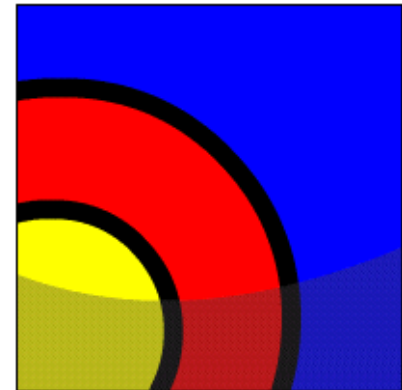


# **Relational Database Technology**

## What Will I Learn?

**In this lesson, you will learn to:**

- Define and give an example of a relational database
- Identify table-key terms, including row, column, field, primary key, foreign key
- Relate the importance of databases to everyday life



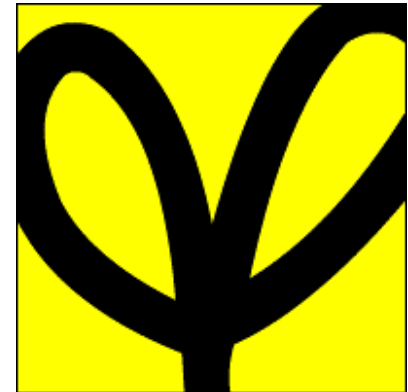


## Why Learn It?

Databases are part of our everyday life even though most of the time we don't even think about them.

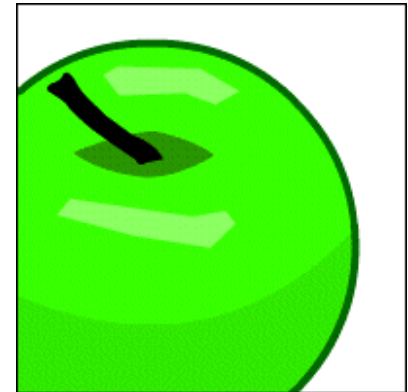
If you've ever made an airline reservation, used an ATM machine, or made a mobile-phone call, you've used a database. In fact, many cities use intelligent traffic guiding system databases to control stoplights. So the next time you're waiting at a red light, it may be a database that is responsible for your delay!

In this lesson, you will learn more about databases and how they're organized and created.



## Tell Me / Show Me

A relational database allows tables to be related by means of a common field. As few as two tables can be considered a relational database if they share a common field. Realistically, databases used in business have many tables, each table sharing a common field with another table. The D\_SONGS table shown is one of several tables in the DJ On Demand database and just one example of the many tables that will be used in this course.





## Tell Me / Show Me

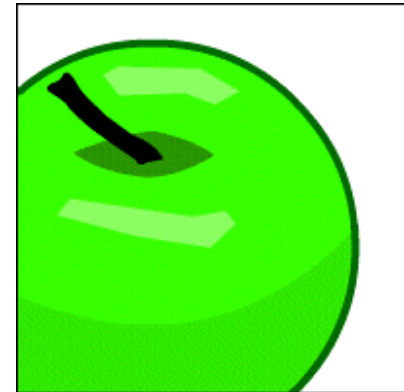
To understand how important databases have become in today's world, consider the following statistics:

- Currently 20% of the world's data resides in RDBMSs.
- In the next two years, databases are expected to grow larger than 100 terabytes. A database this big would be able to store 100,000 copies of the Encyclopedia Britannica or 200,000 hours of music or about 10 billion web pages.
- Some of the top 10 world's largest databases using the Oracle RDBMS are:
  - France Telecom, 29.2TB -- a communications company (a TB is a terabyte equivalent to 1,000 gigabytes)
  - Amazon.com with, 13 TB -- selling books and merchandise
  - The Claria Corporation, 12TB -- Internet behavioral marketing company tracking Internet user behavior

## Tell Me / Show Me

**Let's review the following key terms:**

- table -- basic storage structure
- column -- one kind of data in a table
- primary key -- unique identifier for each row
- foreign key -- column that refers to a primary-key column in another table
- row -- data for one table instance
- field -- the one value found at the intersection of a row and a column



## Tell Me / Show Me

**There are six properties of tables in a relational database:**

Property 1: Entries in columns are single-valued.

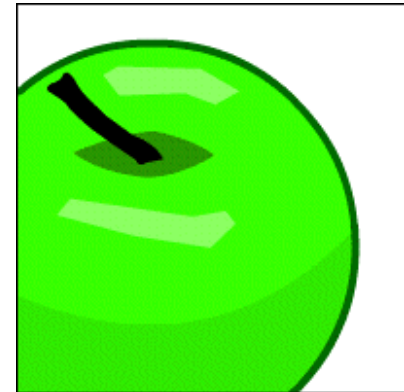
Property 2: Entries in columns are of the same kind.

Property 3: Each row is unique.

Property 4: Sequence of columns is insignificant.

Property 5: Sequence of rows is insignificant.

Property 6: Each column has a unique name.

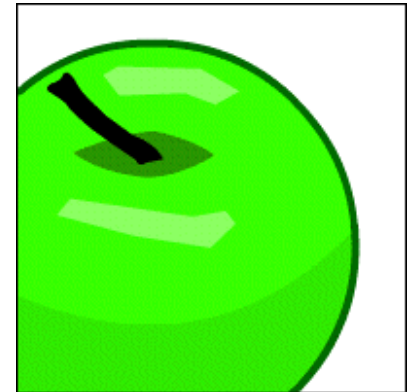


## Tell Me / Show Me

A relational database-management system (RDBMS) organizes data into related rows and columns.

To access the data in a database, you do not need to know where the data is located physically nor do you need to specify an access route to the tables.

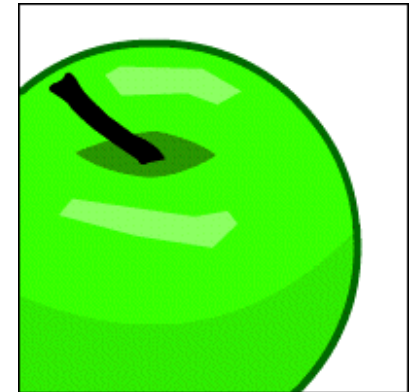
You simply use structured query language (SQL) statements and operators.





## Tell Me / Show Me

Working with the database is very similar to calling up and talking to a friend on the phone. First, you must choose a method to communicate (the phone). Once connected, you ask your friend a question (a query). In response to your question, your friend answers (return of data). Pretty simple, most of us are experts at this.



In this class, our method of communication with the database will be through Oracle Application Express. When you ask a question using SQL, the application will return an answer.

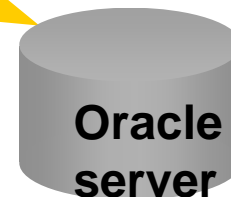
## Tell Me / Show Me

As shown in the diagram, communicating with an RDBMS is accomplished by entering a SQL statement in Oracle Application Express. The request is then sent to the Oracle Server (a database running on a computer), the request is processed and the data returned is displayed. In very large database systems, many users, servers and tables make up the RDBMS.

**SQL statement is entered.**

```
SELECT department_name  
FROM departments;
```

**Statement is sent to the Oracle Server.**



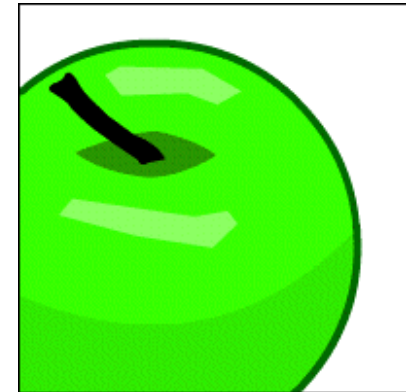
**Data is returned from the Oracle Server.**

DEPARTMENT_NAME
Administration
Marketing
Shipping
IT
Sales
Executive
Accounting
Contracting

# Tell Me / Show Me

## Categories of SQL Statements

SQL statements are grouped into several categories depending on the functions they perform. During this course, you will learn how to use SQL to execute these statements. The data retrieval statement retrieves data from the database using the keyword **SELECT**.



## Data Manipulation Language (DML)

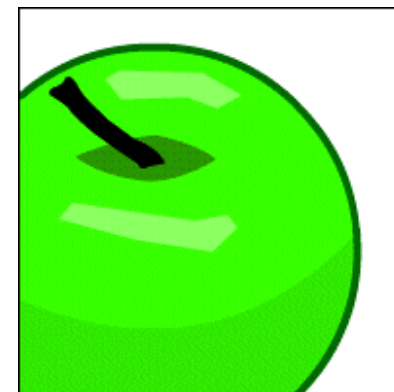
DML statements begin with **INSERT**, **UPDATE**, **DELETE**, or **MERGE** and are used to modify the table data by entering new rows, changing existing rows, or removing existing rows.

## Tell Me / Show Me

### Categories of SQL Statements (continued)

#### Data definition language (DDL)

DDL statements creates, changes, and removes data structures from the database. The keywords CREATE, ALTER, DROP, RENAME, and TRUNCATE begin DDL statements.



#### Transaction control (TCL)

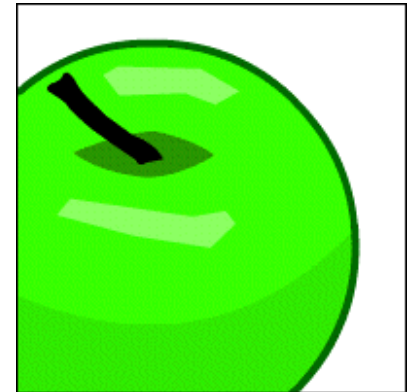
TCL statements are used to manage the changes made by DML statements. Changes to the data are executed using COMMIT, ROLLBACK, and SAVEPOINT. TCL changes can be grouped together into logical transactions.

## Tell Me / Show Me

### Categories of SQL Statements (continued)

#### Data control language (DCL)

DCL keywords GRANT and REVOKE are used to give or remove access rights to the database and the structures within it.



# Tell Me / Show Me

## Terminology

Key terms used in this lesson include:

Data control language (DCL)

Data definition language (DDL)

Data manipulation language (DML)

Field

Foreign key

Primary key

Relational database

Row

Table

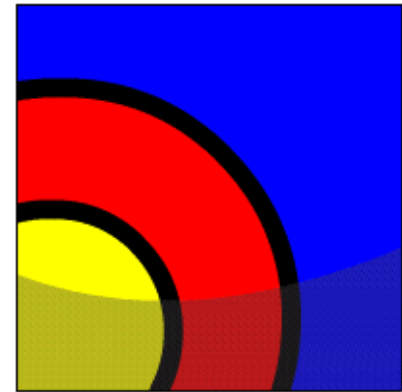
Transaction control (TCL)



## Summary

**In this lesson, you have learned about:**

- The definition of a relational database
- The building bricks of a table: rows, columns, fields, primary keys, foreign keys
- How databases relates to everyday life



# Summary

## Practice Guide

The link for the lesson practice guide can be found in the course outline.

