

A (very) Little Practical MySQL

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agenda

- what is mysql
- basic commands
- when should I use a db
- alternatives to using a db
- simple examples
- backup
- status
- things to look out for
- replication
- performance

what is mysql

- relational database
- easy of installation and setup
- attention to standards
- responsiveness to community
- easy interface to other software

an application that could use a db

- home caller-id database
 - currently in a big text file
 - examples of useful things to know:
 - most frequent caller, calls per day, ...
 - collect caller-id data, keep in db
 - diskless/headless box running mysql db with a modem
 - desktop/server replicates caller-id box on startup

alternatives to using a db

- grep
- wc
- long pipelines and intermediate text files

basic commands

- show
- create
- use
- load
- select
- describe
- count
- alter
- update

getting data into a db

- csv (delimited field) files
- bulk import

some simple test data

zip code info from 1990

<http://www.census.gov/geo/www/gazetteer/gazette.html>

fields in the zip code data

<http://www.census.gov/tiger/tms/gazetteer/zip90r.txt>

zip code data

<http://www.census.gov/tiger/tms/gazetteer/zips.txt>

user interface

```
mysql -u root -p
```

what's already in there

show databases;

make a new one

create database zipcodes;

which one to use

use zipcodes;

data types

- INT
- DECIMAL
- DATE
- TIME
- TIMESTAMP
- CHAR
- BOOLEAN
- BLOB
- VARCHAR
- TEXT
- TINYBLOB
- ENUM
- DOUBLE

create a table to put stuff in

```
create table zips (  
  fips char(2),  
  zipcode integer,  
  state char(2),  
  zipname char(20),  
  longitude double,  
  latitude double,  
  population integer,  
  allocfactor double);
```

what does a table look like

describe zips;

load some stuff into it

load data local infile

```
"/home/dtoppin/Desktop/mysql/zipcodes/list.csv  
" into table zips fields terminated by ",";
```

see what's in there

```
select * from zips limit 10;
```

look for something more specific

```
select * from zips where state = "AL";
```

delete everything in the table

```
truncate zips;
```

load it again

load data local infile

"/home/dtoppin/Desktop/mysql/zipcodes/list1.csv" into table zips fields terminated by ",";

were there any warnings?

show warnings;

simple query

```
select * from zips where state = "AL";
```

did anything go wrong

show warnings;

count something

```
select count(*) from zips where state= "TX";
```

count something specific

```
select count(*) from zips where  
zipname="HOUSTON";
```

count something specific again

```
select count(*) from zips where  
zipname="houston";
```

a little more specific

```
select * from zips where zipname="houston" AND  
population > 40000;
```

more specific counting

```
select count(*) from zips where  
    zipname="houston" AND population > 40000;
```

save the data somewhere

```
select * from zips where zipname="houston" AND  
population > 40000 into outfile  
"/tmp/queryresults.txt";
```

add a column to an existing table

```
alter table zips add updated TIMESTAMP;
```

now look at it

```
select * from zips limit 10;
```

update a field

```
update zips SET population="7000" where  
zipname="ACMAR" and zipcode="35004";
```

look at it again

```
select * from zips limit 10;
```

queries using time values

```
select * from zips where updated > "0000-00-00";
```

update a field

```
update zips SET updated="1998-05-06" where  
zipname="ALPINE";
```

queries using time values

```
select * from zips where updated = "1998-05-06";
```

queries using time values

```
select * from zips where updated > "1998-05-06";
```

update a field

```
update zips SET updated="1999-05-06" where  
zipname="ALPINE" and STATE="TN";
```

queries using time values

```
select * from zips where updated > "1998-05-06"  
and updated < "2008-10-31";
```

backup

```
$ mysqldump --user=root --password=xxxx  
--result-file=/tmp/mysqlzips.sql zipcodes
```

```
$ ls -l /tmp/mysqlzips.sql
```

```
-rw-r--r-- 1 dtoppin dtoppin 2508427 2008-11-01  
08:27 /tmp/mysqlzips.sql
```

status

- `show status;`
- `show variables;`
- `show processlist;`

things to look out for

- sql injection
 - data in the db might mod a query/operation causing a “side effect”
 - incoming data from an outside source should be examined and escaped if necessary to ensure security
 - numerous real world examples of the risk of this

replication

- keep a copy of the db in another db
- useful for backup and potentially a read-only server
- replicate in real time or intervals

performance

- if it works I'm happy