Database Software

Let's Play ...

Name that Database!

Try to name the databases described on the following slides...

"World's most popular"

Free relational database system (RDBMS) that...

- the "M" in "LAMP" and "XAMP" stacks

- claims to be the world's most popular client-server database

- Created a a Swiss company, sold to Sun Microsystems.

- Now owned by Oracle.

SOLD

MySQL

MySQL - a client-server database

- the "M" in "LAMP" and "XAMP" stacks

- "free" for non-commercial use

- many useful tools:
  - MySQL Administrator (Windows or Linux)
  - MySQL Workbench & Query Browser
  - phpMyAdmin

- Owned by Oracle

- `http://www.mysql.com`

What is "LAMP"? "XAMPP"?

- What does "LAMP stack" mean?

- What does "XAMPP stack" mean?

LAMP

A platform (stack) to create a web server & web apps:

Linux OS

Apache web server

MySQL or MariaDB database

Php, Perl, or Python language to write your apps

XAMPP

Web platform for mult-OS developed by *Apache Friends*.

X cross platform (any OS)

Apache web server

MariaDB database

PHP and

Perl language to write your apps

XAMPP is intended for development and testing, not production use (not very secure).

What database is a clone of MySQL ?

What database is a **fork** of MySQL ?

- based on MySQL source code

- led by the original MySQL creator (Micheal Widenius)

- compatible with MySQL up to version 5.5

- used by Google! (switched from MySQL in 2013)

MariaDB

MariaDB is a fork of MySQL

- led by the original MySQL creator (Micheal Widenius)

- based on MySQL source code!

- slightly *faster* (3-5%) than MySQL

- used by Google! (switched from MySQL in 2013)

- compatible with MySQL up to version 5.5

- `http://www.mariadb.org`

SQL database from Berkeley?

- Originally developed at Berkeley, as "Postgres"

- Open Source, can be used in commercial apps without a licence

- Very stable and reliable

- Has some O-O features

PostgreSQL

- Based on Berkeley Postgres (non-SQL database)

- Now an open-source project, with friendly commercial use license

- Very stable and reliable

- Has some O-O features

- `http://www.postgresql.org`

Small, Light, and Embedded?

- "World's most widely deployed database engine" [Wikipedia]

- Embedded database – no server!

- included on **Android** devices

- written in **C** and very small (about 1MB)

- supports only a subset of SQL commands & datatypes

SQLite

"World's most widely deployed database engine"

- written in C & very small: 350KB binary

- included on Android

- supports only a subset of SQL cmds & datatypes

- used in Django, Ruby on Rails, and Firefox

- "language bindings" for many programming languages

  - http://code.google.com/p/sqlite-jdbc/

  - http://www.xerial.org/trac/Xerial/wiki/SQLiteJDBC

Really fast, pure Java database?

- Lightweight, *fast* database written in Java

- Embedded and client-server modes possible.

- can store database on disk or in memory

- included in OpenOffice, Libre Office, Mathematica

Hypersonic SQL (HSQLDB)

Lightweight, *fast* database written in Java

- database can be stored in memory or on disk.

- embed in your Java app

  - don't need a database server or disk-based database

- can also run in client-server mode & network access

- useful for development and "demo" systems

- `http://hsqldb.org`

(Almost) Correct: H2

H2 - "Hypersonic 2", as successor to HSQLDB

- Started by the original Hypersonic SQL team in 2004

- embedded database written in Java

- a competitor to Hypersonic SQL (HSQLDB)

- the default database in Play! framework

Another lightweight Java database?

- an **Apache project**; formerly "Cloudscape"

- included in Java SDK (JDK) as "Java DB"
  - *located in the JDK "*db*" subdirectory*

- embedded mode and client-server mode

- good support for SQL standard and JPA

- supports transactions and crash recovery

Derby

"Lightweight", pure Java database

- Apache project; formerly named Cloudscape

- only 1 user can connect to a database at a time

- embed in app or run in client-server mode

- good support for SQL standard and JPA

- included in Java JDK (in `jdkxxx/db` directory)

- *not as fast or light as HSQLDB or H2*

- `http://db.apache.org/derby`

Top 3 Commercial Databases?
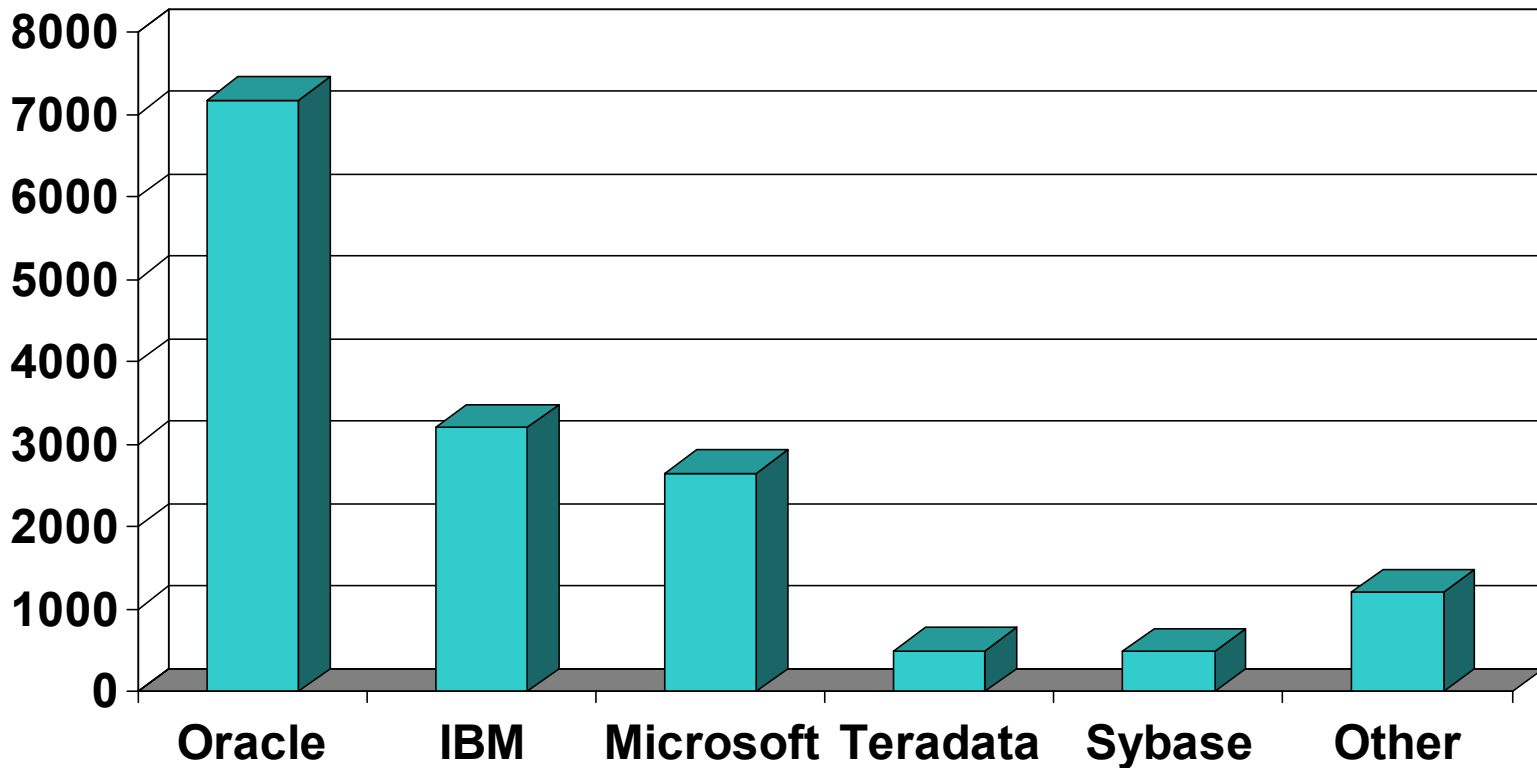
Name these:

_____ database server made by Oracle Corp.

_____ IBM's commercial database

_____ Microsoft's SQL database

Commercial Databases

Databases ranked by 2006 revenue (million US$).

Source: Gartner Research (www.gartner.com)

"Community Edition" Databases

IBM DB2 Express-C - relational DB with XML support

- free edition of IBM DB2
- good documentation and learning tools:

    `http://www.ibm.com/university`

- `http://www.ibm.com/db2/express`

Oracle 11g Express Edition (XE)

- leading market share among commercial databases
- XE is easier to administer than full Oracle
- `http://www.oracle.com`

Ranking by Popularity

http://db-engines.com/en/ranking_trend