

Getting Started

- Open a web browser
 - <https://64.59.233.234/phpmyadmin>

- Open two ssh sessions to 64.59.233.234
 - Putty on Windows

Database web interface

- At least 4 Web pages
 - at least one that allows (some) users to insert data
 - at least three predefined queries
 - click a button/link and run an existing query
 - at least three flexible/free form queries
 - allow the user to choose options

Advanced SQL

Oct 28, 2009

<http://dev.mysql.com/doc/refman/5.1/en/index.html>

phpMyAdmin

https://64.59.233.234/phpmyadmin/

Only available from on campus

The screenshot shows the phpMyAdmin interface. On the left, the 'Database' dropdown is set to 'chadd_test (6)'. Below it, a list of tables is shown: Actors, HFordMovies, Junk, Movies, pictures, and WasIn. Two red arrows point from the text above to the 'chadd_test (6)' dropdown and the 'chadd_test (6)' entry in the table list.

The main area displays the 'Structure' view for the 'chadd_test' database. The 'SQL' tab is selected, indicated by a red arrow from the text above. The table structure is as follows:

Table	Action	Records ¹	Type	Collation	Size	Overhead
<input type="checkbox"/> Actors		8	InnoDB	latin1_swedish_ci	32.0 KiB	-
<input type="checkbox"/> HFordMovies		~0 ²	View	---	-	-
<input type="checkbox"/> Junk		0	MyISAM	latin1_swedish_ci	1.0 KiB	-
<input type="checkbox"/> Movies		7	InnoDB	latin1_swedish_ci	32.0 KiB	-
<input type="checkbox"/> pictures		2	InnoDB	latin1_swedish_ci	304.0 KiB	-
<input type="checkbox"/> WasIn		11	InnoDB	latin1_swedish_ci	32.0 KiB	-
6 table(s)	Sum	~28	MyISAM	latin1_swedish_ci	401.0 KiB	0 B

Below the table structure, there are links for 'Print view' and 'Data Dictionary'. A section for 'Create new table on database chadd_test' is visible, with fields for 'Name:' and 'Number of fields:'. A yellow information box contains the following text:

¹ May be approximate. See [FAQ 3.11](#)
² This view has at least this number of rows. Please refer to [documentation](#).

At the bottom right, there is a link to 'Open new phpMyA'.

phpMyAdmin

Database: chadd_test (6)

- Actors
- HFordMovies
- Junk
- Movies
- pictures
- WasIn

Server: localhost Database: chadd_test

Structure SQL Search Query Export Import Designer Operations Privileges Drop

Run SQL query/queries on database chadd_test:

Select * from WasIn

Bookmark this SQL query: Let every user access this bookmark
 Replace existing bookmark of same name

[Delimiter :] Show this query here again

[Open new phpMyAdmin window](#)

phpMyAdmin

Database: chadd_test (6)

- Actors
- HFordMovies
- Junk
- Movies
- pictures
- WasIn

Server: localhost Database: chadd_test Table: WasIn

Browse Structure SQL Search Insert Export Import Operations Empty Drop

Showing rows 0 - 10 (~11¹ total, Query took 0.0004 sec)

SELECT *
FROM WasIn
LIMIT 0, 30

Profiling [[Edit](#)] [[Explain SQL](#)] [[Create PHP Code](#)] [[Refresh](#)]

Show: row(s) starting from record #
in mode and repeat headers after cells

Sort by key:

+ Options

			MovieID	ActorID	Salary	StageName
<input type="checkbox"/>			1	1	500000	NULL
<input type="checkbox"/>			1	4	500	NULL
<input type="checkbox"/>			2	1	5e+06	NULL
<input type="checkbox"/>			9	2	100	NULL
<input type="checkbox"/>			10	1	1000	NULL

Because MovieID and ActorID are foreign keys, they are clickable!

Text matching

```
SELECT *  
FROM Actors  
WHERE LastName LIKE 'M%'
```

% is a wild card character

```
SELECT *  
FROM Actors  
WHERE FirstName LIKE '%O%'
```

Control Flow

IF(condition, trueValue, falseValue)

```
SELECT ActorID, IF( salary>1000, 1, 0)
FROM WasIn;
```

IFNULL(Value, returnIfValueIsNull)

```
SELECT ActorID, IFNULL(StageName, "NONAME")
FROM WasIn;
```

There is also a case (switch) statement

GROUP BY and HAVING

- Allows SQL to filter on calculated/aggregate values
- Similar to **WHERE**
- must be last

```
SELECT ActorID, avg(salary) as AvgSalary  
FROM WasIn  
WHERE salary > 0  
GROUP BY ActorID  
HAVING AvgSalary > 10000;
```


Bulk Load / Backup a table

```
SELECT *  
FROM Actors  
INTO OUTFILE '/tmp/Actors_PUNetID.txt';
```

The file path must be WORLD WRITEABLE

```
LOAD DATA INFILE '/tmp/Actors_PUNetID.txt'  
INTO TABLE Actors2;
```

- Actors2 must already exist
- File needs to be tab-delimited
- Can optionally be comma-delimited

Backup Your Database!

```
@db:~> mysqldump PUNetID_BigProject -u PUNetID -p -S  
/opt/lampp/var/mysql/mysql.sock > backup_BigProject.sql
```

Database Name

How to connect to MySQL

Output file

To see what this file looks like:

```
@db:~> cat backup_BigProject.sql | less
```

Copy to Zeus for safe keeping!

```
@db:~> scp backup_BigProject.sql PUNetID@zeus:
```



Don't forget the colon!

Blob: Binary Data

- BLOB

- Binary data can be images, sounds, video, OpenOffice documents, executable files, etc.

- TEXT

- Long chunk of text

Data Type	Max Size (Bytes)
TINYBLOB, TINYTEXT	2^8
BLOB, TEXT	2^{16}
MEDIUMBLOB, MEDIUMTEXT	2^{24}
LOB, LONGTEXT	2^{32}

Binary Data

```
CREATE TABLE pictures (  
  PicID int(11) NOT NULL auto_increment,  
  image mediumblob NOT NULL,  
  type varchar(255) NOT NULL,  
  PRIMARY KEY (`PicID`)) ENGINE=InnoDB;
```

For binary data, we need to track the type of data we have stored.

For data to display on the web, store the MIME type

Multipurpose **I**nternet **M**ail **E**xtensions

image/gif

image/png

INSERT Binary Data

```
INSERT INTO pictures (PicID, image, type)
VALUES (null,
LOAD_FILE('/home/chadd/image.png'),
"mime/png");
```

- From the command line you must specify the entire path to the file
- The file must be world readable

```
chadd@db:~> chmod o+r image.png
```

```
chadd@db:~> ls /home/chadd/image.png
```

```
-rw-r--r-- /home/chadd/image.png
```



Practice

- Find all agents whose **maximum down payment** for a sale they have been involved with is greater than 10% of the **maximum total price** for a sale they have been involved with.
- List all Movie titles. For each movie, display the MovieID if Harrison Ford is in it and “Not A HF Movie” otherwise. The column headers should be as shown.

Title	HFOrNot
Star Wars	1
Indiana Jones and the Raiders of the Lost Ark	2
Plan 9 From Outer Space	Not a HF Movie
American Graffiti	10
The Good, the Bad, and the Ugly	Not a HF Movie
The Fugitive	12
Clear and Present Danger	13

Practice

- Display each movie title and the string “Before I was Born” or “After I was born” to show if the movie was released before or after the day you were born. The column headers should be as shown.

Title	BornBeforeOrAfter
Star Wars	After I was born
Indiana Jones and the Raiders of the Lost Ark	After I was born
Plan 9 From Outer Space	Before I was born
American Graffiti	Before I was born
The Good, the Bad, and the Ugly	Before I was born
The Fugitive	After I was born
Clear and Present Danger	After I was born

Practice

- Display all ZoneTypes that are listed for 3 or more Parcels
- Display all Parcels whose asking price is above the average asking price
- Find each Parcel that is on a Street
- Backup your Movie database and copy it to Zeus!