

# Computer Science E-75

## Building Dynamic, Scalable Websites

Harvard Extension School  
<http://www.cs75.net/>

### Lecture 6: 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/5.0/en/functions.html>

- `AES_ENCRYPT(key, key_str)`
- `DATE_FORMAT(date, format)`  
[http://dev.mysql.com/doc/refman/5.0/en/date-and-time-functions.html#function\\_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](http://dev.mysql.com/doc/refman/5.0/en/date-and-time-functions.html#function_time-format)
- ...

## JOIN

Employees:

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

Orders:

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

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

Excerpted from [http://www.w3schools.com/sql/sql\\_join.asp](http://www.w3schools.com/sql/sql_join.asp).

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Name	Product
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Adapted from [http://www.w3schools.com/sql/sql\\_join.asp](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;
```

Image from [dev.mysql.com](http://dev.mysql.com).

## Transactions (InnoDB)

```
START TRANSACTION;
UPDATE account SET balance = balance - 1000 WHERE number = 2;
UPDATE account SET balance = balance + 1000 WHERE number = 1;
COMMIT;
```

Excerpted from <http://dev.mysql.com/books/mysqlpress/mysql-tutorialch10.html>.

# 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) History
- 7) . . .

# CSV



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