

Blog Export: LAMPsig, <http://www.lampsig.org/new/>

Monday, May 23, 2005

LAMPsig MySQL Class :: Class #4

Class #4 of the MySQL class is scheduled for this Monday, May 23 at 7:00pm at CalTek and will cover Select Statements, Expressions and Functions, Misc SQL.

Complete syllabus for Class #4 are continued in the further reading section.

Instructor:

David Benjamin :: david_AT_peterbenjamin_(dot)_com

Class Contact:

Sharon Lake :: sharon_AT_linuxchixla_(dot)_org

Lab Help:

Steve Glasser :: steve_AT_fpig_(dot)_net

CLASS #4 SYLLABUS

Class 4 – Select Statements, Expressions and Functions, Misc SQL
(Chap 5 & 6 / MySQL-M 9.2, 12, 13.1.7, 13.1.8, A.5.4)
20% exam material (10% Chapter 5, 10% Chapter 6)

Example Sorting database sortingOrderExamples. Sql file will create three tables 'sortChar', 'sortEnum', and 'sortSet'. Please create a database called sortingOrderExamples and import. These tables will be used to demonstrate sorting options when dealing with Char vs. Binary Char, ENUM, and SET column types.

```
SELECT Select Syntax mysql> SELECT values_to_display
FROM table_name
WHERE expression
GROUP BY how_to_group
HAVING expression
ORDER BY sort_options
LIMIT row_count;
```

```
mysql> SELECT 2+2, REPEAT('x', 5), DATE_ADD('2001-01-01', INTERVAL 7 DAY), 1/0;
```

Using Aliases for Column Names AS is optional keyword Aliases *may* be quoted, multiple word Alias *must* be quoted You can refer to an Alias elsewhere in a query, e.g., GROUP BY, HAVING, or ORDER BY, but it *cannot* be used as part of the WHERE clause.

Restricting a selection Using WHERE

Using ORDER BY to Sort Natural (or default) Sort Order of Column Types Numeric: Ascending
Numeric Decimal: sorted numerically, even though DECIMAL values are stored in string form Date/Time: Ascending
Temporal (oldest values first) String Binary: Numeric Value of Bytes that make up the String String Non binary:
Lexical Enum: Internal Numeric Value based on Enum Set Order Set: Internal Number Value based on a more complex Set Order

Limiting a Selection using LIMIT

Aggregate Functions. Using both with and without WHERE clause. Aggregate values for Empty Set

```
SUM() AVG() MIN() MAX() COUNT()
GROUP BY
```

```
HAVING
```

Using DISTINCT to Eliminate Duplicates
Concatenating SELECT Results with UNION

Pattern Matching with LIKE and WILDCARD Characters

Dealing with NULL NULL Values and Column Definitions NULL Values and NOT NULL Columns NULL Values in Expressions and Comparisons ISNULL(), IFNULL() NULL Values in Aggregate Functions are ignored except for the COUNT() Function. New in mysql 4.1 / 5 SUB-SELECTS. Will also be covered Class #6 & 7 (Chap. 8 Joins).

Using Reserved Words as Identifiers

Commentating in SQL files

Functions. Per the study guide, you are not expected to every detail about each function, but you are expected to know it's general behavior ABS() AES_DECRYPT()and AES_ENCRYPT() / DES_DECRYPT() and

DES_ENCRYPT() BIN() CEILING() CHAR() CHAR_LENGTH() CHARACTER_LENGTH() CONCAT()and

CONCAT_WS() CONV() CURRENT_DATE() and

CURRENT_TIME() DATE_ADD() DATE_FORMAT() DATE_SUB() DAYNAME() and DAYOFMONTH() and

DAYOFWEEK() and DAYOFYEAR() DECODE and

ENCODE ELT() EXPORT_SET() FIELD() FIND_IN_SET() FLOOR() FROM_DAYS() FROM_UNIXTIME() GREATER() HEX() HOUR() IF() IFNULL()and

ISNULL() IN() INSERT() INSTR() LCASE() LEAST() LEFT() LENGTH() LOAD_FILE() LENGTH() LOCATE() LOWER() LPAD() LTRIM() MAKE_SET() MD5() MID() MINUTE() MOD() MONTH() MONTHNAME() NOW() OCT() PA

SSWORD() PERIOD_ADD() PERIOD_DIFF() POSITION() POW() and

POWER() QUARTER() QUOTE() RAND() REPLACE() REVERSE() RIGHT() ROUND() RPAD() RTRIM() SEC_T

O_TIME() SECOND() SIGN() SUBSTRING()and

SUBSTRING_INDEX() TIME_FORMAT() TIME_TO_SEC() TO_DAYS() TRIM() TRUNCATE() UCASE() UNIX_TIM

ESTAMP() UPPER() WEEK() WEEKDAY() YEAR() YEARWEEK() VERSION()

Posted by Sharon Lake in Classes: MySQL at 19:00

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Saturday, May 21. 2005

May Meeting - SQLite

Main Topic: SQLite - Al Danial

Al Danial will present SQLite at the May LAMPsig meeting. Having used SQLite for over a year he has found many reasons to recommend this database engine. The presentation will include an overview of SQL, a comparison of SQLite to conventional client/server database programs like MySQL and Postgres, and demos using the command line and Perl and C bindings.

SQLite is included in PHP5 and is a simple, totally open alternative to other databases. This makes it ideal for development environments.

Opening Topic: Open for Business - Si Chen

Si Chen will do our introductory presentation. He will be giving an overview of Open for Business, an Open Source set of business applications written in Java. Si has used Open for Business to develop his very professional www.graciousstyle.com Website. He will also cover his development effort for the project. Si currently has opportunities for programmers with his support company.

Posted by Jim Workman in Meetings at 17:30

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Monday, May 16, 2005

LAMPsig MySQL Class :: Class #3

Class #3 of the MySQL class is scheduled for this Monday, May 16 at 7:00pm at CalTek and will cover the Storage Engines, DDL (Data Definition Language), Primary Keys, Columns Types, and Indexes.

Complete syllabus for Class #3 are continued in the further reading section.

Instructor:

David Rolston :: david_AT_gizmola_(dot)_com

Class Contact:

Sharon Lake :: sharon_AT_linuxchixla_(dot)_org

Lab Help:

Steve Glasser :: steve_AT_fpig_(dot)_net

CLASS #3 SYLLABUS

Class 3 – Data Definition Language.

(Chapter 4 / MySQL-M 1.2.4, 1.5.6.1, 3.3.2, 3.6.9, 11, 13.2, 13.5.4, 14, 15)

[NOTE: MySQL-M 7 covers optimization and how to use INDEXES effectively. Optimization techniques are not covered in this class.]

20% exam material

General Database and Table Properties MySQL associates each database on the server with a directory under the data directory. The directory has the same name as the database it represents. The directory contains all the files associated with the database, i.e., indexes and tables. Databases cannot be nested, i.e., one database cannot contain another. Tables consist of rows and columns. A table can be empty, i.e., it can have 0 rows, but it must have at least one column. Every table is associated with a format file in the database directory. The format file name is the same as the table name followed with a .frm extension. Depending on the storage engine MySQL might create additional files. MyISAM storage engine creates data and index file(s) named tablename.MYD and tablename.MYI respectively. InnoDB storage engine creates the .frm file, but stores the data and index information in an InnoDB tablespace.

Storage Engine and Table Types MyISAM Tables represented on disk with .frm format file, an .MYD datafile and an .MYI index file. most flexible AUTO-INCREMENT column handling can be set up to handle MERGE tables can be converted to compressed, read-only tables supports FULL TEXT searching uses table level locking for query contentions and write queries. InnoDB Tables represented on disk with .frm format file in database directory, as well as data and index storage in the InnoDB tablespace. The table space is shared by all InnoDB tables. Supports transactions with full ACID compliance provides auto-recovery after server or host crash supports foreign keys and referential integrity, including cascaded deletes and updates uses multi-versioning and row-level locking for query contentions. MERGE Tables a MERGE table is a collection of identically structured MyISAM tables represented on disk by an .frm format file and an .MRG file located in the database directory a query on a MERGE table acts as a query on all the MyISAM tables of which it consists. A MERGE table creates a logical entity that can exceed the maximum MyISAM table size BDB (Berkeley DB) Tables (Note: BDB storage engine not enabled in LAMPsig/Knoppix LiveCD installation) represented on disk by an .frm format file and a .db file that stores data and index information located in database directory. Supports transactions with full ACID compliance uses page-level locking for query contention. HEAP (Memory) Tables represented on disk by a .frm format file in database directory. Table data and indexes are stored in memory In-memory storage results in fast performance HEAP table contents do not survive a restart of the server. The structure survives, but it contains 0 data rows after a restart.

Limits on Database Components MySQL doesn't place limits on number of databases, but the OS or filesystem might due to limits on number of sub-directories allowed in filesystem tree. MySQL databases are represented on disk in sub-directories MySQL doesn't place limits on number of files in directory, tho the OS or filesystem might. MyISAM tables are represented on disk in files under the database subdirectory MySQL does place limits on size of individual tables. Techniques around this limitation would include: MERGE tables (for MyISAM storage engine) RAID setup (for datafiles only as index tables are stored in a single file) Convert MyISAM tables to InnoDB tables as InnoDB allows for

larger datafiles. For OS or filesystem limitations see if OS dependent adjustments are possible.

Identifier Syntax. Identifiers identify a specific database elements, e.g, databases, tables, table columns, aliases, and (sometimes) indexes. Legal Characters Qualifiers for Table and Column Names. Sometimes qualifiers are necessary to resolve ambiguity.

```
SELECT * FROM Country;
SELECT * FROM world.Country;
SELECT Name FROM Country;
SELECT Country.Name FROM Country;
SELECT world.Country.Name FROM world.Country;
CREATE and DROP DATABASE
```

```
CREATE TABLE Syntax Temporary
DROP TABLE
```

ALTER TABLE Adding and Dropping Columns Modifying Existing Columns Renaming a Table Specifying Multiple Alterations

Creating and Dropping Indexes Four types of Indexes non-unique index UNIQUE PRIMARY KEY FULL TEXT Defining at Table-Creation Time Creating and Using Primary Keys Modifying Indexes of Existing Tables Column Types Numeric / Integer TINYINT SMALLINT MEDIUMINT INT BIGINT Numeric / Floating-Point and Fixed-Decimal FLOAT DOUBLE DECIMAL String Binary and Nonbinary String Characteristics CHAR VARCHAR BLOB TEXT ENUM SET Date and

Time DATE TIME DATETIME TIMESTAMP YEAR

Column Options UNSIGNED ZEROFILL AUTO_INCREMENT BINARY NULL and NOT

NULL DEFAULT PRIMARY KEY and UNIQUE

Using AUTO_INCREMENT

Automatic Type Conversion and Value Clipping

DESCRIBE and SHOW to display table structures

Posted by Sharon Lake in Classes: MySQL at 19:00

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Monday, May 9, 2005

LAMPsig MySQL Class :: Class #2

Class #2 of the MySQL class is scheduled for this Monday, May 9nd at 7:00pm at CalTek and will cover the various clients used to access a MySQL server.

Due to space limitations the class is now full so no more students are currently being accepted.

Complete syllabus for Class #2 are continued in the further reading section.

Instructor:

Steve Glasser :: steve_AT_fpig_(dot)_net

Class Contact:

Sharon Lake :: sharon_AT_linuxchixla_(dot)_org

Lab Help:

Solomon Chang :: skevin521_AT_yahoo_(dot)_com

CLASS #2 SYLLABUS

Class 2 – Using the MySQL client. (Chapter 3 / MySQL-M 3.1, 4, 25)

10% exam material

Invoking Command-Line Client Programs from Shell Prompt short vs. long shell> mysql -V or -h shell> mysql --version or --host options followed by values --host=myhost.example.com -h myhost.example.com -hmyhost.example.com default values and changing default values through my.cnf Windows my.ini /my.cnf *nix global /etc/my.cnf, local /home/user/.my.cnf

Connection Parameter Options Host (default value localhost) --host=host_name / -h host_name / -hhost_name Port (default value 3306) --port=port_number / -P port_number Socket (default value *nix /tmp/mysql.sock, Windows pipe name 'MySQL') --socket=socket_name / -S socket_name Windows NT servers --enable-named-pipe option User (default value *nix system login name, Windows 'ODBC') --user=user_name / -u user_name / -uuser_name Password (no default value) --password=password_value or -ppassword_value Note spacing (-ppassword_value) OK to omit the password_value in initial connection parameter as with either span STYLE="font-weight: medium">–password or -p flag a password prompt will appear If you omit the password option then your MySQL account must be specifically set up to allow you to connect without a password. Compress --compress / -C Using Custom Option Files --defaults-file=file_location Must be first option after the command name For an option specified multiple times in the same or separate option file(s), the option found last takes precedence. Options on the command line take precedence over options found in options files

Selecting Default (or Current) Database Naming on command line when connecting shell> mysql --user=username --password database_name

shell> mysql --user=root --password world shell> mysqldump --user=username --password database_name > database_name.sql

shell> mysqldump --user=root --password world > world.sql Specifying with sql statements mysql> SELECT * FROM database_name.database_table; Select or Change default database mysql> USE database_name; mysql> SELECT * FROM database_table;

MySQL Client Program Interactive mode useful for day-to-day, one time queries, etc. Batch mode running prewritten queries, complex queries that are difficult to type, or to be run automatically by scheduler without user intervention.

Using MySQL Client Interactively Connect to server and database shell> mysql -u root -p -h localhost world A mysql> prompt will appear ready to accept sql statements mysql> is primary prompt -> generic secondary prompt: waiting for next line of statement or statement terminator '>' specific secondary prompt: waiting for end of single-quoted string '“>' specific secondary prompt: waiting for end of double-quoted string '`>' specific secondary prompt: waiting for end of backtick-quoted identifier. Canceling a statement with clear query \c sql statement need to be terminated in order for the MySQL server to execute. The terminators ; and \g are interchangeable mysql> SELECT * FROM world; mysql> SELECT * FROM world\g The terminator \G

(capital G) displays query results with each column value on a separate line
mysql> SELECT * FROM world\G
Executing statements from text or source file. If statement in source file end with an error, mysql ignores remainder of file. To execute entire file regardless of statement errors use the --force or -f option. A source file can contain other execute other source files, but careful of endless source loops.
mysql> SOURCE source_path/file_name; shell> mysql database_name < source_path/file_name
MySQL output Interactive Mode displays with bars and dashes in tabular format Batch Mode produces tab-delimited output between data values Output options --batch or -B to display with tabs even if used interactively --raw or -r option to suppress newline and carriage return escape-sequences like \n or \r --table or -t to display tabular format in table even if used in batch mode --html or -H to produce output in HTML format --xml or -X for XML format
Summary of Client Commands. Long form is case insensitive, short form case sensitive. Long form can only be executed at the mysql> primary prompt unless you invoke with --named-commands options. Short form can be executed on any input line
mysql> sql statements: SELECT,INSERT, UPDATE, and DELETE mysql> QUIT or \q mysql> SOURCE or \. mysql> STATUS or \s mysql> HELP or \h mysql> CLEAR or \c
Using --safe-updates option (--i-am-a-dummy) Limits UPDATE and DELETE statement to those either containing a WHERE clause or a LIMIT clause. Restricts returned rows to 1,000 unless the statement has a LIMIT clause. Multiple-table SELECT statements are allowed only if MySQL will examine no more than 1,000,000 rows to process the query.
mysqlimport

mysqldump

Reloading mysqldump output

Checking tables with mysqlcheck and myisamchk

MySQL Connectivity Drivers MySQL Connector/ODBC MySQL Connector/J

Posted by Sharon Lake in Classes: MySQL at 19:00

Blog Export: LAMPsig, <http://www.lampsig.org/new/>

Monday, May 2, 2005

LAMPsig MySQL Class :: Class #1

Class #1 of the MySQL class is scheduled for this Monday, May 2nd at 7:00pm at CalTek. Address, directions, and parking information can be found [here](#).

Due to space limitations the class is now full so no more students are currently being accepted.

Class #1 will cover an introduction to the class, resources available, MySQL & MySQL AB, MySQL Software and Components, and an intro in getting information about MySQL database and table information, and data directories structure.

Complete syllabus for Class #1 are continued in the further reading section.

Instructor:

David Benjamin :: [david_AT_peterbenjamin_\(dot\)_com](mailto:david_AT_peterbenjamin_(dot)_com)

Class Contact:

Sharon Lake :: [sharon_AT_linuxchixla_\(dot\)_org](mailto:sharon_AT_linuxchixla_(dot)_org)

Lab Help:

Steve Glasser :: [steve_AT_fpig_\(dot\)_net](mailto:steve_AT_fpig_(dot)_net)

CLASS #1 SYLLABUS

Class 1 – Introduction. (Chapter 1 & 2 / MySQL-M 1, 2, 3.3, 3.4, 5, 8, 21, 22)
20% exam material (5% Chapter 1, 10% Chapter 2)

Class Goals

To be introduced to the basic MySQL knowledge needed to pass the MySQL Core Certification. The MySQL Core Certification includes testing the knowledge needed to maintain a basic MySQL installation and use MySQL as a backend database for applications.

MySQL Core and Professional Certifications

Certifications available

MySQL certification information can be found on the MySQL site.<http://www.mysql.com/training/certification/>
Core Certification - tests basic MySQL knowledge sufficient to main a basic MySQL installation and create application p6t5yy7rograms that use MySQL as a backend database

Professional Certification - covers installation, large table maintenance, storage engines, and optimizations.

MySQL Certification Study Guide (ISBN: 0672326329)

Study Guide Errata: <http://www.mysql.com/training/certification/studyguides/errata.html>

Starting February 1st, 2005, the MySQL Certification Exams will be updated to reflect the changes that have taken place with the release of MySQL Server version 4.1.

4.1 Test Update information (<http://www.mysql.com/training/certification/41update.html>)

MySQL Version 4.1 Exam Preparation addendum pdf
(<http://www.mysql.com/training/certification/mysql-certification-41addendum.pdf>)

MySQL Certification Self Test <http://www.mysql.com/training/certification/selftest/core/index.php>

Knoppix LiveCD. A Knoppix LiveCD will be available with the MySQL 4.1 server and client, the MySQL manual, and the sample 'World' database already pre-installed.

Installed Components

MySQL server -- user: root password: lampsig
MySQL client
MySQL Manual (pdf and html versions available). <http://dev.mysql.com/doc/>
MySQL Certificate Study Guide Sample Chapter and Errata
<http://www.mysql.com/training/certification/studyguides/errata.html>
phpMyAdmin <http://localhost/phpmyadmin>
Sample world Database installed. <http://dev.mysql.com/doc/world-setup.html>
<http://dev.mysql.com/get/Downloads/Manual/world.sql.gz/from/pick>

What is MySQL

MySQL and MySQL AB

Dual Licensing
GPLCommercial
Major Program Components (mysqld server, mysql client programs)
Server: mysqld / mysqld-max) & mysqld-nt / mysql-max-nt)
Client(s)
mysql
MySQL Control Center (MySQLcc) -- No longer in development.
MySQL Administrator -- Server administration
MySQL Query Browser -- SQL browser
mysqlimport
mysqladmin
mysqlcheck

Difference Between Major MySQL Distributions
States: pre-alpha, alpha, beta, gamma, production
Production Versions: MySQL 4.0, 4.1, and 5)

MySQL APIs
Interfaces provided within MySQL (C client library, ODBC connector, JDBC connector)
Third party interfaces (PERL DBD::mysql, PHP, Python, etc.) While these APIs are downloadable from the MySQL site, they do not receive official support.

Interpreting the DESCRIBE output

Field
Type
Null
Key
Default
Extra
Server / client architecture

Creating New Database

Root user vs. User. Brief overview of Grant tables (Note: not covered in MySQL Core Certification)
Demonstration: create Sample World Database from MySQL command line
Demonstration: populating the world database by importing Sample World Database .sql file

Where is/are the data directory(ies)

Intro to switching default databases with use (covered in depth in MySQL client)

Posted by Sharon Lake in Classes: MySQL at 19:00