MySQL Types

- CHAR
- VARCHAR
- TEXT
- TINYTEXT
- MEDIUMTEXT
- LONGTEXT
- DATE
- DATETIME
- YEAR
- TIME
- TIMESTAMP
- TINYINT
- SMALLINT
- MEDIUMINT
- INT
- BIGINT
- FLOAT
- DOUBLE
- DECIMAL
- TINYBLOB
- BLOB
- MEDIUMBLOB
- LONGBLOB
- BINARY
- VARBINARY
- ENUM
- SET
MySQL Functions


- **DATE_FORMAT(date,format)**
  http://dev.mysql.com/doc/refman/5.0/en/date-and-time-functions.html#function_date-format

- **TIME_FORMAT(time,format)**
  http://dev.mysql.com/doc/refman/5.0/en/date-and-time-functions.html#function_time-format

- ...
PDO

$dsn = 'mysql:dbname=lecture;host=127.0.0.1';
$user = 'jharvard';
$password = 'crimson';

try {
    $dbh = new PDO($dsn, $user, $password);
} catch (PDOException $e) {
    echo 'Connection failed: ' . $e->getMessage();
}

http://www.phpro.org/tutorials/Introduction-to-PHP-PDO.html
JOIN

SELECT Employees.Name, Orders.Product
FROM Employees, Orders
WHERE Employees.Employee_ID=Orders.Employee_ID
JOIN

SELECT Employees.Name, Orders.Product
FROM Employees, Orders
WHERE Employees.Employee_ID=Orders.Employee_ID

Employees:

<table>
<thead>
<tr>
<th>Employee_ID</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Hansen, Ola</td>
</tr>
<tr>
<td>02</td>
<td>Svendson, Tove</td>
</tr>
<tr>
<td>03</td>
<td>Svendson, Stephen</td>
</tr>
<tr>
<td>04</td>
<td>Pettersen, Kari</td>
</tr>
</tbody>
</table>

Orders:

<table>
<thead>
<tr>
<th>Prod_ID</th>
<th>Product</th>
<th>Employee_ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>234</td>
<td>Printer</td>
<td>01</td>
</tr>
<tr>
<td>657</td>
<td>Table</td>
<td>03</td>
</tr>
<tr>
<td>865</td>
<td>Chair</td>
<td>03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hansen, Ola</td>
<td>Printer</td>
</tr>
<tr>
<td>Svendson, Stephen</td>
<td>Table</td>
</tr>
<tr>
<td>Svendson, Stephen</td>
<td>Chair</td>
</tr>
</tbody>
</table>
JOIN

SELECT Employees.Name, Orders.Product
FROM Employees
JOIN Orders ON Employees.Employee_ID=Orders.Employee_ID

Adapted from http://www.w3schools.com/sql/sql_join.asp.
Race Conditions
INSERT ... ON DUPLICATE KEY UPDATE

INSERT INTO table (a,b,c) VALUES (1,2,3)
  ON DUPLICATE KEY UPDATE c=c+1;

UPDATE table SET c=c+1 WHERE a=1;
Transactions (InnoDB)

START TRANSACTION;
UPDATE account SET balance = balance - 1000 WHERE number = 2;
UPDATE account SET balance = balance + 1000 WHERE number = 1;
COMMIT;
Transactions (InnoDB)

START TRANSACTION;
UPDATE account SET balance = balance - 1000 WHERE number = 2;
UPDATE account SET balance = balance + 1000 WHERE number = 1;
SELECT balance FROM account WHERE number = 2;
# suppose account #2 has a negative balance!
ROLLBACK;
Locks (MyISAM)

LOCK TABLES account WRITE;
SELECT balance FROM account WHERE number = 2;
UPDATE account SET balance = 1500 WHERE number = 2;
UNLOCK TABLES;
C$75 Finance

1) Log In
2) Register
3) Get Quotes
4) Sell Stocks
5) Buy Stocks
6) . . .
Rostock Ventures Corp. (ROSV) - OTC BB

<table>
<thead>
<tr>
<th>Prev Close:</th>
<th>0.03</th>
<th>Day's Range:</th>
<th>0.03 - 0.04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open:</td>
<td>0.03</td>
<td>52wk Range:</td>
<td>0.00 - 0.05</td>
</tr>
<tr>
<td>Bid:</td>
<td>N/A</td>
<td>Volume:</td>
<td>240,200</td>
</tr>
<tr>
<td>Ask:</td>
<td>N/A</td>
<td>Avg Vol (3m):</td>
<td>251,860</td>
</tr>
<tr>
<td>1y Target Est:</td>
<td>N/A</td>
<td>Market Cap:</td>
<td>1.33M</td>
</tr>
<tr>
<td>Beta:</td>
<td>2.86</td>
<td>P/E (ttm):</td>
<td>N/A</td>
</tr>
<tr>
<td>Next Earnings Date:</td>
<td>N/A</td>
<td>EPS (ttm):</td>
<td>-0.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Div &amp; Yield:</td>
<td>N/A (N/A)</td>
</tr>
</tbody>
</table>
Computer Science S-75
Building Dynamic Websites

Harvard Summer School
https://www.cs75.net/

Lecture 5: SQL, Continued

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