MySQL

* MySQL is a database system used on the web
* MySQL is a database system that runs on a server
* MySQL uses standard SQL

Advantages of RDBMSs:

* RDBMSs can provide faster access to data than flat files.
* RDBMSs can be easily queried to extract sets of data that fit certain criteria.
* RDBMSs have built-in mechanisms for dealing with concurrent access so that you, as a programmer, don’t have to worry about it.
* RDBMSs provide random access to your data.
* RDBMSs have built-in privilege systems.

Keys

You need to have a way of identifying each specific customer. Names usually aren’t a very good way of doing this. If you have a common name, you probably understand why. Consider Julie Smith from the Customers table, for example. If you open your telephone directory, you may find too many listings of that name to count.

Schemas

The complete set of table designs for a database is called the database schema. It is akin to a blueprint for the database. A schema should show the tables along with their columns, and the primary key of each table and any foreign keys.

Relationships

Foreign keys represent a relationship between data in two tables. For example, the link from Orders to Customers represents a relationship between a row in the Orders table and a row in the Customers table.

Three basic kinds of relationships exist in a relational database.

A one-to-one relationship means that one of each thing is used in the relationship.

For example, if you put addresses in a separate table from Customers, they would have a one-to-one relationship between them. You could have a foreign key from Addresses to Customers or the other way around (both are not required).

In a one-to-many relationship, one row in one table is linked to many rows in another table. In this example, one Customer might place many Orders. In these relationships, the table that contains the many rows has a foreign key to the table with the one row. Here, we put the CustomerID into the Order table to show the relationship.

In a many-to-many relationship, many rows in one table are linked to many rows in another table. For example, if you have two tables, Books and Authors, you might find that one book was written by two coauthors, each of whom had written other books, on their own or possibly with other authors. This type of relationship usually gets a table all to itself, so you might have Books, Authors, and Books\_Authors. This third table would contain only the keys of the other tables as foreign keys in pairs, to show which authors are involved with which books.

Database Queries

* A query is a question or a request.
* We can query a database for specific information and have a record set returned.

Prepared Statement:

* Prepared Statements protect from SQL injection, and are very important for web application security.

Summary of Table Types

You will usually find that your database design ends up consisting of two kinds of tables:

* Simple tables that describe a real-world object.They might also contain keys to other simple objects with which they have a one-to-one or one-to-many relationship. For example, one customer might have many orders, but an order is placed by a single customer.Thus, you put a reference to the customer in the order.
* Linking tables that describe a many-to-many relationship between two real objects such as the relationship between Orders and Books.These tables are often associated with some kind of real-world transaction.