Basic SQL Data Management - MySQL

"*This document contains notes for basic SQL and MySQL functions. The goal is to learn how to install MySQL, Create databases, tables and use basic MySQL queries to manipulate data stored in databases.*
SQL"
Rows referred to as turples
Each column (attribute/field)
Table – is the combination of attributes (columns) and rows containing data.
SQL is a tool used to access and manipulate tables stored inside databases.

Common Data Types

- "precision" – The number of digits in a number
- "Scale" – The number of digits to the right of a decimal point
- Integer – Used to store 4-byte integer data example:1000
- Smallint – Used to store 2-byte integer data example: 10
- Float – Used to store floating poin t numbers.
- Datetime – Date and time format
- Date – Just a date
- Time – Just time
- Set – Data that can contain 0 or more values meaning "a set of marbles"
- Enum – Declare an enumeration or a distinct type consisting of a set of named constants. MSDN (http://msdn.microsoft.com/en-us/library/sbbt4032(v=vs.80).aspx)
- Char – Contains one or more characters
- Varchar – Most common field used for storing smaller string values. It is a variable of characters and can only contain 255 characters maximum. Used for storing usernames and other basic text items.

Database Servers – Below is a list of common database servers

- MySQL
- MS SQL
- PostgresSQL
- Oracle

Installing MySQL

- Yum install mysql

    - service mysqld start
    - mysqladmin -uroot password "plain text password"
- Apt-get install mysql
    - All steps are taken care of during the install GUI process.

Using MySQL

Typing "MySQL –u root –p" at the command promt will allow you to access the MySQL console.

Create A Database

"note: MySQL> signifies the MySQL command prompt"
All commands need to be ended with ; or MySQL will interpret a new line as a continuation of your current line.

MySQL > **create database database_name;**

- Creates a database named "database_name"

MySQL > **Show Databases;**

- List all created databases

MySQL > **use database_name;**

- Typing "use database_name" will move your prompt into that database. All queries performed at the command line will be performed against database_name.

MySQL > **Show Tables;**

- Used after the "use database_name" command. Will list all tables inside of the database.
- mysqladmin -uroot password fu09wf((3

Create table table_name (field_name field_type, field_name field_type);

- **Example:** MySQL > **create table linuxacademy (lesson_name varchar(255), id int(2));**
- Will create a table with two fields
    - Lesson_name with a maximum character set of 255.
    - Id – id of the current row used heavily in relational databses.

MySQL > **insert into table_name (field, field, field) VALUES ("field1, "field2", field 3");**

- Example: insert into linuxacademy (lesson_name, id) VALUES ("Learn SQL", 1);
    - Creates a new row in the table where the lesson_name is learn sql and the id is 1.

MySQL > **Update linuxacademy set lesson_name="MySQL Rocks" where id=1;**

- Updates the lesson_name to "MySQL Rocks" on the row where ID=1.
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MySQL > **delete from linuxacademy where id=1;**

- Removes the row inside linuxacademy tables where the id on the row is set to 1. Every row that has the id set to 1 will be removed.
- Delete from linuxacademy;
    - Will delete all rows from the linuxacademy table.

MySQL > **select * from linuxacademy;**

- Query will select all fields and return all data from the linuxacademy table

MySQL > **select lesson_name from linuxacademy;**

- Query will return just the lesson_name column for every row in the table.

MySQL > **select lesson_name from linuxacademy where lesson_name="mysql rocks";**

- Will return only the lesson_name column for each row that the lesson_name is set exactly to "mysql rocks"
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MySQL > **select * from linuxacademy order by id desc;**

- Will return all columns and all rows in order decending order based off the id field

MySQL > **select * from linuxacademy where id=1 and lesson_name="mysql rocks"**

- Will return only rows that lesson_name is set to "mysql rocks" AND the id is 1. If this is not true on a single row that row will not be returned.

Joining Multiple Tables In A Query *The concept of querying tables above applies. However, we can join data across multiple tables. When the query*

executes it will interpret the query as if it was 1 table. There are multiple types of joins and can be long and complex queries. This course only covers basic joins between tables.

Step 1: Lets create multiple tables of data for the example.

- MySQL > create table users (id int(5), first_name varchar(25), last_name varchar(25));
- MySQL > create table user_contact (id int(5), user_id int(5), phone varchar(255));

  The two tables rows are relational based off the "id" field in the "users" table and the "user_id" field in the user_contact table. That is how we know what row of data in the users table goes with what row of data in the user_contact table.

Step 2: Create a query that joins both tables to return first_name, last_name, phone in one result. Without a join we can only query one table at a time.

- The two tables must of a common field that they can relate to each other.
  - *Join allows us to join the two tables on a certain field so the data is relational (related).*

  - MySQL > select customers.email, users.name from users,customers where users.id = customers.id;