdbi, it first needs to be initialized:

```
DBI_Initialize();
```

This will build a list of available drivers from the default driver directory (this is specified at the time libdbi is compiled). If you have installed drivers elsewhere, you might want to specify that directory when initialising oxdbi, so that the drivers can be found:

```
DBI_InitializeWithDir("somedir");
```

You can have a look at the drivers that have been loaded with the function `DBI.GetDriverList()`, which returns a list of loaded drivers. Note that you have to install the libdbi drivers before you can use them!

3.2 Connecting to a database

In order to connect to a database, you need to create a connection object, specifying the driver that you would like to use:

```
decl c = new DBI_Connection("pgsql")
```

Here, we have specified the PostgreSQL driver for a connection to a PostgreSQL database.

In order to connect to a database, you usually need to set some options, such as a hostname, username, and the name of the database:

```
c.SetOption("host", "localhost");
c.SetOption("username", "max");
c.SetOption("dbname", "fisdnaic");
```

Once all options have been set, we are ready to open the connection. (Note that you can view the options you have set with `c.GetOptionList()`, you can clear individual options with `c.ClearOption("optionname")`, and you can clear all options with `c.ClearOptions()`.) To open the connection, we can write:

```
c.Open();
```

This function returns 1 if the connection was opened, and zero if it wasn't (if, for example, you set the wrong database name).

3.3 Running queries

Once the connection is open, you can run queries with the `c.Query()` function. The first argument is a string containing the query, the second argument is the address of the result of the query (if any).

Queries that return only numeric data will produce a matrix. If the query also returns strings, the query will produce an array.

The `c.Query()` function will return a negative value for a bad query, zero if the query does not produce a result and 1 if it is valid and produces a result. Here is an example query that produces a list of tickers:

```
decl sQuery = "SELECT DISTINCT ticker FROM mytemp";
decl aTickers;
decl retval = c.Query(sQuery, &aTickers);
// check that the query was successful...
if(1 == retval) print(aTickers);
else println("Query '", sQuery, "' failed with return value ", retval);
```

3.4 A note on the handling of dates

Since Ox does not have a date-time object, it is usually easiest to extract dates as Julian dates (day numbers), which can then be converted to dates in Ox with the `dayofcalendar()` function. For example, in PostgreSQL, we could do something like the following:

```
decl sQuery = "SELECT DISTINCT EXTRACT(JULIAN FROM date) AS julian_date
FROM mytemp WHERE date > '2001-01-01' ORDER BY julian_date";
// PostgreSQL Julian dates are the same
// as the ones dayofcalender() uses,
// provided the date is after October 14, 1582
decl mDates;
decl retval = c.Query(sQuery, &mDates);
if(1 == retval) print("%f", mDates);
else println("Query '", sQuery, "' failed.");
```

3.5 Closing a connection

To close a connection, you can either call its close method (`c.Close()`), delete the connection object, or close `Ox`.

4 Contributing

At the moment, `oxdbi`'s feature set is still quite limited, and the list of supported platforms is quite short. I have released it under the LGPL license to encourage people to contribute to it. If you have some ideas as to how to improve this package, please let me know!

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