SQL Examples

Documentation
We are using MySQL 5.1.58
Documentation link: http://dev.mysql.com/doc/refman/5.1/en/index.html

Documentation Specifically For SQL Data Definition Components:
http://dev.mysql.com/doc/refman/5.1/en/sql-syntax-data-definition.html

The documentation is written using a "BNF grammar"- this chart should help in understanding the various symbols that occur in the grammar:

- **Vertical bar (|):** The vertical bar can be interpreted to mean "or." Whenever you can choose from two or more options, those options are separated with a vertical bar. For example, in the sixth line, you can choose either NOT NULL *or* NULL.
- **Square brackets ([ ]):** A set of square brackets indicates that the syntax enclosed in those brackets is optional.
- **Angle brackets (< >):** A set of angle brackets indicates that the syntax enclosed is a placeholder, in which case, you must insert a specific value in place of the angle brackets and the text within those brackets. If the meaning of the placeholder is not self-evident, a later section within the syntax usually defines it.
- **Curly brackets ({ }):** A set of curly brackets indicates that the syntax enclosed in those brackets should be treated as a unit. As a result, if one element within the brackets is used, all elements are used, unless a vertical bar separates options within the brackets.
- **Three periods (...):** A set of three periods means that the clause that immediately precedes the periods can be repeated as often as necessary.
- **Two colons/equal sign (::=):** The colon/equal sign construction defines placeholders. Literally, it is the equivalent to an equal sign. The syntax to the right of the symbols defines the specified placeholder to the left.

Using mysql
After connecting to your virtual machine:

To access mysql and work directly in the mysql client (this will prompt you for a password, the "--tee=logfile.txt" says where to log your actions if you want them to be logged)
mysql --tee=logfile.txt --user=root --password

To run a script, use either:
mysql --tee=logfile.txt --user=root --verbose --password < scriptFile
OR
At mysql prompt, which looks like, mysql>, type the following: source scriptFile

Typing the line below will help in explaining errors (look for the section of text it outputs that says "Last Known Error" or something similar)
SHOW ENGINE INNDOB STATUS

Examples of Using the Data Definition Components of SQL

```
#show which databases are available
SHOW DATABASES;

# create a new database for the problem of interest
CREATE DATABASE parking;

# use the parking database
USE parking;

# create the staff entity relation
CREATE TABLE staff (staffNumber INTEGER(4) PRIMARY KEY, name
VARCHAR(30) NOT NULL, telephone CHAR(10), tag CHAR(7)) ENGINE=INNODB;

# show all tables in database
SHOW TABLES;

# describe staff
DESCRIBE staff;

# create the lots entity relation
CREATE TABLE lots (lotName VARCHAR(30) PRIMARY KEY, location
VARCHAR(30) NOT NULL, capacity INTEGER(3) NOT NULL, numberOfFloors
INTEGER NOT NULL) ENGINE=INNODB:

# describe lots
DESCRIBE lots;

# create the spaces entity relation
CREATE TABLE spaces (space INTEGER(5) PRIMARY KEY, lotName
VARCHAR(30), FOREIGN KEY (lotName) REFERENCES lots(lotName) ON
DELETE RESTRICT ON UPDATE RESTRICT) ENGINE=INNODB;

# describe spaces;
DESCRIBE spaces;

# create the uses relation
CREATE TABLE uses (staffNumber INTEGER(4), space INTEGER(5), PRIMARY
KEY (staffNumber, space), FOREIGN KEY (staffNumber) REFERENCES
staff(staffNumber) ON DELETE RESTRICT ON UPDATE RESTRICT, FOREIGN
KEY (space) REFERENCES spaces(space) ON DELETE RESTRICT ON UPDATE
RESTRICT) ENGINE=INNODB;

# describe uses;
DESCRIBE uses;
```

```
# delete uses relation
DROP TABLE uses;

# delete lots relation – this should actually fail, since spaces relies on lots!
DROP TABLE lots;

# show all tables in database
SHOW TABLES;

# delete the whole database
DROP DATABASE parking;
```