



Computer Science S-75

Building Dynamic Websites

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

Lecture 5: SQL, Continued

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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

<http://dev.mysql.com/doc/refman/5.5/en/functions.html>

- **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
```

Employees:

Employee_ID	Name
01	Hansen, Ola
02	Svendson, Tove
03	Svendson, Stephen
04	Pettersen, Kari

Orders:

Prod_ID	Product	Employee_ID
234	Printer	01
657	Table	03
865	Chair	03

JOIN

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SELECT Employees.Name, Orders.Product
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Name	Product
Hansen, Ola	Printer
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JOIN

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

Name	Product
Hansen, Ola	Printer
Svendson, Stephen	Table
Svendson, Stephen	Chair

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) . . .

CSV

Rostock Ventures Corp. (ROSV) - OTC BB

0.03 ↓ **0.00 (3.03%)** Jul 13, 3:14PM EDT

Prev Close:	0.03	Day's Range:	0.03 - 0.04
Open:	0.03	52wk Range:	0.00 - 0.05
Bid:	N/A	Volume:	240,200
Ask:	N/A	Avg Vol (3m):	251,860
1y Target Est:	N/A	Market Cap:	1.33M
Beta:	2.86	P/E (ttm):	N/A
Next Earnings Date:	N/A	EPS (ttm):	-0.00
		Div & Yield:	N/A (N/A)



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