
libdrizle-redux Documentation

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Drizzle Redux is a project which aims to breath new life into the libdrizzle C connector. It is designed to allow you to connect to and query a MySQL database server using a simple API.

The connector is 3-clause BSD licensed so it can statically and dynamically link with almost any other open source or commercial software.

Differences from Libdrizzle

- The server-side functionality has been removed, it no longer acts as both a client and server API.
- The Drizzle prototype library functions have been removed. It now only talks to MySQL compatible servers.
- API functions have been simplified. In Libdrizzle there was a big confusion over whether the application or library should be doing the allocation and freeing of objects. It is now less ambiguous.
- New binlog API added. The library can now connect as a slave or mysqlbinlog client and retrieve binlog events.

There are many more new features to come.

Differences from libmysqlclient

- API is slightly different
- Currently missing server-side prepared statement support and protocol compression

These missing features are to be added.

Documentation Content



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About the Drizzle logo

The Drizzle logo was created by Zak Greant under the [Creative Commons Share Alike 3.0 license](#).

The logo is available in SVG format on [Wikipedia](#).

Libdrizzle Redux License

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```
Copyright (c) 2012, Drizzle Developer Group
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```

```
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```

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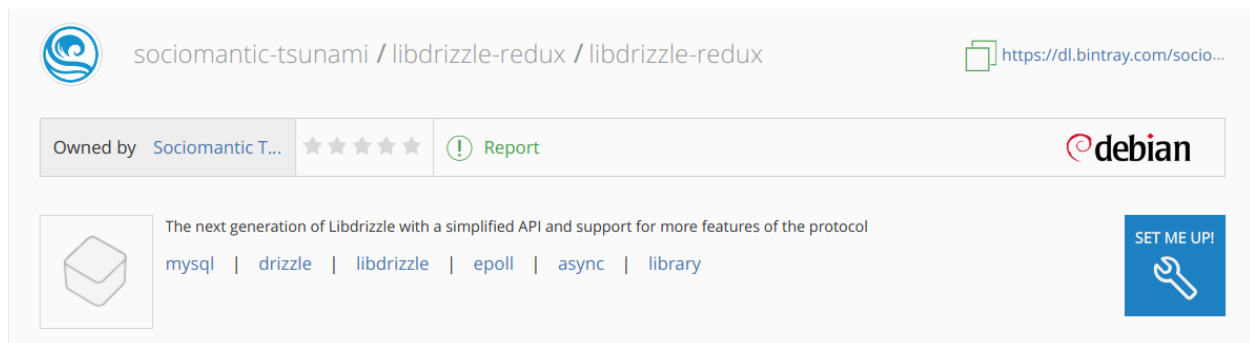
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Installing Libdrizzle Redux

Debian

For Debian based systems running **ubuntu xenial** deb packages are available in the project's **apt** repository at [bintray](#).

To add the **apt** repository to your system follow the instructions given when clicking on the **[set up me]!** button.



The screenshot shows the Bintray package page for `sociomantic-tsunami / libdrizzle-redux / libdrizzle-redux`. The page includes a header with the package name and a URL `https://dl.bintray.com/socio...`. Below the header, there is a section for the package details, including the owner `Sociomantic T...`, a star rating, and a `Report` button. The package description states: "The next generation of Libdrizzle with a simplified API and support for more features of the protocol". Below the description, there are links for `mysql`, `drizzle`, `libdrizzle`, `epoll`, `async`, and `library`. A blue button labeled `SET ME UP!` with a key icon is located in the bottom right corner.

The parameter `{distribution}` should be `xenial` while `{components}` can be `release` and/or `prerelease`. E.g:

```
https://dl.bintray.com/sociomantic-tsunami/libdrizzle-redux xenial release prerelease
```

Then run:

```
sudo apt update
sudo apt install libdrizzle-redux (for versions on the v5.x branch)
sudo apt install libdrizzle-redux6 (for versions on the v6.x branch)
```

Redhat

Distribution packages are not available for Redhat based systems, but rpm packages can be generated by running `make rpm`.

Compiling Libdrizzle Redux

Building Libdrizzle Redux

To build libdrizzle-redux you can invoke bootstrap script:

```
bootstrap.sh
```

Alternatively you can build and customize:

```
autoreconf -fi
./configure
make
make install
```

Please check the [RELEASE NOTES](#) for a list of dependencies specific to the version of the library you are trying to compile.

Running the Test Suite

Libdrizzle has a unit test suite, it needs a running MySQL server which has a user that can create databases, tables and can connect as a MySQL slave.

The test suite uses system environment variables to find the MySQL server:

- `MYSQL_SERVER` - The hostname of the MySQL server (default localhost)
- `MYSQL_PORT` - The port number of the MySQL server (default 3306)
- `MYSQL_USER` - The username for the MySQL connection (default empty)
- `MYSQL_PASSWORD` - The password for the MySQL username (default empty)
- `MYSQL_SCHEMA` - The default database for the MySQL connection (default empty)

The test suite can then be run using `make check` or `make distcheck` for testing a source distribution rather than the straight git branch.

To test with `valgrind` you can run the following:

```
``TESTS_ENVIRONMENT="./libtool --mode=execute valgrind --error-exitcode=1 --leak-  
↪check=yes --track-fds=yes --malloc-fill=A5 --free-fill=DE" make check``
```

Building For OSX (clang and gcc)

You can compile the source code with the `clang` compiler provided by **Xcode Command Line Tools**. Alternatively you can use [Homebrew](#) to install a specific `gcc` or `clang` compiler. Regardless of the choice of compiler, you will need to install **Xcode** and the **Xcode Command Line Tools**.

Compatible compilers:

Compiler	Version
GNU gcc	>= 4.5
LLVM clang	>= 3.3
Apple LLVM clang ¹	>= 6.1

1. Install the dependencies specified in the [RELEASE NOTES](#) of the latest minor release.
2. Ensure **OpenSSL** headers are linked by creating a symlink:

```
ln -sf "$(brew --prefix openssl)/include/openssl" /usr/local/include/openssl
```

or pass the OpenSSL directory to configure using `--with-openssl`:

```
./configure --with-openssl=$(brew --prefix openssl)
```

3. Optionally set the C and C++ compiler before running `configure`, e.g.:

```
autoreconf -fi  
CC=gcc-4.9 CXX=g++-4.9 ./configure  
make
```

Linking Your Application

To link your app to `libdrizzle-redux` you need to provide the following to GCC, this assumes that the library is in your library and include paths:

```
gcc app.c -oapp -ldrizzle-redux -lpthread
```

A tool called `libdrizzle-redux_config` is included to also assist with this.

¹ The version listed for Apple LLVM is the compiler used in the OS X builds on Travis CI. However earlier versions should be compatible as long as they support C++11 features, i.e. Apple LLVM 5.0, Xcode 5.0 and later.

Constants

Introduction

Libdrizzle Redux contains a number of constants, most of what are in the form of ENUMs. All ENUMs are typedef'd so no need to use the 'enum' keyword.

Library

drizzle_verbose_t

An ENUM of the verbosity for the library

DRIZZLE_VERBOSE_NEVER

Completely silent

DRIZZLE_VERBOSE_FATAL

Fatal errors only

DRIZZLE_VERBOSE_ERROR

All errors

DRIZZLE_VERBOSE_INFO

Information messages and errors

DRIZZLE_VERBOSE_DEBUG

Debugging messages and errors

DRIZZLE_VERBOSE_CRAZY

Everything

Global constants

Constants available to the client and internally

DRIZZLE_DEFAULT_TCP_HOST Default socket tcp connection host	"localhost"
DRIZZLE_DEFAULT_TCP_PORT Default socket tcp connection port	3306
DRIZZLE_MYSQL_TCP_PORT Unused	3306
DRIZZLE_MYSQL_TCP_SERVICE Unused	"mysql"
DRIZZLE_DRIZZLE_TCP_PORT Unused	4427
DRIZZLE_DEFAULT_TCP_SERVICE Unused	"mysql"
DRIZZLE_DRIZZLE_TCP_SERVICE Unused	"drizzle"
DRIZZLE_DEFAULT_UDS Default path for the Unix Domain Socket	"/tmp/mysql.sock"
DRIZZLE_DEFAULT_BACKLOG Default number of pending connections on the listening queue	64
DRIZZLE_MAX_ERROR_SIZE Maximum length of a drizzle error message	2048
DRIZZLE_MAX_USER_SIZE Maximum length for the database user name	64
DRIZZLE_MAX_PASSWORD_SIZE Maximum length for the database password	32
DRIZZLE_MAX_DB_SIZE Maximum length for the database name	64
DRIZZLE_MAX_INFO_SIZE Maximum length of a <i>drizzle_result_st</i> info or error message	2048
DRIZZLE_MAX_SQLSTATE_SIZE Maximum length a MySQL SQLSTATE code	5
DRIZZLE_MAX_CATALOG_SIZE Maximum length of the catalog name on a <i>drizzle_column_st</i>	128
DRIZZLE_MAX_TABLE_SIZE Maximum length of the table name on a <i>drizzle_column_st</i>	128
DRIZZLE_MAX_COLUMN_NAME_SIZE Maximum length of a <i>drizzle_column_st</i> column name	2048
DRIZZLE_MAX_DEFAULT_VALUE_SIZE Maximum size of the default value for a column	2048
DRIZZLE_MAX_PACKET_SIZE Maximum packet size for the connection	UINT32_MAX

DRIZZLE_MAX_BUFFER_SIZE	1024*1024*1024
Maximum size of the allocated buffer on a <i>drizzle_st</i>	
DRIZZLE_DEFAULT_BUFFER_SIZE	1024*1024
Default size of the allocated buffer on a <i>drizzle_st</i>	
DRIZZLE_BUFFER_COPY_THRESHOLD	8192
Unused	
DRIZZLE_MAX_SERVER_VERSION_SIZE	32
Maximum length of the server version string	
DRIZZLE_MAX_SERVER_EXTRA_SIZE	32
Maximum size of additional data sent after server handshake	
DRIZZLE_MAX_SCRAMBLE_SIZE	20
Maximum size of the buffer used during authentication if password scrambling is enabled	
DRIZZLE_STATE_STACK_SIZE	8
Maximum number of states saved on the stack	
DRIZZLE_ROW_GROW_SIZE	8192
The number of rows to read at a time when buffering a result	
DRIZZLE_DEFAULT_SOCKET_TIMEOUT	10
The default time in seconds to wait before a setsockopt call times out	
DRIZZLE_DEFAULT_SOCKET_SEND_SIZE	DRIZZLE_DEFAULT_BUFFER_SIZE
The default size of the socket send buffer	
DRIZZLE_DEFAULT_SOCKET_RECV_SIZE	DRIZZLE_DEFAULT_BUFFER_SIZE
The default size of the socket receive buffer	
DRIZZLE_MYSQL_PASSWORD_HASH	41
Unused	
DRIZZLE_BINLOG_CRC32_LEN	4
Size of the CRC32 checksum appended to each binlog event	
DRIZZLE_BINLOG_CHECKSUM_VERSION	"5.6.1"
From this version and higher automatic checksums is on	
DRIZZLE_BINLOG_MAGIC	"xFEx62x69x6E"
The 4-byte header of a binary log file	

Return

drizzle_return_t

Function return status ENUM

DRIZZLE_RETURN_OK

Return is OK

DRIZZLE_RETURN_IO_WAIT

Waiting on IO

DRIZZLE_RETURN_PAUSE

DRIZZLE_RETURN_ROW_BREAK

Row break because row is larger than packet size

DRIZZLE_RETURN_MEMORY

Memory allocation error

DRIZZLE_RETURN_ERRNO

OS error code

DRIZZLE_RETURN_INTERNAL_ERROR

Internal error during handshake

DRIZZLE_RETURN_GETADDRINFO

Domain lookup failure

DRIZZLE_RETURN_NOT_READY

Client is not connected to server

DRIZZLE_RETURN_BAD_PACKET_NUMBER

Packets are out of sequence

DRIZZLE_RETURN_BAD_HANDSHAKE_PACKET

Bad packet received during handshake

DRIZZLE_RETURN_BAD_PACKET

Bad packet received (unused)

DRIZZLE_RETURN_PROTOCOL_NOT_SUPPORTED

Attempt to connect to a version of MySQL less than 4.1

DRIZZLE_RETURN_UNEXPECTED_DATA

Unexpected data in the receive buffer

DRIZZLE_RETURN_NO_SCRAMBLE

No password scramble received (usually if server is expecting an auth plugin but client didn't use one)

DRIZZLE_RETURN_AUTH_FAILED

Authentication failure

DRIZZLE_RETURN_NULL_SIZE

Internal status

DRIZZLE_RETURN_ERROR_CODE

Error code received from MySQL server

DRIZZLE_RETURN_TOO_MANY_COLUMNS

Unused

DRIZZLE_RETURN_ROW_END

Internal status

DRIZZLE_RETURN_LOST_CONNECTION

Connection failure

DRIZZLE_RETURN_COULD_NOT_CONNECT

Could not connect to server

DRIZZLE_RETURN_NO_ACTIVE_CONNECTIONS

Waiting on a connection which doesn't exist (this shouldn't happen)

DRIZZLE_RETURN_HANDSHAKE_FAILED

Handshake failure

DRIZZLE_RETURN_TIMEOUT

Timeout during connection

DRIZZLE_RETURN_INVALID_ARGUMENT

Bad arguments supplied to a function

DRIZZLE_RETURN_SSL_ERROR

An error occurred during SSL handshake

DRIZZLE_RETURN_EOF

No more data to retrieve

DRIZZLE_RETURN_STMT_ERROR

A prepared statement error has occurred

DRIZZLE_RETURN_BINLOG_CRC

A checksum error has occurred in a MySQL 5.6 binlog

DRIZZLE_RETURN_TRUNCATED

The result has been truncated

DRIZZLE_RETURN_INVALID_CONVERSION

The data type cannot be converted into the requested type

DRIZZLE_RETURN_NOT_FOUND

The requested column was not found

Connection

drizzle_charset_t

An ENUM of the possible character set with collation ID

DRIZZLE_CHARSET_BIG5_CHINESE_CI**DRIZZLE_CHARSET_LATIN2_CZECH_CS****DRIZZLE_CHARSET_DEC8_SWEDISH_CI****DRIZZLE_CHARSET_CP850_GENERAL_CI****DRIZZLE_CHARSET_LATIN1_GERMAN1_CI****DRIZZLE_CHARSET_HP8_ENGLISH_CI****DRIZZLE_CHARSET_KOI8R_GENERAL_CI****DRIZZLE_CHARSET_LATIN1_SWEDISH_CI****DRIZZLE_CHARSET_LATIN2_GENERAL_CI****DRIZZLE_CHARSET_SWE7_SWEDISH_CI****DRIZZLE_CHARSET_ASCII_GENERAL_CI****DRIZZLE_CHARSET_UJIS_JAPANESE_CI****DRIZZLE_CHARSET_SJIS_JAPANESE_CI****DRIZZLE_CHARSET_CP1251_BULGARIAN_CI****DRIZZLE_CHARSET_LATIN1_DANISH_CI****DRIZZLE_CHARSET_HEBREW_GENERAL_CI****DRIZZLE_CHARSET_TIS620_THAI_CI****DRIZZLE_CHARSET_EUCKR_KOREAN_CI****DRIZZLE_CHARSET_LATIN7_ESTONIAN_CS****DRIZZLE_CHARSET_LATIN2_HUNGARIAN_CI****DRIZZLE_CHARSET_KOI8U_GENERAL_CI**

DRIZZLE_CHARSET_CP1251_UKRAINIAN_CI
DRIZZLE_CHARSET_GB2312_CHINESE_CI
DRIZZLE_CHARSET_GREEK_GENERAL_CI
DRIZZLE_CHARSET_CP1250_GENERAL_CI
DRIZZLE_CHARSET_LATIN2_CROATIAN_CI
DRIZZLE_CHARSET_GBK_CHINESE_CI
DRIZZLE_CHARSET_CP1257_LITHUANIAN_CI
DRIZZLE_CHARSET_LATIN5_TURKISH_CI
DRIZZLE_CHARSET_LATIN1_GERMAN2_CI
DRIZZLE_CHARSET_ARMSCII8_GENERAL_CI
DRIZZLE_CHARSET_UTF8_GENERAL_CI
DRIZZLE_CHARSET_CP1250_CZECH_CS
DRIZZLE_CHARSET_UCS2_GENERAL_CI
DRIZZLE_CHARSET_CP866_GENERAL_CI
DRIZZLE_CHARSET_KEYBCS2_GENERAL_CI
DRIZZLE_CHARSET_MACCE_GENERAL_CI
DRIZZLE_CHARSET_MACROMAN_GENERAL_CI
DRIZZLE_CHARSET_CP852_GENERAL_CI
DRIZZLE_CHARSET_LATIN7_GENERAL_CI
DRIZZLE_CHARSET_LATIN7_GENERAL_CS
DRIZZLE_CHARSET_MACCE_BIN
DRIZZLE_CHARSET_CP1250_CROATIAN_CI
DRIZZLE_CHARSET_UTF8MB4_GENERAL_CI
DRIZZLE_CHARSET_UTF8MB4_BIN
DRIZZLE_CHARSET_LATIN1_BIN
DRIZZLE_CHARSET_LATIN1_GENERAL_CI
DRIZZLE_CHARSET_LATIN1_GENERAL_CS
DRIZZLE_CHARSET_CP1251_BIN
DRIZZLE_CHARSET_CP1251_GENERAL_CI
DRIZZLE_CHARSET_CP1251_GENERAL_CS
DRIZZLE_CHARSET_MACROMAN_BIN
DRIZZLE_CHARSET_UTF16_GENERAL_CI
DRIZZLE_CHARSET_UTF16_BIN
DRIZZLE_CHARSET_CP1256_GENERAL_CI
DRIZZLE_CHARSET_CP1257_BIN
DRIZZLE_CHARSET_CP1257_GENERAL_CI

DRIZZLE_CHARSET_UTF32_GENERAL_CI
DRIZZLE_CHARSET_UTF32_BIN
DRIZZLE_CHARSET_BINARY
DRIZZLE_CHARSET_ARMSCII8_BIN
DRIZZLE_CHARSET_ASCII_BIN
DRIZZLE_CHARSET_CP1250_BIN
DRIZZLE_CHARSET_CP1256_BIN
DRIZZLE_CHARSET_CP866_BIN
DRIZZLE_CHARSET_DEC8_BIN
DRIZZLE_CHARSET_GREEK_BIN
DRIZZLE_CHARSET_HEBREW_BIN
DRIZZLE_CHARSET_HP8_BIN
DRIZZLE_CHARSET_KEYBCS2_BIN
DRIZZLE_CHARSET_KOI8R_BIN
DRIZZLE_CHARSET_KOI8U_BIN
DRIZZLE_CHARSET_LATIN2_BIN
DRIZZLE_CHARSET_LATIN5_BIN
DRIZZLE_CHARSET_LATIN7_BIN
DRIZZLE_CHARSET_CP850_BIN
DRIZZLE_CHARSET_CP852_BIN
DRIZZLE_CHARSET_SWE7_BIN
DRIZZLE_CHARSET_UTF8_BIN
DRIZZLE_CHARSET_BIG5_BIN
DRIZZLE_CHARSET_EUCKR_BIN
DRIZZLE_CHARSET_GB2312_BIN
DRIZZLE_CHARSET_GBK_BIN
DRIZZLE_CHARSET_SJIS_BIN
DRIZZLE_CHARSET_TIS620_BIN
DRIZZLE_CHARSET_UCS2_BIN
DRIZZLE_CHARSET_UJIS_BIN
DRIZZLE_CHARSET_GEOSTD8_GENERAL_CI
DRIZZLE_CHARSET_GEOSTD8_BIN
DRIZZLE_CHARSET_LATIN1_SPANISH_CI
DRIZZLE_CHARSET_CP932_JAPANESE_CI
DRIZZLE_CHARSET_CP932_BIN
DRIZZLE_CHARSET_EUCJPMS_JAPANESE_CI

DRIZZLE_CHARSET_EUCJPMS_BIN
DRIZZLE_CHARSET_CP1250_POLISH_CI
DRIZZLE_CHARSET_UTF16_UNICODE_CI
DRIZZLE_CHARSET_UTF16_ICELANDIC_CI
DRIZZLE_CHARSET_UTF16_LATVIAN_CI
DRIZZLE_CHARSET_UTF16_ROMANIAN_CI
DRIZZLE_CHARSET_UTF16_SLOVENIAN_CI
DRIZZLE_CHARSET_UTF16_POLISH_CI
DRIZZLE_CHARSET_UTF16_ESTONIAN_CI
DRIZZLE_CHARSET_UTF16_SPANISH_CI
DRIZZLE_CHARSET_UTF16_SWEDISH_CI
DRIZZLE_CHARSET_UTF16_TURKISH_CI
DRIZZLE_CHARSET_UTF16_CZECH_CI
DRIZZLE_CHARSET_UTF16_DANISH_CI
DRIZZLE_CHARSET_UTF16_LITHUANIAN_CI
DRIZZLE_CHARSET_UTF16_SLOVAK_CI
DRIZZLE_CHARSET_UTF16_SPANISH2_CI
DRIZZLE_CHARSET_UTF16_ROMAN_CI
DRIZZLE_CHARSET_UTF16_PERSIAN_CI
DRIZZLE_CHARSET_UTF16_ESPERANTO_CI
DRIZZLE_CHARSET_UTF16_HUNGARIAN_CI
DRIZZLE_CHARSET_UTF16_SINHALA_CI
DRIZZLE_CHARSET_UCS2_UNICODE_CI
DRIZZLE_CHARSET_UCS2_ICELANDIC_CI
DRIZZLE_CHARSET_UCS2_LATVIAN_CI
DRIZZLE_CHARSET_UCS2_ROMANIAN_CI
DRIZZLE_CHARSET_UCS2_SLOVENIAN_CI
DRIZZLE_CHARSET_UCS2_POLISH_CI
DRIZZLE_CHARSET_UCS2_ESTONIAN_CI
DRIZZLE_CHARSET_UCS2_SPANISH_CI
DRIZZLE_CHARSET_UCS2_SWEDISH_CI
DRIZZLE_CHARSET_UCS2_TURKISH_CI
DRIZZLE_CHARSET_UCS2_CZECH_CI
DRIZZLE_CHARSET_UCS2_DANISH_CI
DRIZZLE_CHARSET_UCS2_LITHUANIAN_CI
DRIZZLE_CHARSET_UCS2_SLOVAK_CI

DRIZZLE_CHARSET_UCS2_SPANISH2_CI
DRIZZLE_CHARSET_UCS2_ROMAN_CI
DRIZZLE_CHARSET_UCS2_PERSIAN_CI
DRIZZLE_CHARSET_UCS2_ESPERANTO_CI
DRIZZLE_CHARSET_UCS2_HUNGARIAN_CI
DRIZZLE_CHARSET_UCS2_SINHALA_CI
DRIZZLE_CHARSET_UCS2_GENERAL_MYSQL500_CI
DRIZZLE_CHARSET_UTF32_UNICODE_CI
DRIZZLE_CHARSET_UTF32_ICELANDIC_CI
DRIZZLE_CHARSET_UTF32_LATVIAN_CI
DRIZZLE_CHARSET_UTF32_ROMANIAN_CI
DRIZZLE_CHARSET_UTF32_SLOVENIAN_CI
DRIZZLE_CHARSET_UTF32_POLISH_CI
DRIZZLE_CHARSET_UTF32_ESTONIAN_CI
DRIZZLE_CHARSET_UTF32_SPANISH_CI
DRIZZLE_CHARSET_UTF32_SWEDISH_CI
DRIZZLE_CHARSET_UTF32_TURKISH_CI
DRIZZLE_CHARSET_UTF32_CZECH_CI
DRIZZLE_CHARSET_UTF32_DANISH_CI
DRIZZLE_CHARSET_UTF32_LITHUANIAN_CI
DRIZZLE_CHARSET_UTF32_SLOVAK_CI
DRIZZLE_CHARSET_UTF32_SPANISH2_CI
DRIZZLE_CHARSET_UTF32_ROMAN_CI
DRIZZLE_CHARSET_UTF32_PERSIAN_CI
DRIZZLE_CHARSET_UTF32_ESPERANTO_CI
DRIZZLE_CHARSET_UTF32_HUNGARIAN_CI
DRIZZLE_CHARSET_UTF32_SINHALA_CI
DRIZZLE_CHARSET_UTF8_UNICODE_CI
DRIZZLE_CHARSET_UTF8_ICELANDIC_CI
DRIZZLE_CHARSET_UTF8_LATVIAN_CI
DRIZZLE_CHARSET_UTF8_ROMANIAN_CI
DRIZZLE_CHARSET_UTF8_SLOVENIAN_CI
DRIZZLE_CHARSET_UTF8_POLISH_CI
DRIZZLE_CHARSET_UTF8_ESTONIAN_CI
DRIZZLE_CHARSET_UTF8_SPANISH_CI
DRIZZLE_CHARSET_UTF8_SWEDISH_CI

DRIZZLE_CHARSET_UTF8_TURKISH_CI
DRIZZLE_CHARSET_UTF8_CZECH_CI
DRIZZLE_CHARSET_UTF8_DANISH_CI
DRIZZLE_CHARSET_UTF8_LITHUANIAN_CI
DRIZZLE_CHARSET_UTF8_SLOVAK_CI
DRIZZLE_CHARSET_UTF8_SPANISH2_CI
DRIZZLE_CHARSET_UTF8_ROMAN_CI
DRIZZLE_CHARSET_UTF8_PERSIAN_CI
DRIZZLE_CHARSET_UTF8_ESPERANTO_CI
DRIZZLE_CHARSET_UTF8_HUNGARIAN_CI
DRIZZLE_CHARSET_UTF8_SINHALA_CI
DRIZZLE_CHARSET_UTF8_GENERAL_MYSQL500_CI
DRIZZLE_CHARSET_UTF8MB4_UNICODE_CI
DRIZZLE_CHARSET_UTF8MB4_ICELANDIC_CI
DRIZZLE_CHARSET_UTF8MB4_LATVIAN_CI
DRIZZLE_CHARSET_UTF8MB4_ROMANIAN_CI
DRIZZLE_CHARSET_UTF8MB4_SLOVENIAN_CI
DRIZZLE_CHARSET_UTF8MB4_POLISH_CI
DRIZZLE_CHARSET_UTF8MB4_ESTONIAN_CI
DRIZZLE_CHARSET_UTF8MB4_SPANISH_CI
DRIZZLE_CHARSET_UTF8MB4_SWEDISH_CI
DRIZZLE_CHARSET_UTF8MB4_TURKISH_CI
DRIZZLE_CHARSET_UTF8MB4_CZECH_CI
DRIZZLE_CHARSET_UTF8MB4_DANISH_CI
DRIZZLE_CHARSET_UTF8MB4_LITHUANIAN_CI
DRIZZLE_CHARSET_UTF8MB4_SLOVAK_CI
DRIZZLE_CHARSET_UTF8MB4_SPANISH2_CI
DRIZZLE_CHARSET_UTF8MB4_ROMAN_CI
DRIZZLE_CHARSET_UTF8MB4_PERSIAN_CI
DRIZZLE_CHARSET_UTF8MB4_ESPERANTO_CI
DRIZZLE_CHARSET_UTF8MB4_HUNGARIAN_CI
DRIZZLE_CHARSET_UTF8MB4_SINHALA_CI

drizzle_status_t

An ENUM of connection statuses intended to be used in a bit field

DRIZZLE_CON_STATUS_NONE

No status set

DRIZZLE_CON_STATUS_IN_TRANS

In a transaction

DRIZZLE_CON_STATUS_AUTOCOMMIT

Autocommit is enabled

DRIZZLE_CON_STATUS_MORE_RESULTS_EXISTS

There are more result sets available

DRIZZLE_CON_STATUS_QUERY_NO_GOOD_INDEX_USED

No good index couldn't be used

DRIZZLE_CON_STATUS_QUERY_NO_INDEX_USED

No index was used

DRIZZLE_CON_STATUS_CURSOR_EXISTS

A cursor is available

DRIZZLE_CON_STATUS_LAST_ROW_SENT

The last row has been sent to the client

DRIZZLE_CON_STATUS_DB_DROPPED

The database has been dropped

DRIZZLE_CON_STATUS_NO_BACKSLASH_ESCAPES

NO_BACKSLASH_ESCAPES SQL mode set

DRIZZLE_CON_STATUS_QUERY_WAS_SLOW

Query hit the slow query timeout

drizzle_capabilities_t

An ENUM of connection capabilities intended to be used in a bit field

DRIZZLE_CAPABILITIES_NONE

No capabilities set

DRIZZLE_CAPABILITIES_LONG_PASSWORD

Long password support

DRIZZLE_CAPABILITIES_FOUND_ROWS

FOUND_ROWS support

DRIZZLE_CAPABILITIES_LONG_FLAG

Get all column flags

DRIZZLE_CAPABILITIES_IGNORE_SPACE

Ignore spaces before open brackets

DRIZZLE_CAPABILITIES_CONNECT_WITH_DB

A database can be specified upon connect

DRIZZLE_CAPABILITIES_NO_SCHEMA

Disable access to database.table.column way of accessing things

DRIZZLE_CAPABILITIES_COMPRESS

Enable compression protocol

DRIZZLE_CAPABILITIES_ODBC

An ODBC client

DRIZZLE_CAPABILITIES_LOCAL_FILES

Enables LOAD DATA LOCAL

DRIZZLE_CAPABILITIES_PROTOCOL_41

MySQL 4.1 and higher protocol

DRIZZLE_CAPABILITIES_INTERACTIVE

An interactive client

DRIZZLE_CAPABILITIES_SSL

Use SSL

DRIZZLE_CAPABILITIES_IGNORE_SIGPIPE

Ignore sigpipe

DRIZZLE_CAPABILITIES_TRANSACTIONS

Client understands transactions

DRIZZLE_CAPABILITIES_RESERVED

Unused

DRIZZLE_CAPABILITIES_SECURE_CONNECTION

MySQL 4.1 and higher authentication

DRIZZLE_CAPABILITIES_MULTI_STATEMENTS

Enable multiple statement support

DRIZZLE_CAPABILITIES_MULTI_RESULTS

Enable multiple result sets

DRIZZLE_CAPABILITIES_PS_MULTI_RESULTS

DRIZZLE_CAPABILITIES_PLUGIN_AUTH

Enable plugin authentication

DRIZZLE_CAPABILITIES_SSL_VERIFY_SERVER_CERT

Verify SSL cert

DRIZZLE_CAPABILITIES_REMEMBER_OPTIONS

DRIZZLE_CAPABILITIES_CLIENT

Enables the following:

*DRIZZLE_CAPABILITIES_LONG_PASSWORD, DRIZZLE_CAPABILITIES_FOUND_ROWS,
DRIZZLE_CAPABILITIES_LONG_FLAG, DRIZZLE_CAPABILITIES_CONNECT_WITH_DB,
DRIZZLE_CAPABILITIES_PLUGIN_AUTH, DRIZZLE_CAPABILITIES_TRANSACTIONS,
DRIZZLE_CAPABILITIES_PROTOCOL_41, DRIZZLE_CAPABILITIES_SECURE_CONNECTION*

drizzle_ssl_state_t

An enum of SSL States

DRIZZLE_SSL_STATE_NONE

SSL connection is not initialized

DRIZZLE_SSL_STATE_HANDSHAKE_COMPLETE

SSL connection is established

drizzle_socket_owner_t

Owner of socket connection

DRIZZLE_SOCKET_OWNER_NATIVE

DRIZZLE_SOCKET_OWNER_CLIENT

(deprecated) drizzle_socket_owner

typedef of *drizzle_socket_owner_t*

drizzle_socket_option_t

An ENUM of socket connection options

DRIZZLE_SOCKET_OPTION_KEEPIDLE

The socket connection timeout

DRIZZLE_SOCKET_OPTION_KEEPCNT

Number of probes before dropping connection

DRIZZLE_SOCKET_OPTION_KEEPINTVL

TCP interval between probes

DRIZZLE_SOCKET_OPTION_TIMEOUT

TCP Keep-alive timeout

(deprecated) drizzle_socket_option

typedef of *drizzle_socket_option_t*

Query

drizzle_field_t

Field data (an alias for `char*`)

drizzle_row_t

Row data (an array of *drizzle_field_t*)

drizzle_column_type_t

An ENUM of column types

DRIZZLE_COLUMN_TYPE_DECIMAL

An old style decimal type

DRIZZLE_COLUMN_TYPE_TINY

A tiny int

DRIZZLE_COLUMN_TYPE_SHORT

A short int

DRIZZLE_COLUMN_TYPE_LONG

A long int

DRIZZLE_COLUMN_TYPE_FLOAT

A float

DRIZZLE_COLUMN_TYPE_DOUBLE

A double

DRIZZLE_COLUMN_TYPE_NULL

A NULL

DRIZZLE_COLUMN_TYPE_TIMESTAMP

A timestamp

DRIZZLE_COLUMN_TYPE_LONGLONG

A bigint

DRIZZLE_COLUMN_TYPE_INT24**DRIZZLE_COLUMN_TYPE_DATE****DRIZZLE_COLUMN_TYPE_TIME****DRIZZLE_COLUMN_TYPE_DATETIME**

DRIZZLE_COLUMN_TYPE_YEAR
DRIZZLE_COLUMN_TYPE_NEWDATE
DRIZZLE_COLUMN_TYPE_VARCHAR
DRIZZLE_COLUMN_TYPE_BIT
DRIZZLE_COLUMN_TYPE_NEWDECIMAL
DRIZZLE_COLUMN_TYPE_ENUM
DRIZZLE_COLUMN_TYPE_SET
DRIZZLE_COLUMN_TYPE_TINY_BLOB
DRIZZLE_COLUMN_TYPE_MEDIUM_BLOB
DRIZZLE_COLUMN_TYPE_LONG_BLOB
DRIZZLE_COLUMN_TYPE_BLOB
DRIZZLE_COLUMN_TYPE_VAR_STRING
Text column type
DRIZZLE_COLUMN_TYPE_STRING
DRIZZLE_COLUMN_TYPE_GEOMETRY

drizzle_column_options_t

DRIZZLE_COLUMN_UNUSED

drizzle_column_flags_t

An ENUM of column flags intended to be used in a bit field

DRIZZLE_COLUMN_FLAGS_NONE
No flags set

DRIZZLE_COLUMN_FLAGS_NOT_NULL
Column is not NULL

DRIZZLE_COLUMN_FLAGS_PRI_KEY
Column is a primary key

DRIZZLE_COLUMN_FLAGS_UNIQUE_KEY
Column is a unique key

DRIZZLE_COLUMN_FLAGS_MULTIPLE_KEY
Column is part of a multi-part key

DRIZZLE_COLUMN_FLAGS_BLOB
Column is a blob

DRIZZLE_COLUMN_FLAGS_UNSIGNED
Column is unsigned

DRIZZLE_COLUMN_FLAGS_ZEROFILL
Column has a zerofill

DRIZZLE_COLUMN_FLAGS_BINARY

DRIZZLE_COLUMN_FLAGS_ENUM
Column is an ENUM

DRIZZLE_COLUMN_FLAGS_AUTO_INCREMENT

Column has auto increment

DRIZZLE_COLUMN_FLAGS_TIMESTAMP

Column in a timestamp

DRIZZLE_COLUMN_FLAGS_SET

Column is a SET data type

DRIZZLE_COLUMN_FLAGS_NO_DEFAULT_VALUE

Column has no default value

DRIZZLE_COLUMN_FLAGS_ON_UPDATE_NOW

Column has on update now timestamp

DRIZZLE_COLUMN_FLAGS_PART_KEY

Column is part of a key

DRIZZLE_COLUMN_FLAGS_NUM

Column is a number

Note: Group and num are the same flag

DRIZZLE_COLUMN_FLAGS_GROUP

Note: Group and num are the same flag

DRIZZLE_COLUMN_FLAGS_UNIQUE**DRIZZLE_COLUMN_FLAGS_BINCMP****DRIZZLE_COLUMN_FLAGS_GET_FIXED_FIELDS****DRIZZLE_COLUMN_FLAGS_IN_PART_FUNC****DRIZZLE_COLUMN_FLAGS_IN_ADD_INDEX****DRIZZLE_COLUMN_FLAGS_RENAMED****drizzle_result_options_t**

An ENUM used to the indicate the state of a result

DRIZZLE_RESULT_NONE**DRIZZLE_RESULT_SKIP_COLUMN****DRIZZLE_RESULT_BUFFER_COLUMN****DRIZZLE_RESULT_BUFFER_ROW****DRIZZLE_RESULT_EOF_PACKET****DRIZZLE_RESULT_ROW_BREAK****DRIZZLE_RESULT_BINARY_ROWS**

Prepared Statement

drizzle_stmt_state_t

An internal state for prepared statements

Binlog

drizzle_binlog_event_types_t

An ENUM of binlog event types

DRIZZLE_EVENT_TYPE_UNKNOWN

An unknown event

DRIZZLE_EVENT_TYPE_START

A binlog start event

DRIZZLE_EVENT_TYPE_QUERY

A MySQL query for SBR

DRIZZLE_EVENT_TYPE_STOP

Binlog end event

DRIZZLE_EVENT_TYPE_ROTATE

Binlog file rotate event

DRIZZLE_EVENT_TYPE_INTVAR

Insert ID event

DRIZZLE_EVENT_TYPE_LOAD

Load data from file event

DRIZZLE_EVENT_TYPE_CREATE_FILE

Create file event

DRIZZLE_EVENT_TYPE_APPEND_BLOCK

Append block data to a file

DRIZZLE_EVENT_TYPE_EXEC_LOAD

Exec load event

DRIZZLE_EVENT_TYPE_DELETE_FILE

Delete file event

DRIZZLE_EVENT_TYPE_NEW_LOAD

New load data from file event

DRIZZLE_EVENT_TYPE_RAND

Seeds for RAND() functions

DRIZZLE_EVENT_TYPE_USER_VAR

A user variable

DRIZZLE_EVENT_TYPE_FORMAT_DESCRIPTION

A description of the binlog file (a replacement for DRIZZLE_EVENT_TYPE_START in MySQL 5.0 onwards)

DRIZZLE_EVENT_TYPE_XID

XA Transaction ID

DRIZZLE_EVENT_TYPE_BEGIN_LOAD_QUERY

Truncate file and save block data

DRIZZLE_EVENT_TYPE_EXECUTE_LOAD_QUERY

Execute load query event

DRIZZLE_EVENT_TYPE_TABLE_MAP

A table map event for RBR

DRIZZLE_EVENT_TYPE_OBSOLETE_WRITE_ROWS

RBR Write rows event for MySQL 5.1 pre-release

DRIZZLE_EVENT_TYPE_OBSOLETE_UPDATE_ROWS

RBR Update rows event for MySQL 5.1 pre-release

DRIZZLE_EVENT_TYPE_OBSOLETE_DELETE_ROWS

RBR Delete rows event for MySQL 5.1 pre-release

DRIZZLE_EVENT_TYPE_V1_WRITE_ROWS

RBR Write rows event

DRIZZLE_EVENT_TYPE_V1_UPDATE_ROWS

RBR Update rows event

DRIZZLE_EVENT_TYPE_V1_DELETE_ROWS

RBR Delete rows event

DRIZZLE_EVENT_TYPE_INCIDENT

Replication incident message

DRIZZLE_EVENT_TYPE_HEARTBEAT

Replication heartbeat event

DRIZZLE_EVENT_TYPE_IGNOREABLE

DRIZZLE_EVENT_TYPE_ROWS_QUERY

DRIZZLE_EVENT_TYPE_V2_WRITE_ROWS

A MySQL 5.6 RBR Write rows event

DRIZZLE_EVENT_TYPE_V2_UPDATE_ROWS

A MySQL 5.6 RBR Update rows event

DRIZZLE_EVENT_TYPE_V2_DELETE_ROWS

A MySQL 5.6 RBR Delete rows event

DRIZZLE_EVENT_TYPE_GTID

DRIZZLE_EVENT_TYPE_ANONYMOUS_GTID

DRIZZLE_EVENT_TYPE_PREVIOUS_GTIDS

drizzle_binlog_event_positions_t

DRIZZLE_EVENT_POSITION_TIMESTAMP

DRIZZLE_EVENT_POSITION_TYPE

DRIZZLE_EVENT_POSITION_SERVERID

DRIZZLE_EVENT_POSITION_LENGTH

DRIZZLE_EVENT_POSITION_NEXT

DRIZZLE_EVENT_POSITION_FLAGS

DRIZZLE_EVENT_POSITION_EXTRA_FLAGS

Library Functions

Introduction

This section outlines the functions related to the Libdrizzle Redux library

Functions

void **drizzle_library_init** (void)

Setup of the SSL and Windows connection libraries. Should be run before any Libdrizzle Redux function. Only required if using SSL or Windows.

void **drizzle_library_deinit** (void)

Deinitialize the library. Only required for Windows

const char* **drizzle_version** (void)

Gives the version string for the Libdrizzle Redux library

Returns A string of the library version

const char* **drizzle_bugreport** (void)

Gives the URL for reporting library bugs

Returns A string containing the bug report URL

const char* **drizzle_verbose_name** (*drizzle_verbose_t verbose*)

Gives the verbosity name for a given verbosity type

Returns A string containing the verbosity name

Connection Functions

Introduction

This section outlines the connection functions

Structs

drizzle_st

The internal drizzle connection object struct

drizzle_options_st

The internal structure containing connection options

Functions

*drizzle_st** **drizzle_create** (const char **host*, in_port_t *port*, const char **user*, const char **password*, const char **db*, *drizzle_options_st* **options*)

Creates a connection connection object. If a path beginning with / is given as the host the library will connect as a UDS socket. Otherwise a TCP/IP connection is made.

Note: a connection does not happen until the first query or an explicit `drizzle_connect()` call is made

Parameters

- **host** – The socket path, hostname or IP of the server
- **port** – The port number of the server (if TCP/IP)
- **user** – The username of the server
- **password** – The password of the server
- **db** – The default DB to connect to on the server
- **options** – A pointer to a `drizzle_options_st` created using `drizzle_options_create()` or NULL

Returns A newly allocated and setup connection object

int **drizzle_fd** (const `drizzle_st` *con)

Get file descriptor for connection.

Parameters

- **con** – Connection structure previously initialized with `drizzle_create()`.

Returns File descriptor of connection, or -1 if not active.

int **drizzle_timeout** (const `drizzle_st` *con)

Gets the current connection timeout set in the connection object

Parameters

- **drizzle** – A connection object

Returns The current timeout

void **drizzle_set_timeout** (`drizzle_st` *con, int timeout)

Sets the connection timeout for the connection object

Parameters

- **drizzle** – A connection object
- **timeout** – The new timeout to set

`drizzle_verbosity_t` **drizzle_verbosity** (const `drizzle_st` *con)

Gets the verbosity level set in the connection object

Parameters

- **drizzle** – A connection object

Returns The verbosity level from `drizzle_verbosity_t`

void **drizzle_set_verbosity** (`drizzle_st` *con, `drizzle_verbosity_t` verbose)

Sets the verbosity level for the connection object

Parameters

- **drizzle** – A connection object
- **verbose** – The verbosity level from `drizzle_verbosity_t`

void **drizzle_set_log_fn** (*drizzle_st* *con, *drizzle_log_fn* *function, void *context)

Sets a callback function for log handling

Parameters

- **drizzle** – A connection object
- **function** – The function to use in the format of *drizzle_log_fn()*
- **context** – A pointer to data to pass to the log function

void **drizzle_set_event_watch_fn** (*drizzle_st* *drizzle, *drizzle_event_watch_fn* *function, void *context)

Set a custom I/O event watcher function for a drizzle structure

Parameters

- **drizzle** – Drizzle structure previously initialized with *drizzle_create()*.
- **function** – Function to call when there is an I/O event, in the form of *drizzle_event_watch_fn()*
- **context** – Argument to pass into the callback function.

drizzle_return_t **drizzle_set_events** (*drizzle_st* *con, short events)

Set events to be watched for a connection.

Parameters

- **con** – Connection structure previously initialized with *drizzle_create()*.
- **events** – Bitfield of poll() events to watch.

Returns Standard drizzle return value.

drizzle_return_t **drizzle_set_revents** (*drizzle_st* *con, short revents)

Set events that are ready for a connection. This is used with the external event callbacks. See *drizzle_set_event_watch_fn()*.

Parameters

- **con** – Connection structure previously initialized with *drizzle_create()*.
- **revents** – Bitfield of poll() events that were detected.

Returns Standard drizzle return value.

const char* **drizzle_error** (const *drizzle_st* *con)

Get the last error from a connection

Parameters

- **con** – A connection object

Returns A string containing the error message

int **drizzle_errno** (const *drizzle_st* *con)

Get the last OS error code from a connection

Parameters

- **con** – A connection object

Returns The OS error code

uint16_t **drizzle_error_code** (const *drizzle_st* *con)

Gets the last error code from a connection

Parameters

- **con** – A connection object

Returns The server error code

const char* **drizzle_sqlstate** (const *drizzle_st* *con)

Gets the last sqlstate from a connection

Parameters

- **con** – A connection object

Returns A string containing the sqlstate

drizzle_options_st ***drizzle_options_create** (void)

Create a new connection options object

Returns The new connection options object

void **drizzle_options_destroy** (*drizzle_options_st* *options)

Destroys a connection options object

Parameters

- **options** – The options object to be destroyed

void **drizzle_socket_set_options** (*drizzle_options_st* *options, int wait_timeout, int keepidle, int keepcnt, int keepintvl)

Sets several options for the socket connection

Parameters

- **options** – An initialized options structure
- **wait_timeout** – The timeout (in seconds) for setsockopt calls with option values: SO_SNDTIMEO, SO_RCVTIMEO, SO_LINGER
- **keepidle** – The time (in seconds) the connection needs to remain idle before TCP starts sending keepalive probes
- **keepcnt** – The maximum number of keepalive probes TCP should send before dropping the connection.
- **keepintvl** – The time (in seconds) between individual keepalive probes

void **drizzle_socket_set_option** (*drizzle_st* *con, *drizzle_socket_option_t* option, int value)

Sets the value of a socket option.

Note: The available options to set are:

DRIZZLE_SOCKET_OPTION_TIMEOUT : The timeout (in seconds) for setsockopt calls with option values: SO_SNDTIMEO, SO_RCVTIMEO, SO_LINGER

DRIZZLE_SOCKET_OPTION_KEEPIDLE : The time (in seconds) the connection needs to remain idle before TCP starts sending keepalive probes

DRIZZLE_SOCKET_OPTION_KEEPCNT : The maximum number of keepalive probes TCP should send before dropping the connection.

DRIZZLE_SOCKET_OPTION_KEEPINTVL : The time (in seconds) between individual keepalive probes

Parameters

- **con** – Connection structure previously initialized with *drizzle_create()*.
- **option** – the option to set the value for

- **value** – the value to set

int **drizzle_socket_get_option** (*drizzle_st* *con, *drizzle_socket_option_t* option)

Gets the value of a socket option. See *drizzle_socket_set_options()* for a description of the available options

Parameters

- **con** – Connection structure previously initialized with *drizzle_create()*.
- **option** – option to get the value for

Returns The value of the option, or -1 if the specified option doesn't exist

void **drizzle_options_set_non_blocking** (*drizzle_options_st* *options, bool state)

Sets/unsets non-blocking connect option

Parameters

- **options** – The options object to modify
- **state** – Set option to true/false

bool **drizzle_options_get_non_blocking** (*drizzle_options_st* *options)

Gets the non-blocking connect option

Parameters

- **options** – The options object to get the value from

Returns The state of the non-blocking option

void **drizzle_options_set_raw_scramble** (*drizzle_options_st* *options, bool state)

Sets/unsets the raw scramble connect option

Parameters

- **options** – The options object to modify
- **state** – Set to true/false

bool **drizzle_options_get_raw_scramble** (*drizzle_options_st* *options)

Gets the raw scramble connect option

Parameters

- **options** – The options object to get the value from

Returns The state of the raw scramble option

void **drizzle_options_set_found_rows** (*drizzle_options_st* *options, bool state)

Sets/unsets the found rows connect option

Parameters

- **options** – The options object to modify
- **state** – Set to true/false

bool **drizzle_options_get_found_rows** (*drizzle_options_st* *options)

Gets the found rows connect option

Parameters

- **options** – The options object to get the value from

Returns The state of the found rows option

void **drizzle_options_set_interactive** (*drizzle_options_st* *options, bool state)
Sets/unsets the interactive connect option

Parameters

- **options** – The options object to modify
- **state** – Set to true/false

bool **drizzle_options_get_interactive** (*drizzle_options_st* *option)
Gets the interactive connect option

Parameters

- **options** – The options object to get the value from

Returns The state of the interactive option

void **drizzle_options_set_multi_statements** (*drizzle_options_st* *options, bool state)
Sets/unsets the multi-statements connect option

Parameters

- **options** – The options object to modify

Parma state Set to true/false

bool **drizzle_options_get_multi_statements** (*drizzle_options_st* *options)
Gets the multi-statements connect option

Parameters

- **options** – The options object to get the value from

Returns The state of the multi-statements option

void **drizzle_options_set_auth_plugin** (*drizzle_options_st* *options, bool state)
Sets/unsets the auth plugin connect option

Parameters

- **options** – The options object to modify
- **state** – Set to true/false

bool **drizzle_options_get_auth_plugin** (*drizzle_options_st* *options)
Gets the auth plugin connect option

Parameters

- **options** – The options object to get the value from

Returns The state of the auth plugin option

void **drizzle_options_set_socket_owner** (*drizzle_options_st* *options, *drizzle_socket_owner_t* owner)

Sets the owner of the socket connection

Parameters

- **options** – The options object to modify
- **owner** – The owner of the socket connection

drizzle_socket_owner_t **drizzle_options_get_socket_owner** (*drizzle_options_st* *options)
Gets the owner of the socket connection

Parameters

- **options** – The options object to get the value from

Returns The owner of the socket connection

const char* **drizzle_host** (const *drizzle_st* *con)

Gets the host name from a TCP/IP connection

Parameters

- **con** – A connection object

Returns A string containing the host name or NULL for a UDS connection

in_port_t **drizzle_port** (const *drizzle_st* *con)

Gets the port number from a TCP/IP connection

Parameters

- **con** – A connection object

Returns The port number or 0 for a UDS connection

const char* **drizzle_user** (const *drizzle_st* *con)

Gets the user name used at connection time

Parameters

- **con** – A connection object

Returns A string containing the user name

const char* **drizzle_db** (const *drizzle_st* *con)

Gets the default database used at connection time

Parameters

- **con** – A connection object

Returns A string containing the DB name

void ***drizzle_context** (const *drizzle_st* *con)

Get application context pointer for a connection.

Parameters

- **con** – Connection structure previously initialized with *drizzle_create()*.

Returns Application context with this connection.

void **drizzle_set_context** (*drizzle_st* *con, void *context)

Set application context pointer for a connection.

Parameters

- **con** – Connection structure previously initialized with *drizzle_create()*.
- **context** – Application context to use with this connection.

void **drizzle_set_context_free_fn** (*drizzle_st* *con, drizzle_context_free_fn *function)

Set callback function when the context pointer should be freed.

Parameters

- **con** – Connection structure previously initialized with *drizzle_create()*.
- **function** – Function to call to clean up connection context.

uint8_t **drizzle_protocol_version** (const *drizzle_st* *con)

Gets the protocol version used for a connection

Parameters

- **con** – A connection object

Returns The protocol version

const char* **drizzle_server_version** (const *drizzle_st* *con)

Gets the server version string for a connection

Parameters

- **con** – A connection object

Returns A string containing the server version

uint32_t **drizzle_server_version_number** (const *drizzle_st* *con)

Gets the server version number for a connection

Parameters

- **con** – A connection object

Returns An integer containing the server version number

uint32_t **drizzle_thread_id** (const *drizzle_st* *con)

Gets the server thread ID for a connection

Parameters

- **con** – A connection object

Returns The server thread ID

const unsigned char ***drizzle_scramble** (const *drizzle_st* *con)

Get scramble buffer for a connection.

Parameters

- **con** – Connection structure previously initialized with *drizzle_create()*.

Returns Scramble buffer for connection.

drizzle_capabilities_t **drizzle_capabilities** (const *drizzle_st* *con)

Gets the server capabilities for a connection

Parameters

- **con** – A connection object

Returns A bit field of capabilities

drizzle_charset_t **drizzle_charset** (const *drizzle_st* *con)

Gets the character set ID for the connection

Parameters

- **con** – A connection object

Returns The character set used

drizzle_status_t **drizzle_status** (const *drizzle_st* *con)

Gets the status of the connection

Parameters

- **con** – A connection object

Returns The status of the connection

uint32_t **drizzle_max_packet_size** (const *drizzle_st* *con)

Gets the max packet size for a connection

Parameters

- **con** – A connection object

Returns The max packet size for the connection

drizzle_return_t **drizzle_connect** (*drizzle_st* *con)

Open connection to the specified server

Parameters

- **con** – A connection object

Returns A *drizzle_return_t* status. *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_wait** (*drizzle_st* *con)

Wait for I/O on connections.

Parameters

- **drizzle** – Drizzle structure previously initialized with *drizzle_create()*.

Returns Standard drizzle return value.

drizzle_st ***drizzle_ready** (*drizzle_st* *con)

Get next connection that is ready for I/O.

Parameters

- **drizzle** – Drizzle structure previously initialized with *drizzle_create()*.

Returns Connection that is ready for I/O, or NULL if there are none.

drizzle_return_t **drizzle_close** (*drizzle_st* *con)

Gracefully disconnect from a server (leaves the connection object available for a reconnect)

Parameters

- **con** – A connection object

Returns A *drizzle_return_t* response for the quit command sent to the server

drizzle_return_t **drizzle_quit** (*drizzle_st* *con)

Gracefully disconnect from a server and free the connection object

Parameters

- **con** – A connection object

Returns A *drizzle_return_t* response for the quit command sent to the server

drizzle_return_t **drizzle_select_db** (*drizzle_st* *con, const char *db)

Change the current default database

Parameters

- **con** – A connection object
- **db** – The new default database

Returns A *drizzle_return_t* response

*drizzle_result_st** **drizzle_shutdown** (*drizzle_st* *con, *drizzle_return_t* *ret_ptr)

Send a shutdown command to the server

Parameters

- **con** – A connection object
- **ret_ptr** – A pointer to a `drizzle_return_t` to store the return status into

Returns A newly allocated result object

`drizzle_result_st* drizzle_kill (drizzle_st *con, uint32_t connection_id, drizzle_return_t *ret_ptr)`

Sends a query kill command to the server

Parameters

- **con** – A connection object
- **connection_id** – The connection ID to kill a query from
- **ret_ptr** – A pointer to a `drizzle_return_t` to store the return status into

Returns A newly allocated result object

`drizzle_result_st* drizzle_ping (drizzle_st *con, drizzle_return_t *ret_ptr)`

Sends a ping to the server

Parameters

- **con** – A connection object
- **ret_ptr** – A pointer to a `drizzle_return_t` to store the return status into

Returns A newly allocated result object

`const char *drizzle_strerror (const drizzle_return_t ret)`

Get detailed error description

Parameters

- **ret** – A libdrizzle return value

Returns description of libdrizzle error

Callback Functions

These are templates to be used when creating callback functions for the Libdrizzle Redux library.

void **drizzle_log_fn** (const char *log_buffer, drizzle_verbose_t verbose, void *context)

The format of a callback function for log handling

Parameters

- **log_buffer** – The log message passed to the function
- **verbose** – The verbosity level of the message
- **context** – A pointer to data set in `drizzle_set_log_fn()`

`drizzle_return_t drizzle_event_watch_fn (drizzle_st *con, short events, void *context)`

The format of a function to register or deregister interest in file descriptor events

Parameters

- **con** – Connection that has changed the events it is interested in. Use `drizzle_fd()` to get the file descriptor.
- **events** – A bit mask of POLLIN | POLLOUT, specifying if the connection is waiting for read or write events.
- **context** – Application context pointer registered with `drizzle_set_event_watch_fn()`

Returns `DRIZZLE_RETURN_OK` if successful.

Query Functions

Introduction

This section outlines the query and result functions

Structs

`drizzle_query_st`

The internal query object struct

`drizzle_result_st`

The internal result object struct

`drizzle_column_st`

The internal column object struct

Functions

`drizzle_return_t drizzle_set_ssl (drizzle_st *con, const char *key, const char *cert, const char *ca, const char *capath, const char *cipher)`

Sets the SSL data

Parameters

- **con** – A connection object
- **key** – The path to a key file
- **cert** – The path to a certificate file
- **ca** – The path to a certificate authority file
- **capath** – The path to a directory that contains trusted CA certificate files
- **cipher** – A list of allowed ciphers for SSL encryption

Returns A return status code, `DRIZZLE_RETURN_OK` upon success

`drizzle_result_st* drizzle_query (drizzle_st *con, const char *query, size_t size, drizzle_return_t *ret_ptr)`

Executes a query and returns a newly allocated result struct

Parameters

- **con** – A connection object
- **query** – The query to execute
- **size** – The length of the query string, if set to 0 then `strlen()` is used to calculate the length
- **ret_ptr** – A pointer to a `drizzle_return_t` to store the return status into

Returns A newly allocated result object

ssize_t **drizzle_escape_string**(*drizzle_st* *con, char **to, const char *from, const size_t from_size)

Escape a string for an SQL query. The `to` parameter is allocated by the function and needs to be freed by the application when finished with.

Parameters

- **con** – a connection object
- **to** – the destination string
- **from** – the source string
- **from_size** – the length of the source string

Returns the length of the 'to' string or -1 upon error due to empty parameters or overflow

void **drizzle_result_free**(*drizzle_result_st* *result)

Frees a result object

Parameters

- **result** – the result set to free

void **drizzle_result_free_all**(*drizzle_st* *con)

Frees all result objects for a given connection object

Parameters

- **con** – A connection object

*drizzle_st** **drizzle_result_drizzle_con**(*drizzle_result_st* *result)

Gets the connection object from a given result object

Parameters

- **result** – A result object

Returns The connection object associated to the result object

bool **drizzle_result_eof**(*drizzle_result_st* *result)

Tests to see if an EOF packet has been hit

Parameters

- **result** – A result object

Returns true on EOF or false

const char* **drizzle_result_message**(*drizzle_result_st* *result)

Get error or information message from result set

Parameters

- **result** – A result object

Returns The message to be returned

uint16_t **drizzle_result_error_code**(*drizzle_result_st* *result)

Gets the error code from a result set

Parameters

- **result** – A result object

Returns The error code

const char* **drizzle_result_sqlstate**(*drizzle_result_st* *result)

Gets the SQL state from a result set

Parameters

- **result** – A result object

Returns The SQL state string

uint16_t **drizzle_result_warning_count** (*drizzle_result_st* *result)

Gets the warning count from a result set

Parameters

- **result** – A result object

Returns The warning count

uint64_t **drizzle_result_insert_id** (*drizzle_result_st* *result)

Gets the insert ID for an auto_increment column in a result set

Note: With a MySQL server this returns the first ID with multiple inserts in a query.

Parameters

- **result** – A result object

Returns The insert ID

uint64_t **drizzle_result_affected_rows** (*drizzle_result_st* *result)

Gets the affected row count from a result set

Parameters

- **result** – A result object

Returns The affected row count

uint16_t **drizzle_result_column_count** (*drizzle_result_st* *result)

Gets the column count from a result set

Parameters

- **result** – A result object

Returns The column count

uint64_t **drizzle_result_row_count** (*drizzle_result_st* *result)

Gets the row count from a result set buffered with *drizzle_result_buffer()*

Parameters

- **result** – A result object

Returns The row count

*drizzle_result_st** **drizzle_result_read** (*drizzle_st* *con, *drizzle_return_t* *ret_ptr)

Reads the next result in a multi-result return

Parameters

- **con** – A connection object
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into

Returns The result struct for the new object

drizzle_return_t **drizzle_result_buffer** (*drizzle_result_st* *result)

Buffers a result set

Parameters

- **result** – A result object

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

size_t **drizzle_result_row_size** (*drizzle_result_st* *result)

Get result row packet size in bytes.

Parameters

- **result** – Caller allocated structure.

Returns size in bytes else 0

*drizzle_result_st** **drizzle_column_drizzle_result** (*drizzle_column_st* *column)

Gets a result set for a given column object

Parameters

- **column** – A column object

Returns A result object

const char* **drizzle_column_catalog** (*drizzle_column_st* *column)

Gets the catalog name for a given column

Parameters

- **column** – A column object

Returns The catalog name

const char* **drizzle_column_db** (*drizzle_column_st* *column)

Gets the database name for a given column

Parameters

- **column** – A column object

Returns The database name

const char* **drizzle_column_table** (*drizzle_column_st* *column)

Get the table name (or table alias) for a given column

Parameters

- **column** – A column object

Returns The table name

const char* **drizzle_column_orig_table** (*drizzle_column_st* *column)

Gets the original table name (if an alias has been used) for a given column

Parameters

- **column** – A column object

Returns The original table name

const char* **drizzle_column_name** (*drizzle_column_st* *column)

Gets the column name (or column alias) for a given column

Parameters

- **column** – A column object

Returns The column name

const char* **drizzle_column_orig_name** (*drizzle_column_st* *column)

Gets the original column name (if an alias has been used) for a given column

Parameters

- **column** – A column object

Returns The original column name

drizzle_charset_t **drizzle_column_charset** (*drizzle_column_st* *column)

Gets the character set ID for a given column

Parameters

- **column** – A column object

Returns The character set ID

uint32_t **drizzle_column_size** (*drizzle_column_st* *column)

Gets the size of a given column

Parameters

- **column** – A column object

Returns The column size

size_t **drizzle_column_max_size** (*drizzle_column_st* *column)

Gets the maximum size of a given column

Parameters

- **column** – A column object

Returns The maximum size

drizzle_column_type_t **drizzle_column_type** (*drizzle_column_st* *column)

Gets the type of data for the column

Parameters

- **column** – A column object

Returns The column type

const char ***drizzle_column_type_str** (*drizzle_column_type_t* type)

Get a column type as string

Parameters

- **type** – The table column type

Returns The type of the column in human readable format

drizzle_column_flags_t **drizzle_column_flags** (*drizzle_column_st* *column)

Gets the flags for a given column

Parameters

- **column** – A column object

Returns The column flags

uint8_t **drizzle_column_decimals** (*drizzle_column_st* *column)

Gets the number of decimal places for a given column

Parameters

- **column** – A column object

Returns The number of decimal places

const unsigned char* **drizzle_column_default_value** (*drizzle_column_st* *column, size_t *size)

Gets the default value for a given column

Parameters

- **column** – A column object

Returns A string containing the default value

drizzle_return_t **drizzle_column_skip** (*drizzle_result_st* *result)

Skips the next column in a result set when using *drizzle_column_read()* to get the column data

Parameters

- **result** – A result object

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_column_skip_all** (*drizzle_result_st* *result)

Skips all columns in a result set when using *drizzle_column_read()* to get the column data

Parameters

- **result** – pointer to the structure to read from.

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

void **drizzle_column_free** (*drizzle_column_st* *column)

Frees a column when using *drizzle_column_read()* to get the column data

Parameters

- **column** – The column to be freed

*drizzle_column_st** **drizzle_column_read** (*drizzle_result_st* *result, *drizzle_return_t* *ret_ptr)

Reads a column from network buffer

Parameters

- **result** – A result object
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into

Returns A newly allocated column

drizzle_return_t **drizzle_column_buffer** (*drizzle_result_st* *result)

Buffers all the columns for a result set

Parameters

- **result** – A result object

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

*drizzle_column_st** **drizzle_column_next** (*drizzle_result_st* *result)

Gets the next column in a buffered column result set

Parameters

- **result** – A result object

Returns A column object

*drizzle_column_st** **drizzle_column_prev** (*drizzle_result_st* *result)

Gets the previous column in a buffered column result set

Parameters

- **result** – A result object

Returns A column object

void **drizzle_column_seek** (*drizzle_result_st* *result, uint16_t column)

Seeks to a given column in a buffered column result set

Parameters

- **result** – A result object
- **column** – The column number

*drizzle_column_st** **drizzle_column_index** (*drizzle_result_st* *result, uint16_t column)

Gets a given column in a column buffered result set

Parameters

- **result** – A result object
- **column** – The column number

Returns A column object

uint16_t **drizzle_column_current** (*drizzle_result_st* *result)

Gets the column number in a buffered or unbuffered column result set

Parameters

- **result** – A result object:

Returns The column number

uint64_t **drizzle_row_read** (*drizzle_result_st* *result, *drizzle_return_t* *ret_ptr)

Reads the next row header and returns the row number for unbuffered row reads. Use *drizzle_field_read()* or *drizzle_field_buffer()* to get the field data after this call.

Parameters

- **result** – A result object
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into

Returns The row number

drizzle_row_t **drizzle_row_buffer** (*drizzle_result_st* *result, *drizzle_return_t* *ret_ptr)

Read and buffer one entire row, must be freed with c:func:drizzle_row_free

Parameters

- **result** – A result object
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into

Returns The newly allocated row buffer

void **drizzle_row_free** (*drizzle_result_st* *result, *drizzle_row_t* row)

Free a buffered row read

Parameters

- **result** – A result object
- **row** – The row data to be freed

size_t* **drizzle_row_field_sizes** (*drizzle_result_st* *result)

Gets an array of the field sizes for buffered rows

Parameters

- **result** – A result object

Returns An array of row sizes

drizzle_row_t **drizzle_row_next** (*drizzle_result_st* *result)

Gets the next row in a buffered result set

Parameters

- **result** – A result object

Returns The row data

drizzle_row_t **drizzle_row_prev** (*drizzle_result_st* *result)

Gets the previous row in a buffered result set

Parameters

- **result** – A result object

Returns The row data

void **drizzle_row_seek** (*drizzle_result_st* *result, uint64_t row)

Seeks to a given row in a buffered result set

Parameters

- **result** – A result object
- **row** – The row number to seek to

drizzle_row_t **drizzle_row_index** (*drizzle_result_st* *result, uint64_t row)

Gets a row at the given index in a buffered result set

Parameters

- **result** – A result object
- **row** – The row number to get

Returns The row data

uint64_t **drizzle_row_current** (*drizzle_result_st* *result)

Gets the current row number

Parameters

- **result** – A result object

Returns The row number

drizzle_field_t **drizzle_field_read** (*drizzle_result_st* *result, size_t *offset, size_t *size, size_t *total, *drizzle_return_t* *ret_ptr)

Reads the next field from the network buffer. Useful for large blobs without buffering the entire blob.

Parameters

- **result** – A result object
- **offset** – The offset position of the blob for this read, to be written to by the function
- **size** – The size of the read, to be written to by the function
- **total** – The total size of the field, to be written to by the function
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into

Returns The field data

drizzle_field_t **drizzle_field_buffer** (*drizzle_result_st* *result, size_t *total, *drizzle_return_t* *ret_ptr)

Read and buffer the entire field for an unbuffered row read.

Parameters

- **result** – A result object
- **total** – The total size of the field, to be written to by the function
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into

Returns The field data

void **drizzle_field_free** (*drizzle_field_t* field)

Frees field data for unbuffered row reads

Parameters

- **field** – The field data to free

Prepared Statements

Introduction

This section outlines the prepared statement functionality

Structs

drizzle_stmt_st

The internal struct containing the prepared statement object

drizzle_datetime_st

The internal struct for passing a date/time to/from the prepared statement API

Functions

*drizzle_stmt_st** **drizzle_stmt_prepare** (*drizzle_st* *con, const char *statement, size_t size, *drizzle_return_t* *ret_ptr)

Prepare a new statement

Parameters

- **con** – A connection object
- **statement** – The prepared statement with question marks (?) for the elements to be provided as parameters
- **size** – The length of the statement
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into

Returns A newly allocated and prepared statement object (or NULL on error)

drizzle_return_t **drizzle_stmt_set_tiny** (*drizzle_stmt_st* *stmt, uint16_t param_num, uint8_t value, bool is_unsigned)

Sets a parameter of a prepared statement to a tinyint value

Parameters

- **stmt** – A prepared statement object

- **param_num** – The parameter number to set (starting at 0)
- **value** – The value to set the parameter
- **is_unsigned** – Set to true if the parameter is unsigned

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_set_short** (*drizzle_stmt_st* *stmt, uint16_t param_num, uint16_t value, bool is_unsigned)

Sets a parameter of a prepared statement to a short int value

Parameters

- **stmt** – A prepared statement object
- **param_num** – The parameter number to set (starting at 0)
- **value** – The value to set the parameter
- **is_unsigned** – Set to true if the parameter is unsigned

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_set_int** (*drizzle_stmt_st* *stmt, uint16_t param_num, uint32_t value, bool is_unsigned)

Sets a parameter of a prepared statement to an int value

Parameters

- **stmt** – A prepared statement object
- **param_num** – The parameter number to set (starting at 0)
- **value** – The value to set the parameter
- **is_unsigned** – Set to true if the parameter is unsigned

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_set_bigint** (*drizzle_stmt_st* *stmt, uint16_t param_num, uint64_t value, bool is_unsigned)

Sets a parameter of a prepared statement to a bigint value

Parameters

- **stmt** – A prepared statement object
- **param_num** – The parameter number to set (starting at 0)
- **value** – The value to set the parameter
- **is_unsigned** – Set to true if the parameter is unsigned

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_set_double** (*drizzle_stmt_st* *stmt, uint16_t param_num, double value)

Sets a parameter of a prepared statement to a double value

Parameters

- **stmt** – A prepared statement object
- **param_num** – The parameter number to set (starting at 0)
- **value** – The value to set the parameter

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_set_float** (*drizzle_stmt_st* *stmt, uint16_t param_num, float value)

Sets a parameter of a prepared statement to a float value

Parameters

- **stmt** – A prepared statement object
- **param_num** – The parameter number to set (starting at 0)
- **value** – The value to set the parameter

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_set_string** (*drizzle_stmt_st* *stmt, uint16_t param_num, char *value, size_t length)

Sets a parameter of a prepared statement to a string value

Parameters

- **stmt** – A prepared statement object
- **param_num** – The parameter number to set (starting at 0)
- **value** – The value to set the parameter
- **length** – The length of the value data

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_set_null** (*drizzle_stmt_st* *stmt, uint16_t param_num)

Sets a parameter of a prepared statement to a NULL value

Parameters

- **stmt** – A prepared statement object
- **param_num** – The parameter number to set (starting at 0)

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_set_time** (*drizzle_stmt_st* *stmt, uint16_t param_num, uint32_t days, uint8_t hours, uint8_t minutes, uint8_t seconds, uint32_t microseconds, bool is_negative)

Sets a parameter of a prepared statement to a time value

Parameters

- **stmt** – A prepared statement object
- **param_num** – The parameter number to set (starting at 0)
- **days** – The number of days for the time
- **hours** – The number of hours for the time
- **minutes** – The number of minutes for the time
- **seconds** – The number of seconds for the time
- **microseconds** – The number of microseconds for the time

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_set_timestamp** (*drizzle_stmt_st* *stmt, uint16_t param_num, uint16_t year, uint8_t month, uint8_t day, uint8_t hours, uint8_t minutes, uint8_t seconds, uint32_t microseconds)

Sets a parameter of a prepared statement to a datetime/timestamp value

Parameters

- **stmt** – A prepared statement object
- **param_num** – The parameter number to set (starting at 0)
- **year** – The year number for the timestamp
- **month** – The month number for the timestamp
- **day** – The day number for the timestamp
- **hours** – The hour number for the timestamp
- **minutes** – The minute number for the timestamp
- **seconds** – The minute number for the timestamp
- **microseconds** – The minute number for the timestamp

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_execute** (*drizzle_stmt_st* *stmt)

Executes a prepared statement

Parameters

- **stmt** – The prepared statement object

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_send_long_data** (*drizzle_stmt_st* *stmt, uint16_t param_num, unsigned char *data, size_t len)

Send long binary data packet

Parameters

- **stmt** – The prepared statement object
- **param_num** – The parameter number this data is for
- **data** – A pointer to the data
- **len** – The length of the data

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_reset** (*drizzle_stmt_st* *stmt)

Reset a statement to the prepared state

Parameters

- **stmt** – The prepared statement object

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_fetch** (*drizzle_stmt_st* *stmt)

Fetch a row from the result set, can be used with buffered or unbuffered result sets

Parameters

- **stmt** – The prepared statement object

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

drizzle_return_t **drizzle_stmt_buffer** (*drizzle_stmt_st* *stmt)

Buffer the entire result set

Parameters

- **stmt** – The prepared statement object

Returns A return status code, `DRIZZLE_RETURN_OK` upon success

bool **drizzle_stmt_get_is_null** (*drizzle_stmt_st* *stmt, uint16_t column_number, *drizzle_return_t* *ret_ptr)

Check if a column for a fetched row is set to NULL

Parameters

- **stmt** – The prepared statement object
- **column_number** – The column number to get (starting at 0)
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into

Returns True if NULL

bool **drizzle_stmt_get_is_null_from_name** (*drizzle_stmt_st* *stmt, const char *column_name, *drizzle_return_t* *ret_ptr)

Check if a column for a fetched row is set to NULL using a column name

Parameters

- **stmt** – The prepared statement object
- **column_name** – The column name to get
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into, `DRIZZLE_RETURN_NOT_FOUND` if the column name cannot be found

Returns True if NULL

bool **drizzle_stmt_get_is_unsigned** (*drizzle_stmt_st* *stmt, uint16_t column_number, *drizzle_return_t* *ret_ptr)

Check if a column for a fetched row is unsigned

Parameters

- **stmt** – The prepared statement object
- **column_number** – The column number to get (starting at 0)
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into

Returns True if unsigned

bool **drizzle_stmt_get_is_unsigned_from_name** (*drizzle_stmt_st* *stmt, const char *column_name, *drizzle_return_t* *ret_ptr)

Check if a column for a fetched row is unsigned using a column name

Parameters

- **stmt** – The prepared statement object
- **column_name** – The column name to get
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into, `DRIZZLE_RETURN_NOT_FOUND` if the column name cannot be found

Returns True if unsigned

const char ***drizzle_stmt_get_string** (*drizzle_stmt_st* *stmt, uint16_t column_number, size_t *len, *drizzle_return_t* *ret_ptr)

Get the string value for a column of a fetched row (int types are automatically converted)

Parameters

- **stmt** – The prepared statement object

- **column_number** – The column number to get (starting at 0)
- **len** – A pointer to a `size_t` to store the result length into
- **ret_ptr** – A pointer to a `drizzle_return_t` to store the return status into

Returns A pointer to the string value

```
const char *drizzle_stmt_get_string_from_name(drizzle_stmt_st *stmt, const char *column_name, size_t *len, drizzle_return_t *ret_ptr)
```

Get the string value for a column of a fetched row (int types are automatically converted) using a column name

Parameters

- **stmt** – The prepared statement object
- **column_name** – The column name to get
- **len** – A pointer to a `size_t` to store the result length into
- **ret_ptr** – A pointer to a `drizzle_return_t` to store the return status into, `DRIZZLE_RETURN_NOT_FOUND` if the column name cannot be found

Returns A pointer to the string value

```
uint32_t drizzle_stmt_get_int(drizzle_stmt_st *stmt, uint16_t column_number, drizzle_return_t *ret_ptr)
```

Get the int value for a column of a fetched row

Parameters

- **stmt** – The prepared statement object
- **column_number** – The column number to get (starting at 0)
- **ret_ptr** – A pointer to a `drizzle_return_t` to store the return status into `DRIZZLE_RETURN_TRUNCATED` if a truncation has occurred

Returns The int value

```
uint32_t drizzle_stmt_get_int_from_name(drizzle_stmt_st *stmt, const char *column_name, drizzle_return_t *ret_ptr)
```

Get the int value for a column of a fetched row using a column name

Parameters

- **stmt** – The prepared statement object
- **column_name** – The column name to get
- **ret_ptr** – A pointer to a `drizzle_return_t` to store the return status into `DRIZZLE_RETURN_TRUNCATED` if a truncation has occurred, `DRIZZLE_RETURN_NOT_FOUND` if the column name cannot be found

Returns The int value

```
uint64_t drizzle_stmt_get_bigint(drizzle_stmt_st *stmt, uint16_t column_number, drizzle_return_t *ret_ptr)
```

Get the bigint value for a column of a fetched row

Parameters

- **stmt** – The prepared statement object
- **column_number** – The column number to get (starting at 0)

- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into *DRIZZLE_RETURN_TRUNCATED* if a truncation has occurred

Returns The bigint value

uint64_t **drizzle_stmt_get_bigint_from_name**(*drizzle_stmt_st* *stmt, const char *column_name, *drizzle_return_t* *ret_ptr)

Get the bigint value for a column of a fetched row using a column name

Parameters

- **stmt** – The prepared statement object
- **column_name** – The column name to get
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into *DRIZZLE_RETURN_TRUNCATED* if a truncation has occurred, *DRIZZLE_RETURN_NOT_FOUND* if the column name cannot be found

Returns The bigint value

double **drizzle_stmt_get_double**(*drizzle_stmt_st* *stmt, uint16_t column_number, *drizzle_return_t* *ret_ptr)

Get the double value for a column of a fetched row

Parameters

- **stmt** – The prepared statement object
- **column_number** – The column number to get (starting at 0)
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into *DRIZZLE_RETURN_TRUNCATED* if a truncation has occurred

Returns The double value

double **drizzle_stmt_get_double_from_name**(*drizzle_stmt_st* *stmt, const char *column_name, *drizzle_return_t* *ret_ptr)

Get the double value for a column of a fetched row from a column name

Parameters

- **stmt** – The prepared statement object
- **column_name** – The column name to get
- **ret_ptr** – A pointer to a *drizzle_return_t* to store the return status into *DRIZZLE_RETURN_TRUNCATED* if a truncation has occurred, *DRIZZLE_RETURN_NOT_FOUND* if the column name cannot be found

Returns The double value

drizzle_return_t **drizzle_stmt_close**(*drizzle_stmt_st* *stmt)

Close and free a prepared statement

Parameters

- **stmt** – The prepared statement object

Returns A return status code, *DRIZZLE_RETURN_OK* upon success

uint16_t **drizzle_stmt_column_count**(*drizzle_stmt_st* *stmt)

Gets the column count for a result set which has been executed using *drizzle_stmt_execute()*

Parameters

- **stmt** – The prepared statement object

Returns The column count

uint64_t **drizzle_stmt_affected_rows** (*drizzle_stmt_st* *stmt)

Gets the affected rows count for a result set which has been executed using *drizzle_stmt_execute()*

Parameters

- **stmt** – The prepared statement object

Returns The column count

uint64_t **drizzle_stmt_insert_id** (*drizzle_stmt_st* *stmt)

Gets the insert ID for a result set which has been executed using *drizzle_stmt_execute()*

Parameters

- **stmt** – The prepared statement object

Returns The insert ID

uint16_t **drizzle_stmt_param_count** (*drizzle_stmt_st* *stmt)

Gets the number of parameters expected for a result set that has been prepared with *drizzle_stmt_prepare()*

Parameters

- **stmt** – The prepared statement object

Returns The number of parameters

uint64_t **drizzle_stmt_row_count** (*drizzle_stmt_st* *stmt)

Gets the row count for a statement buffered with *drizzle_stmt_buffer()*

On error it returns UINT64_MAX;

Parameters

- **stmt** – The prepared statement object

Returns The row count

Binlog Functions

Introduction

Libdrizzle Redux contains functions which give it the capabilities to connect as a MySQL slave or a mysqlbinlog type client and retrieve the events.

Warning: You should start a binlog retrieval on a new connection only. Running on a connection that has already executed queries has an undefined (usually bad) behaviour.

The binlog functions use a callback API so that a function in the user application will be called whenever there is a new event to retrieve.

Structs

drizzle_binlog_st

The internal struct containing the binlog stream information

drizzle_binlog_event_st

The internal struct containing the binlog event header and data

Callback Functions

There are two callback functions. The first is called whenever a new event is available to retrieve. The second is triggered whenever an error (or EOF) occurs.

void (**drizzle_binlog_fn**) (*drizzle_binlog_event_st* *event, void *context)

This defines the function that will be supplied to accept binlog events

Warning: Event data needs to be copied/processed before exiting the function, it will be erased before the next callback.

Parameters

- **event** – A pointer to the event struct
- **context** – A user defined pointer supplied in *drizzle_binlog_init()*

void (**drizzle_binlog_error_fn**) (*drizzle_return_t* error, *drizzle_st* *con, void *context)

This defines the function that will be supplied to accept binlog errors

Parameters

- **error** – The *drizzle_return_t* for the error (or *DRIZZLE_RETURN_EOF* when all events have been retrieved)
- **con** – The connection object the error occurred on
- **context** – A user defined pointer supplied in *drizzle_binlog_init()*

Functions

drizzle_binlog_st ***drizzle_binlog_init** (*drizzle_st* *con, *drizzle_binlog_fn* *binlog_fn, *drizzle_binlog_error_fn* *error_fn, void *context, bool verify_checksums)

Initializes a binlog object for the connection and sets the event callback functions

Parameters

- **con** – The connection the binlog retrieval will be on
- **binlog_fn** – The function callback defined in (*drizzle_binlog_fn*) ()
- **error_fn** – The function callback defined in (*drizzle_binlog_error_fn*) ()
- **context** – A pointer to user data which will be used for the callback functions
- **verify_checksums** – Set to true if MySQL 5.6 and higher checksums should be verified

void **drizzle_binlog_free** (*drizzle_binlog_st* *binlog)

Frees a binlog object created with *drizzle_binlog_init()*

Parameters

- **binlog** – The binlog object to be freed

drizzle_return_t **drizzle_binlog_start** (*drizzle_binlog_st* *binlog, uint32_t server_id, const char *file, uint32_t start_position)

Start the binlog transaction. Set the server_id to 0 to disconnect automatically at the end of the last log.

Parameters

- **binlog** – A binlog object created using *drizzle_binlog_init()*
- **server_id** – A unique server ID (or 0) to connect to the MySQL server with
- **file** – The start binlog file, can be empty to start at the first known file
- **start_position** – The position of the binlog file to start at, a value of less than 4 is set to 4 due to the binlog header taking the first 4 bytes

Returns A Drizzle return type. *DRIZZLE_RETURN_OK* upon success.

uint32_t **drizzle_binlog_event_timestamp** (*drizzle_binlog_event_st* *event)

Get the timestamp for the event received by the event callback

Parameters

- **event** – The event from the binlog stream

Returns The timestamp for the binlog event

drizzle_binlog_event_types_t **drizzle_binlog_event_type** (*drizzle_binlog_event_st* *event)

Get the event type for the event received by the event callback

Parameters

- **event** – The event from the binlog stream

Returns The timestamp for the binlog event

uint32_t **drizzle_binlog_event_server_id** (*drizzle_binlog_event_st* *event)

Get the server_id for the event received by the event callback

Parameters

- **event** – The event from the binlog stream

Returns The server_id for the binlog event

uint32_t **drizzle_binlog_event_length** (*drizzle_binlog_event_st* *event)

Get the length of the event data received by the event callback

Parameters

- **event** – The event from binlog stream

Returns The event data length

uint32_t **drizzle_binlog_event_next_pos** (*drizzle_binlog_event_st* *event)

Get the next event position from the event received by the event callback

Parameters

- **event** – The event from the binlog stream

Returns The next event position

uint16_t **drizzle_binlog_event_flags** (*drizzle_binlog_event_st* *event)

Get the flags for the event received by the event callback

Parameters

- **event** – The event from the binlog stream

Returns The event flags

uint16_t **drizzle_binlog_event_extra_flags** (*drizzle_binlog_event_st* *event)
Get the extra flags for the event received by the event callback

Parameters

- **event** – The event from the binlog stream

Returns The extra event flags

const unsigned char* **drizzle_binlog_event_data** (*drizzle_binlog_event_st* *event)
Get the event data for the event received by the event callback

Parameters

- **event** – The event from the binlog stream

Returns A pointer to the event data

const unsigned char* **drizzle_binlog_event_raw_data** (*drizzle_binlog_event_st* *event)
Get the raw event data (including header) for the event received by the event callback

Parameters

- **event** – The event from the binlog stream

Returns A pointer to the raw event data

uint32_t **drizzle_binlog_event_raw_length** (*drizzle_binlog_event_st* *event)
Get the length of the raw event data (including header) for the event received by the event callback

Parameters

- **event** – The event from the binlog stream

Returns The length of the raw event data

const char ***drizzle_binlog_event_type_str** (*drizzle_binlog_event_types_t* event_type)
Get the event type for the binlog event as string

Parameters

- **event_type** – A binlog event type

Returns The event type of the binlog event as string

void **drizzle_binlog_get_filename** (*drizzle_st* *con, char *filename, int file_index)
Get the name of a binlog-file

Queries the database for a list of binlog files and copies the filename to the passed buffer. If the file_index is invalid or no binlog files exist, filename will contain an empty string. A valid file_index is in the range [-1 to (number of binlog files - 1)].

The memory (de)allocation of the filename buffer must be done by the client.

Parameters

- **con** – Drizzle structure previously initialized with *drizzle_create()*
- **filename** – Buffer to copy filename to
- **file_index** – Index of the binlog to retrieve

Buffered Results

Introduction

In this example `drizzle_query()` is used to send a select query to a MySQL server. The whole result set is then retrieved and stored in memory using `drizzle_result_buffer()`.

The number of columns is retrieved using `drizzle_result_column_count()`. Each row is iterated through by calling `drizzle_row_next()` which returns an array containing string of the row data. We know how many elements are in this array due to the earlier call to `drizzle_result_column_count()`. The data from each element in the row is finally echoed to the console.

To end the query the result set is freed using `drizzle_result_free()`

Code

```
#include <libdrizzle-5.1/libdrizzle.h>
#include <stdio.h>
#include <stdlib.h>

int main(int argc, char *argv[])
{
    (void) argc;
    (void) argv;
    drizzle_st *con;
    drizzle_return_t ret;
    drizzle_result_st *result;
    drizzle_row_t row;
    int num_fields;

    con = drizzle_create("localhost", 3306, "user", "pass", "test", 0);
    if (con == NULL)
```

```
{
    printf("Drizzle connection object creation error\n");
    return EXIT_FAILURE;
}
ret = drizzle_connect(con);
if (ret != DRIZZLE_RETURN_OK)
{
    printf("Drizzle connection failure\n");
    return EXIT_FAILURE;
}

result= drizzle_query(con, "select * from libdrizzle.t1", 0, &ret);
if (ret != DRIZZLE_RETURN_OK)
{
    printf("Select failure\n");
    return EXIT_FAILURE;
}
drizzle_result_buffer(result);
num_fields= drizzle_result_column_count(result);

printf("%d fields\n", num_fields);
while ((row = drizzle_row_next(result)))
{
    printf("Data: ");
    for (uint16_t col=0; col < num_fields; col++)
    {
        printf("%s", row[col]);
    }
    printf("\n");
}

drizzle_result_free(result);

drizzle_quit(con);
return EXIT_SUCCESS;
}
```

Unbuffered Results

Introduction

In this example `drizzle_query()` is used to send a select query to a MySQL server. The first thing that is sent back in the results is a list of columns, so this list needs to be retrieved. The simplest way of doing this is to buffer the column data using `drizzle_column_buffer()`.

The number of columns is retrieved using `drizzle_result_column_count()`. Each row is iterated through by calling `drizzle_row_buffer()` which buffers and returns an array containing string of the row data. We know how many elements are in this array due to the earlier call to `drizzle_result_column_count()`. The data from each element in the row is finally echoed to the console. The row data is freed using `drizzle_row_free()`.

To end the query the result set is freed using `drizzle_result_free()`

Code

```
#include <libdrizzle-5.1/libdrizzle.h>
#include <stdio.h>
#include <stdlib.h>

int main(int argc, char *argv[])
{
    (void) argc;
    (void) argv;
    drizzle_st *con;
    drizzle_return_t ret;
    drizzle_result_st *result;
    drizzle_row_t row;
    int num_fields;

    con = drizzle_create("localhost", 3306, "root", "", "libdrizzle", 0);
    if (con == NULL)
    {
        printf("Drizzle connection object creation error\n");
        return EXIT_FAILURE;
    }
    ret = drizzle_connect(con);
    if (ret != DRIZZLE_RETURN_OK)
    {
        printf("Drizzle connection failure\n");
        return EXIT_FAILURE;
    }

    result= drizzle_query(con, "select * from libdrizzle.t1", 0, &ret);
    if (ret != DRIZZLE_RETURN_OK)
    {
        printf("Select failure\n");
        return EXIT_FAILURE;
    }

    if (drizzle_column_buffer(result) != DRIZZLE_RETURN_OK)
    {
        printf("Column buffer failure\n");
        return EXIT_FAILURE;
    }
    num_fields= drizzle_result_column_count(result);

    printf("%d fields\n", num_fields);
    while(1)
    {
        row= drizzle_row_buffer(result, &ret);
        if (ret != DRIZZLE_RETURN_OK)
        {
            printf("Row retrieval error\n");
            break;
        }
        if (row == NULL)
        {
            // EOF
            break;
        }
        printf("Data: ");
```

```
    for (uint16_t col=0; col < num_fields; col++)
    {
        printf("%s", row[col]);
    }
    printf("\n");
    drizzle_row_free(result, row);
}

drizzle_result_free(result);

drizzle_quit(con);
return EXIT_SUCCESS;
}
```

Prepared Statements

Introduction

This code example has been simplified to make it easier to read, the connection and error handling code has been removed.

In this example a basic select query has been defined which has one element to replace using the ‘?’ character. The statement is prepared using `drizzle_stmt_prepare()` and we can get the number of parameters the server is expecting with `drizzle_stmt_param_count()`. In this example we know that there is only one parameter required so we send one INT type parameter using `drizzle_stmt_set_int()` stating that this is parameter 0 and a signed value.

Once the parameters have been provided the statement is executed using `drizzle_stmt_execute()` and the results buffered using `drizzle_stmt_buffer()`. Once buffered the row count can be obtained using `drizzle_stmt_row_count()`.

Finally we get the result data. A call to `drizzle_stmt_fetch()` gets the next row from either the network or the buffer (the buffer in this case). The int data is retrieved using `drizzle_stmt_get_int()`, a call for each column in the row (in example the table only has one column) is made using the `drizzle_stmt_get_` functions.

When we are done the statement is closed and cleaned up using `drizzle_stmt_close()`. It can also be reused with `drizzle_stmt_reset()` or executed again with `drizzle_stmt_execute()` (this is useful for inserts).

Code

```
drizzle_stmt_st *stmt;
const char *query= "select * from libdrizzle.t1 where a > ?";
stmt= drizzle_stmt_prepare(con, query, strlen(query), &ret);

printf("Params: %" PRIu16 "\n", drizzle_stmt_param_count(stmt));

uint32_t val= 1;
ret = drizzle_stmt_set_int(stmt, 0, val, false);

ret = drizzle_stmt_execute(stmt);

ret = drizzle_stmt_buffer(stmt);
```

```
printf("Rows found: %" PRIu64 "\n", drizzle_stmt_row_count(stmt));
while (drizzle_stmt_fetch(stmt) != DRIZZLE_RETURN_ROW_END)
{
    uint32_t res_val;
    res_val= drizzle_stmt_get_int(stmt, 0, &ret);
    printf("Got value: %" PRIu32 "\n", *res_val);
}
ret = drizzle_stmt_close(stmt);
```

Event Callback

Introduction

In this example `drizzle_event_watch_fn()` is used to set a custom I/O event watcher function for a drizzle structure. It is used to integrate libdrizzle-redux with a custom event loop. The callback will be invoked to register or deregister interest in events for a connection. When the events are triggered, `drizzle_set_revents()` should be called to indicate which events are ready. The event loop should stop waiting for these events, as libdrizzle-redux will call the callback again if it is still interested. To resume processing, the libdrizzle-redux function that returned `DRIZZLE_RETURN_IO_WAIT` should be called again.

The custom callback must have a signature as shown:

```
drizzle_return_t (drizzle_event_watch_fn)(drizzle_con_st *con, short events, void_
↳ *context);
```

Code

```
#include <libdrizzle-5.1/libdrizzle.h>
#include <libdrizzle-5.1/constants.h>

extern drizzle_return_t drizzle_event_callback(drizzle_st *con, short events,
void *context);

extern drizzle_return_t drizzle_event_callback(drizzle_st *con, short events,
void *context)
{
    // The context defined for the drizzle connection
    int* drizzle_cxt = (int*) drizzle_context(con);

    // The context defined for the callback function
    int* callback_cxt = (int*) context;

    printf("Called drizzle_event_callback\n");

    return DRIZZLE_RETURN_OK;
}

int main(int argc, char *argv[])
{
    (void) argc;
    (void) argv;

    int cxt_a = 1;
```

```
int cxt_b = 0;

drizzle_st *con = drizzle_create("localhost", 3306, "root", "", "libdrizzle", 0);
if (con == NULL)
{
    printf("Drizzle connection object creation error\n");
    return EXIT_FAILURE;
}

// Set drizzle dummy context
drizzle_set_context(con, (void*)&cxt_a);

// Set user defined callback function event_watch_fn
drizzle_set_event_watch_fn(con, drizzle_event_callback, (void*)&cxt_b);

drizzle_return_t driz_ret= drizzle_connect(con);

if (ret != DRIZZLE_RETURN_OK)
{
    printf("Drizzle connection failure\n");
    return EXIT_FAILURE;
}

driz_ret= drizzle_quit(con);

return EXIT_SUCCESS;
}
```

Binlog Retrieval

Introduction

This example shows how the binlog api can be used to retrieve the events from a mysql binlog.

First a *drizzle_binlog_st* is created by calling *drizzle_binlog_init()* with an already initialized *drizzle_st* connection. Two callbacks are specified; *binlog_event*, which is called every time a binlog event is retrieved and *binlog_error* which is called when an error occurs while parsing binlog-data. In addition it is possible to pass a user context to be used for the callback functions. When NULL is passed, as in this example, the context is unspecified. Calling *drizzle_binlog_start()* starts the parsing of the binlog. The second argument is the id of the server to connect to. It corresponds to the *server_id* variable defined in the **MySQL** config file. When 0 is passed as *server_id* the connection is disconnected automatically at the end of the last logfile.

In the callback function *binlog_event* several properties of the binlog event are retrieved from the *drizzle_binlog_event_st* object. E.g. the type of binlog event, cf. *drizzle_binlog_event_types_t*, is retrieved by calling *drizzle_binlog_event_type()*.

The binlog api offers retrieval of information which is common for all binlog event types. To retrieve information specific to each type, please refer to the [MySQL documentation](#)

When all binlog events have been parsed, *binlog_error* is called with a return status *DRIZZLE_RETURN_EOF* indicating that end of the last binlog logfile has been reached.

To compile the example, save the code and run:

```
g++ binlog_example.cxx -ldrizzle-redux -lpthread -o binlog_example
```


Code

```
#include <libdrizzle-5.1/libdrizzle.h>
#include <stdio.h>
#include <stdlib.h>
#include <inttypes.h>

/**
 * @file binlog_example.cxx
 */

void binlog_error(drizzle_return_t ret, drizzle_st *connection, void *context)
{
    (void) context;
    if (ret != DRIZZLE_RETURN_EOF)
    {
        printf("Error retrieving binlog: %s\n", drizzle_error(connection));
    }
}

void binlog_event(drizzle_binlog_event_st *event, void *context)
{
    (void) context;
    printf("Timestamp: %"PRIu32"\n", drizzle_binlog_event_timestamp(event));
    printf("Type: %"PRIu8"\n", drizzle_binlog_event_type(event));
    printf("Server-id: %"PRIu32"\n", drizzle_binlog_event_server_id(event));
    printf("Next-pos: %"PRIu32"\n", drizzle_binlog_event_next_pos(event));
    uint length= drizzle_binlog_event_length(event);
    printf("Length: %"PRIu32"\n", length);
    const unsigned char *data= drizzle_binlog_event_data(event);
    printf("Data: 0x");
    for (uint i=0; i<length; i++)
        printf("%02X ", data[i]);
    printf("\n\n");
}

int main(int argc, char *argv[])
{
    (void) argc;
    (void) argv;
    drizzle_st *con;
    drizzle_return_t ret;
    drizzle_binlog_st *binlog;

    // Should be changed to the specifics of the MySQL installation
    con = drizzle_create("localhost", 3306, "root", "", "", 0);
    if (con == NULL)
    {
        printf("Drizzle connection object creation error\n");
        return EXIT_FAILURE;
    }
    ret = drizzle_connect(con);
    if (ret != DRIZZLE_RETURN_OK)
    {
        printf("Drizzle connection failure\n");
        return EXIT_FAILURE;
    }
}
```

```
binlog= drizzle_binlog_init(con, binlog_event, binlog_error, NULL, true);
ret= drizzle_binlog_start(binlog, 0, "", 0);
if (ret != DRIZZLE_RETURN_EOF)
{
    printf("Drizzle binlog start failure\n");
    return EXIT_FAILURE;
}

drizzle_quit(con);
return EXIT_SUCCESS;
}
```

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