

Introduction MySQL

Open Source RDBMS
& SQL Interface

Intro Videos

- 1) Database Intro:
 - Terminology, Objectives, Types, Careers
 - 2) Database/RDBMS/SQL Market Share
Intro to Cloud
 - 3) MySQL/SQL Intro – DB Evolution
 - 4) Select Command Intro
Will Cover Actual Examples in Tutorial.sql Assignment
 - 5) Deprecated SQL IDE Environments
 - We are Using PHPMyAdmin <https://cim.saddleback.edu/pma>
 - WorkBench, PHPMyAdmin, or optional NetBeans SQL Editor
- Tutorial Assignment Separate Viewgraphs

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Database Introduction

Terminologies
Course Goal is to Learn SQL & Familiar RDBMS
Global Perspective: Market Shares & MySQL Growth

Database Outline

- Database Definitions
- Fruit Relational Database Example
- Database Objectives
- Database Privileges

- Database Structures
- Database Careers
- Present Day Multi-tier Server Software Delivery

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Databases

- Database is a Collection of Tables
- Table (2-D Row/Column File)
 - Data Set Organized into Rows & Columns
 - In a specific table all rows share the same columns
 - Table is a Single Row/Column Spreadsheet
 - Relational Database Management System (RDBMS)
 - Tables Have Relationships Within themselves & between others
- Row or record: collection of data going across for an entity
- Column goes down, each field belongs to column defines it
- Field is a specific row column intersection of data

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Two Table RDBMS

- fruitID is Key That Relates Tables

fruitID	Name	Price
1	apple	2.50
2	pear	3.00
4	grpe	.75
5	peach	1.25
8	pluot	4.50
6	plum	1.25
3	banana	1.00

fruitID	quantity
1	100
3	500
2	100
5	10
1	250
2	200

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Database Objectives

- Seek to Organize Large Amounts of Information
- Retrieve Data By Asking Questions "Query"
- Database Programmer
 - Sets up the Query "SQL"
 - Analyst Organizes the Tables
- RDBMS
 - Synchronous Simultaneous User
 - Continuously Update Data

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Database Privileges

- Operating System File Privileges
 - Lock a File When One Application is using It
 - Remember to Save File in Application
- Database Privileges on Steroids
- Lock Not Only a File but Parts of a File
 - These User can Write these Files/Rows
 - These User Can Only Read This Column
- Synchronized DB Access (Multiple User at Once)
 - Lock, Write Record, Unlock,
 - Wait to Read Updated Record

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PHPMyAdmin Privilege Page

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Detailed Privilege Applied to Table Set (aka DB/Schema), Table or just Part of a Table

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Database Structures

- Hierarchy
 - Directory Structure – File system Folders
 - LDAP/Active Directory Services
- Flat: NIS/AWK, Outlook, /etc/passwd
- Can access Flat/Hierarchical w SQL or NoSQL Key Value Pair Redis or Document MongoDB Relational Databases
 - Minimize Repeat Information By:
 - Relating Tables – Usually with a Key
 - Each Row Has a Key(s) For Identifying & Indexing
 - For a DMS to be relational it must satisfy Codd's 12 Rules

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A Typical Relational Schema

Two Tables Related by fruitID

Inventory: fruitID refers to fruit: fruitID

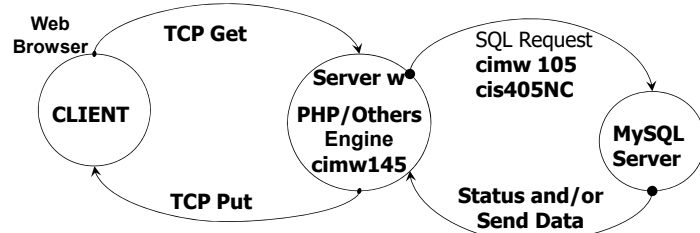
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Database Occupations

- Information Processor/Data Entry
 - Enter Data Into Database
- Data Analyst
 - Specialist in Organizing Data
 - Tables Contents, and Relationships
 - BI Business Intelligence (Analysis Multiple Sources)
- Data Analytics (Modern Day Blurred w Analyst)
 - Analysis of Data to Make Conclusions
- Database Administrator – System Admin
- Modern Day Developer
 - Traditional Coder + UI + SQL (Databases are Everywhere)
 - Web/Mobile Enabled + *Multicores + Multitier Server Structure*

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Simplified Modern Day Application



DHTML ←
 JavaScript(cimw160 or cis460NC) + HTML + CSS (cimw140) ←
 Execute PHP Code + Integrate MySQL Data + Static DHTML

Also Offer:

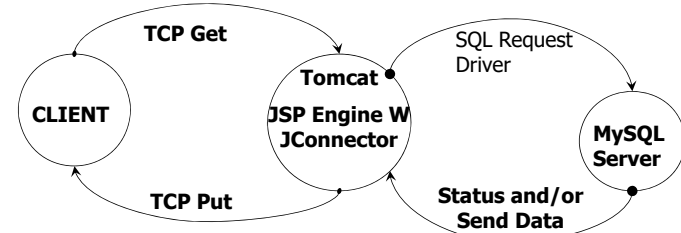
CIMP7A Java, CIMP8A Python, CIMA 288 BI Database Reporting
 Coming Soon Business Database and Data Analytics Certificate 13

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Java Blackboard/eBay/Amazon



DHTML ← JSP + JDBC + MySQL Data

JConnector Java Interface (aka Driver) to MySQL

Same As

DHTML ← PHP + MySQL Library + MySQL Data

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Database Quiz Questions

- ① A Database is a Collection of _____.
- ② A Table is a collection of _____ or _____.
- ③ A Row contains record of data _XXX_.
 A Column definition/datatype of _XXX_.
- ④ RDBMS Stands for?
- ⑤ RDBMS
 - Form _____ among/between Tables
 - Minimize _____ Information.
- ⑥ When You Ask a DB a Question You are?

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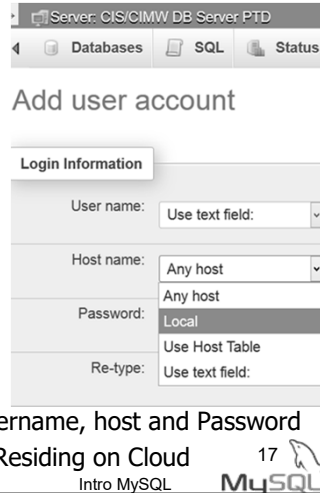
Database Market Share

Cloud Intro
 Site Uses Web Metrics
 Google Trends
 SQL Popularity on Job Sites
 Cloud Has Blurred Revenues

10/20

Cloud

- Cloud is just an *internet* based Service
- Service "solution" = SW + DB + *Virtual data center* (HW) + support
- Flexible pricing/Scalable Service
- Internet is network using IP protocols
- Web Browser uses HTTP to TCP/IP
- Web Server is Internet Computer responds to HTTP
- SQL IP Protocol Authentication Username, host and Password
- Cloud Databases: DB SW Service Residing on Cloud



<https://db-engines.com/en/ranking>

Rank	DBMS			Database Model	Score		
	Sep 2020	Aug 2020	Sep 2019		Sep 2020	Aug 2020	Sep 2019
1.	1.	1.	Oracle	Relational, Multi-model	1369.36	+14.21	+22.71
2.	2.	2.	MySQL	Relational, Multi-model	1264.25	+2.67	-14.83
3.	3.	3.	Microsoft SQL Server	Relational, Multi-model	1062.76	-13.12	-22.30
4.	4.	4.	PostgreSQL	Relational, Multi-model	542.29	+5.52	+60.04
5.	5.	5.	MongoDB	Document, Multi-model	446.48	+2.92	+36.42
6.	6.	6.	IBM Db2	Relational, Multi-model	161.24	-1.21	-10.32
7.	7.	↑8.	Redis	Key-value, Multi-model	151.86	-1.02	+9.95
8.	8.	↓7.	Elasticsearch	Search engine, Multi-model	150.50	-1.82	+1.23
9.	9.	↑11.	SQLite	Relational	126.68	-0.14	+3.31
10.	↑11.	10.	Cassandra	Wide column	119.18	-0.66	-4.22
11.	↓10.	↓9.	Microsoft Access	Relational	118.45	-1.41	-14.26
12.	12.	↑13.	MariaDB	Relational, Multi-model	91.61	+0.69	+5.54
13.	13.	↓12.	Splunk	Search engine	87.90	-2.01	+0.89
14.	14.	↑15.	Teradata	Relational, Multi-model	76.39	-0.39	-0.57
15.	15.	↓14.	Hive	Relational	71.17	-4.12	-11.93
16.	16.	↑18.	Amazon DynamoDB	Multi-model	66.18	+1.43	+8.36
17.	17.	↑25.	Microsoft Azure SQL Database	Relational, Multi-model	60.45	+3.60	+32.91
18.	18.	↑19.	SAP Adaptive Server	Relational	54.01	+0.05	-2.09
19.	19.	↑21.	SAP HANA	Relational, Multi-model	52.86	-0.26	-2.53

Rankings based on various Web Metrics

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Top 10

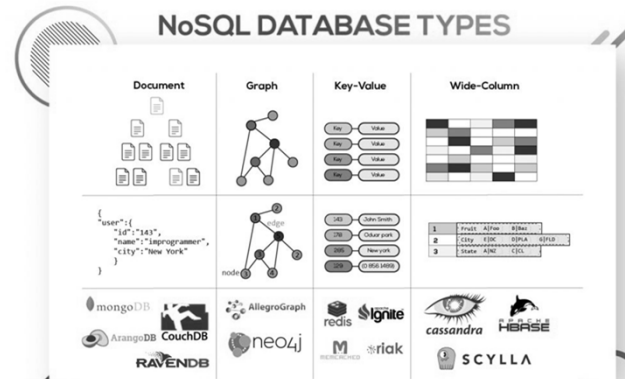
Rank	Database	
1-4	Oracle, MySQL, Microsoft SQL Server, PostgreSQL (v 12)	Relational
5	Mongo	Document, No Table Joins
6	IBM DB2	Relational
7	Redis	Remote Dictionary Server; Key-Value Matching Database Caching SW
8	Elastic Search	Big Data Petabyte Data Search
9	SQL Lite	Mobile Based Application requiring Relational DB
10	Apache Cassandra	Big Data Wide Column Search (CQL like SQL)

SQL Structure Query Language
 Communication language to interface to Relational Data
 Cassandra is using SQL like language CQL

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NoSQL Database Types



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Technology/SW Company Revenues

- 12 Month Trailing SW Revenues 8/7/2020
- Top 5 SW Companies w IBM

Company	Revenue	
Microsoft	\$143B/\$44B	
IBM	\$79B	Not SW Group
Oracle	\$39B/\$10B	Relational DB
SAP	\$31B/\$5B	Relational DB
Salesforce CRM	\$18B/-0.2B	Relational DB
Adobe	\$12B	Creative Cloud

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RDBMS Revenue Market Share

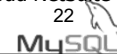
- <http://www.gartner.com/it/page.jsp?id=507466>
- http://www.informationweek.com/news/software/info_management/207402230
- <https://www.techrepublic.com/article/microsoft-oracle-aws-are-the-top-database-leaders-according-to-gartner/>

	2010	07	
Oracle	48.1%	44.1%	Effectively Added PeopleSoft, (07Siebel) and Sun MySQL
IBM	22%	21.3%	DB2, Open Source Option
MSFT	10%	11.2%	SQL Server, Access
Others	20%	23.4%	Teradata 1B; SAP

- As 2020, Cloud has Blurred Database Revenues
 - MySQL + Oracle Keeps Oracle on Top, but Oracle losing Market Share
 - Oracle Step Behind on Cloud, Offer on Oracle/MySQL on Cloud NetSuite
 - Gartner Group 75% of all Database moving to cloud

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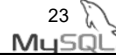
Four Horseman 90s



- First Decade 21st Only ORCL Performed
- Didn't define horseman for 2010-2020, usually appl, goog, and amzn

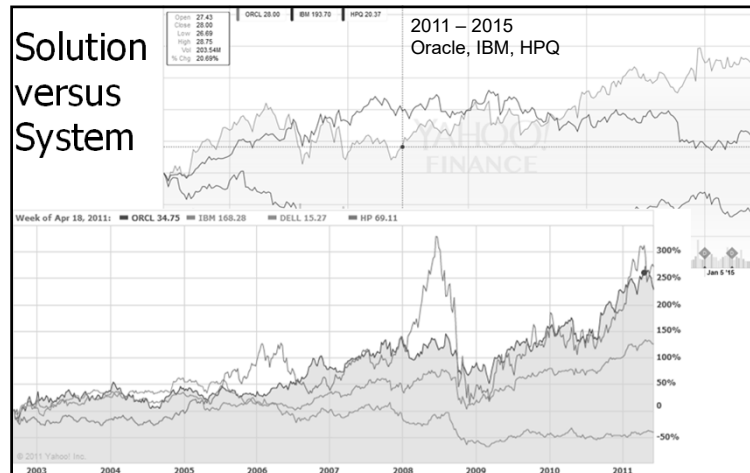
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Solution versus System



- Dell is also getting hit PC versus Intelligent Device
 - In 2013 Dell Became a Private Company

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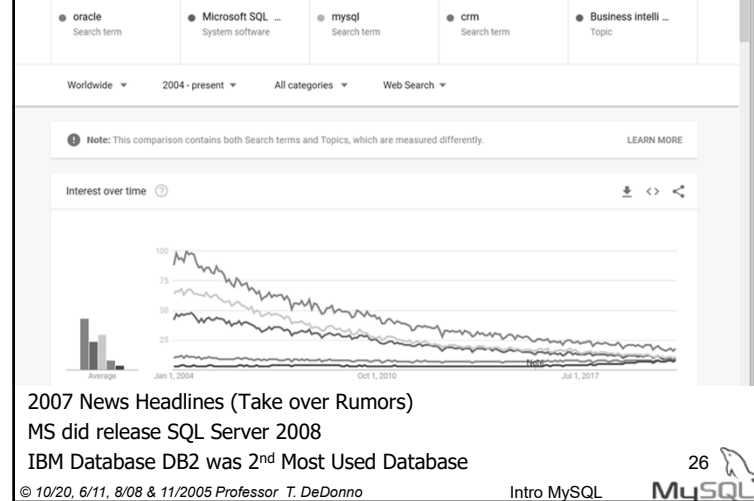
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Stock Performance Last 5 Years

- ORCL slipped last 5 yrs, Cloud Solution
- MSFT slow to cloud, last 5 years reversed
- CRM capitalizing on BI - Tableau



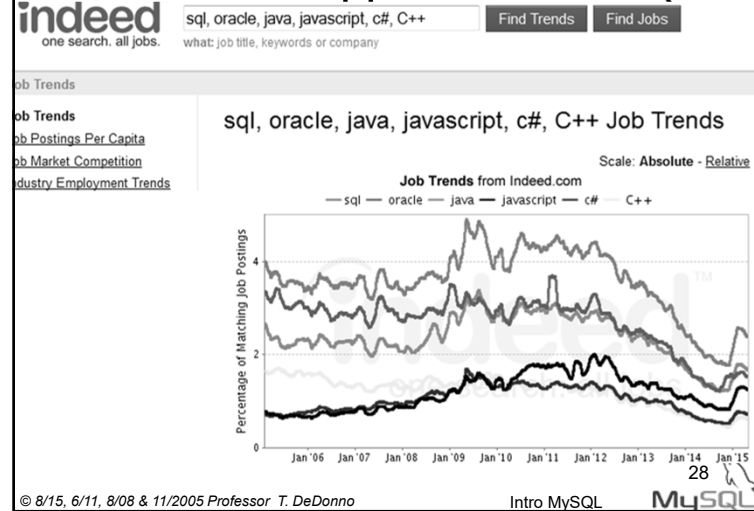
Google Trends



Google Trends Last 5 Years



Indeed.com dropped Trends :~(



Dice.com (8/08 or 3/06 probably last 60 days)

Keyword	9/20	6/11 all Days	8/08 Last 60 Days	3/15/06 Last 60 Days
SQL	13,260	23,815	23,249	
Oracle	12,120	17,914	18,900	DB Admin + SW/SQL
Java	12,199	16,335	15,349	14,617
SQL Server	954	13,534	13,421	
C++/C#	6369/3833	5959/7865	7,837	7,682
JavaScript	8711	9689	6,595	3,730
Perl/Python	1233/8812	5150/2738	5,367	4348
VB	160	2841	3,841	
DB2	62	2465	2,738	
PHP	949	3169	2,536	Growth 976
MySQL	2617	3268	2,415	Hotjobs.com is not
ActionScript	7	459	748	163
Ruby	1729	1676	787	133 29

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Indeed.com (has more)

	9/8/2020 (all jobs)	6/10/2011
Total (last 7 Days)		982,575
SQL	55K	151,133
Oracle/"SQL Server"/MySQL	1629/15k/10k	109K/54K/21K
Java	48K	100,274
C#/C++	22K/29K	48,647/59,231
XML/JavaScript/CSS	11K/40K/21K	58K/55K/40K
ASP/PHP/JSP	11K/7K/2K	33K/23K/16.5K
Python/Perl/VB	55K/10K/3K	21K/37K/17K
ActionScript/PLSQL/JSON	113/368/8K	5K/1K/6K
NoSQL/MongoDB/Cassandra	9K/5.5K/3K	

Google is using Python; Adroid supports ActionScript
Five Year Analysis

SQL/Java always at Top

C#/C++ Second Tier

Web Growing Fast XML/JS/CSS, ASP/PHP/JSP, ActionScript

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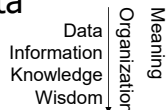


Database is Hot to Stay SQL/RDBMS Standard

- More and More Data –Era of Big Data

- Data is Worthless Unless Organized

- Better Search Engines
- CloudSearch – Enterprise Search
- Era of Big Data (Disk Space) – Elastic Search
- Information → Knowledge BI Business Intelligence
- Window8.0 Search/Google Desktop Search
 - Beagle (Bleeding Edge Search Tool)
- Implement SQL on Desktop
 - Original LongHorn/Vista Objective
- Database Seeks Organize Data



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Summary

- Oracle/MySQL/SQL Server/NoSQL/IBM DB2
- Relational Databases are the biggest
 - SQL is the Language for RDB
- NoSQL is Popular
 - Document Only, Key-Value Redis, Wide Column
- BI is Growing (Tableau/CRM)
- All Databases are Moving to Cloud
- SQL is Definitely a Critical Skill

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MySQL/SQL Introduction

SQL Definitions
DB Evolution Complete Cycle
MySQL Key Points & Popularity

SQL: Structured Query Language

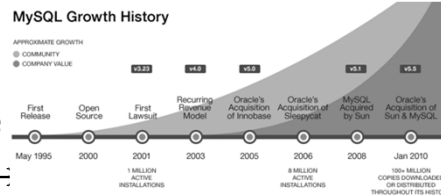
- Session Layer Protocol for Relation Database Access
 - Make Connection: Then Maintain Connection Entire Session
- 1970 IBM Developed Sequel
 - 1980 SQL (Called Sequel or "ESS CUE EL")
- Oracle (Former IBM Employees) Emphasized SQL
- Has Become a De facto RDBMS Standard
- 90s, PL/SQL (Procedure Language)
 - Oracle Developed Procedural Extension Language for SQL
 - PHP/MySQL, or Oracle DB: Java, SQL & PLSQL

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MySQL History



- MySQL Open Source
 - Wikipedia is a PHP/MySQL System :-
- Sun Buys MySQL \$1B 1/2008; 11 Million Installations
- IBM Considered \$6B Offer for Sun (Datacenter)
 - Would have Been a Lot of Duplication of Effort
- 4/20/2009 Oracle Buys Sun for \$7.4B
 - Enterprise Solution: HW, SW, DB & Support
 - Enhanced Oracle Stack: PLSQL, Java (Sun Java), SQL
 - Entry Level DB MySQL

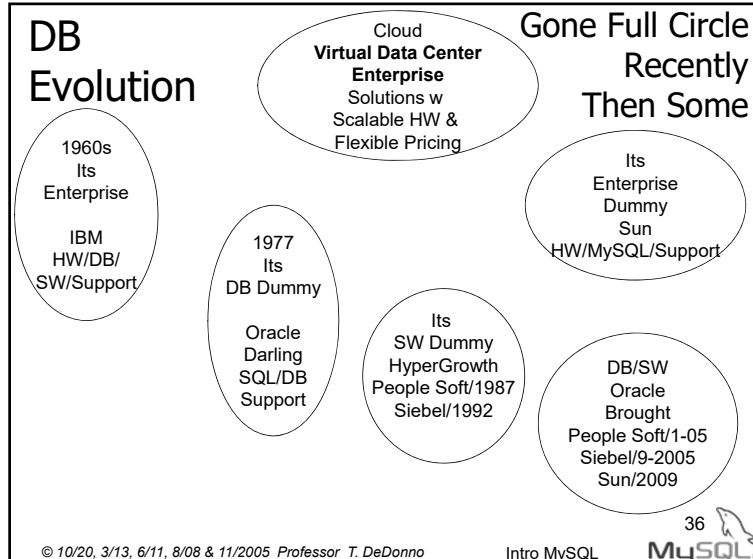
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DB Evolution



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Oracle MySQL Plans

- Feb 2011 Targeting MS SQL Server
- Oracle – Microsoft Long Competitive History
 - 1995 Oracle Released Thin Network Client
 - Failed Sub \$500 PC
 - Windows Vista Alpha “longhorn” had RDMBS
 - Attempts to Streamline Oracle DB Failed
- Oracle Open Source & Supported Version
 - <http://mysql.com/products/>
 - Strong Java Integration
- Worried About Oracle Pricing
MariaDB Compatible Replacement MySQL 5.5 Fork

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MySQL.com Key Points

- Open Source RDMS With Full SQL Implementation
- Web Hosting Sites Usually Provide 1 MySQL DB
- Interfaces to PHP, Perl, C++, Python, Java;
- Supports PLSQL (Procedural Language)
- The Open Source Database
 - 65,000 Downloads Per Day
 - <https://enlyft.com/tech/pro>

Rank			DBMS
Sep 2020	Aug 2020	Sep 2019	
1.	1.	1.	Oracle +
2.	2.	2.	MySQL +
3.	3.	3.	Microsoft SQL Server +
4.	4.	4.	PostgreSQL +

- Previous Video
Web Metrics
2nd Place

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Stack Solutions based on MySQL

- 2000 LAMP Stack - Linux Apache MySQL PHP
 - Open Source SW Stack for Developing Web Applications
 - Why LAMP? PHP3,4 Most Used Server-Side Scripting Language
 - Fun to Use – Rock n Roll is only 3 Notes
- LAMP Applications
 - Joomla, WordPress, Drupal, Google (non Search)
 - Wikipedia, Facebook – Front end
 - Facebook, PHP not Well Suited for Large System
- 2007 MySQL 5.0, PHP 5.0 & PHP Collaboration
 - Push into Large System
 - DB2 & Oracle Large Systems Standards (eBay uses Oracle)
- 2013 MariaDB plugin alternative Oracle/MySQL
 - CIM which uses Suse 15.1 is Linux Apache MariaDB PHP7.x Stack
- 2017 Cloud Data Centers/Enterprise Solution
Full Open Source Support: MySQL, MariaDB, PostGRESQL

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MySQL Quiz Summary

- 1 SQL Stands For?
- 2 MySQL supplies both a _____ and SQL Language Interface
- 3 Oracle SW Development Stack?
- 4 LAMP SW Development Stack?
- 5 If You Learn MySQL commands you also know DB2, Oracle and SQL Server?
- 6 Oracle 2010 purchase of Sun/MySQL wise, But What about 2020 ?

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Select Commands Intro

Introduce Select

Select DisplaySomething;

Select DisplaySomething from Table;

Select DisplaySomething from Table where
conditionalIsTrue;

SQL Syntax

- All SQL Commands End with a ; Semicolon
 - Systems will automatically add ; to last command
- # Begins Comment to End of Line
in Viewgraphs #AssignAbbrevNumber assignment identification
-- double dash is also begin end of line comment in SQL
- Comments and Blank Lines increase Readability
- Tables and User Names are Case Sensitive
 - Can have Letter, Underscore or Numbers, Use Letter First
 - Select * from fruit; not select * from FruIt;

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Select Display Expression from tableRef

- Select expression[, expression]
[from table];
[Square Brackets Imply Optional

Expression	Comment/Command	Output*
String	--output hello Select "hello";	hello
Arithmetic	--output sum of 3 + 5 Select 3+5;	8
*	--Display all rows for table:fruit Select * from fruit;	1 Apple 2.50 2 Pear 3.00
Field Name	--# for table:fruit display only name, and price Select name, price from fruit;	Apple 2.50 Pear 3.00

* Not Displaying Column Headers on Outut

- Need to Learn Select; Others Use IDE as Crutch

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Where Conditional

- Select expression [from table
[where conditional_is_true]] ;

Select name from fruit where price = 3.0	pear
Select name from fruit where price < 3.0	apple
Select name from fruit where price > 3.0	Empty Set
Select name from fruit where price >= 3.0	pear
Select name from fruit where price != 3.0;	apple

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SQL New Skill Summary

- 1) Semicolon ; is statement Terminator
 - Systems will insert ; on last line
- 2) In viewgraphs Assignments use #Identifier
- 3) Blank Lines & Comments Increase Readability
- 4) Table Names are Case Sensitive
- 5) Select UsedToDisplaySomething;
- 6) Select Display from TableName;
- 7) Select Display from TableName where ConditionalIsTrue⁴⁵

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SQL IDEs

- Outline
- General IDE Requirements
- Specific SQL IDE Requirements
- Applications

SQL IDE Keypoints

- Improved a Lot in Recent Years
- Many Applications have SQL/RDB Integration

Outline

- General IDE/RAD Tool Requirements
- Specific SQL Requirements
- SQL Editor Genres
- IDEs That Meet Requirements
- tutorial.sql Assignment Tool Choice

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General IDE Requirements

- IDE – Integrated Developers Environment
 - One Stop Debugging/Editing/Execution
 - Streamline-Shorten Development Cycle
- RAD – Rapid Application Development
 - Complete Commands @ Higher Level Abstraction
- Real time Syntax Checking
- Ctrl^Space Universal Code Completion
- Drag/Drop, Click & Right Click Short-Cuts

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Specific SQL IDE Requirements

- 1) Query Editor – Ask DB a Question
- 2) Data Manipulation
 - Insert Update or Delete Table Contents, Alter Structure
- 3) Administration
 - Add Users, Export/import Data, Start Stop server

Ancillary

- 4) Data Modeling
- 5) Programmers Interface
- 6) Report Generation

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Ancillary SQL IDE Requirements

4) Data Modeling

- Determine Database Schema
- DB has These tables with these fields
- These keys form relationships



5) Programmers Interface

- Integrate & Get Queries for Java/C/PHP etc.
- PL SQL – Procedure Language SQL
- Execute SQL Scripts as in Batch
 - Class Lists → Questionnaire/SQL Accounts

6) Reports – use this table inside a sales report

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CIMW105 SQL Tools

- Command Line client
 - Ships w MySQL Server
 - Universal Batch Command (class list → CIM/MySQL)
- MySQL Work Bench
 - Disadvantage Port 3306 is Almost Always closed
 - Three Tools: SQL Editor, Model-Design, Administrator
- PHPMyAdmin Web-Based Standard
 - Alternate but Linux Only webmin
- Programming Environments
 - Netbeans SQL Editor Well Integrate; Eclipse More Popular
- Reports: Open Office/Libre Office, Jasper Reports

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CIMW105 Tool Comparison (0..5)

	Query	Data Manipulation	Administration	Modeling	Interface Java-PHP/PLSQL/Script File	Reports
Workbench Local	3	3	4	4	0,0,3	0
PhpMyAdmin Web-Based	4	5	4	3 Designer	4,0,0	1 Export fmt
NetBeans Local	3.5	4	1	1	3,3,3 Add PLSQL Plugin	3 add I-Reports Plugin

WorkBench only works locally, no one opens port 3306, real time syntax checking
 phpMyAdmin defacto Web Standard – Universal, But Not Good w Script Files
 Netbeans well integrated IDE, Real time Syntax Checking, Auto Completion
 PLSQL requires NetBeans Add-on or JDeveloper – Oracle NetBeans
 MySQL Client is not an IDE, its part of the IDE

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tutorial.sql Tool Choice

MySQL Client	MySQL WorkBench
Part of MySQL Server	Separate Installation I don't debug failed Installations
Putty – Secure Terminal Connection	Install MySQL Locally
Familiarity with Command Line Interface	GUI Interface
Running submit from command line Superior Error Reports	Submit tutorial.sql on Web

Can Do Both, but only Hand in tutorial.sql using PHPMyAdmin
 Deprecated Paths Putty/WorkBench create different tutorial.sql
 Later on **PHPMyAdmin** Assignment, Well Recommended Tool
 Casino.sql Assignments will Demo Netbeans

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Mysql Command Line Interface

- `mysql [-h hostname] -u username -p [DBUsername]`
 - `mysql -h cim.saddleback.edu`
 - Square Brackets are always Optional
 - For -h port 3306 Must be Open on Server
 - `mysql -u SBUsername -p`
 - Start MySQL with SBUsername, followed by Password Prompt
 - Note You don't want to have Passwords on Command Line
 - `[DBsusername]`
 - Can Optionally Specify DB at Command line;
 - Mysql Prompt > use DBsusername;

- `mysql -u username -ppassword -e "source xyz.sql"`

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MySQL Client Command Line Editing

- Up Arrow Back a Command
- Edit Command using
 - ← → Arrow
 - delete, backspace, and insert key
- Hit Enter to enter the Command "Remember ;"
- ? At MySQL Prompt for Help
- Sending mySQL output to screen and File
 - `tee outputFile; #echo screen to File`
 - `notee # turns off Tee`

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Other Editors to Consider

- Mac X-Code (SQL Plug-in)
- vi (linux/Mac), gvim (pc)
 - Vi has automatic SQL syntax highlighting
 - Works Anywhere (Edit Fast)
 - But Another Learning Curve
 - NetBeans has a VI plugin
- Notepad++
- Sublime – has gotten popular in recent years
- textpad with a sql Syntax Definition

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TextPad/Sublime Adding Plug-in

- Get oracle sql add-on
- Extract sql.syn c:\program files\textPad 5\system
- Inside Text Pad
 - click on Configure, New Document Class
- call it SQL, click next
- type *.sql, click next
- check "enable syntax highlighting"
- choose sql.syn from the drop down box
- click next then finish
- restart TextPad

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Deprecated Ranking by DB/SW Revenue

Unable to Get Current Data Blurred by Cloud

- <http://www.softwaretop100.org/list.php?page=1>
- Top 4 Are All RDBMS Oriented
- 2006 SW/DB Revenue = \$140B/\$17.1B = 12%

Company	SW-10 Revenue-Growth	SW-09 Revenue Growth	SW -07 Revenue Growth	06 Total Revenue	DB 06 Revenue	06 % DB Revenue
Microsoft	\$49B -1%	\$49B 10%	\$37B 08%	\$45B	\$2.6B	82%
IBM	\$21.4B -3%	\$22B 11%	\$18B 08%	\$91B	\$3.2B	20%
Oracle	\$18.5 6%	\$17B 17%	\$13B 34%	\$16B	\$7.2B	79%
SAP	\$11.3 -2%	\$11B 08%	\$09B 24%	\$12B		0%

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Deprecated Certcities.com Hot Certificates – not have 07-2010

	2006	2005	2004	2003	2002
1	RHCE	CCIE Internetwork Expert	MCSE: Security	CCIE	MCSA
2	MS SQL .net	MCSE: Security	Tie Security+, CCIE	Security+	Oracle: DBA
3	MS Certified Architect	RHCE – Redhat Certified Eng.		RHCE	CCNA Cisco
4	CCSP & PMP	Cisco Certified Security Pro.	CCNP	CCNP	CCNP
5		CCNP Cisco C Net Pro.	RHCE	Certified Info. Sys. Security Pro. CISSP	MCDBA
6	Cisco Inter- network Expert	Linux Pro. Institute	MCDST MS Desktop Support	Checkpoint Certified Security Admin	RHCE
7	CCNP	Novell Linux	CISSP, MCSE, MS Exchange	Linux+ CompTIA	Network+
8	MSCE: Sec	MySQL		MCSA Microsoft Cert Sy Ad.	Citrix Cert. Ad.
9	SSCP System Security	Security+	MCDBA MS DB Admin.	Sun Solaris SA	Java Pro
10	Linux Pro	PMP	PMP	MCDMA, Citrix Enterprise	CISSP

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Deprecated Amazon Book Momentum

Search	Total Books 9/20/ 6-11/08/06	After 6/09
Oracle Database	2K	
Oracle	8.8K/12K/2k	1.5K
SAS	4.6K/6K/2K	561
SAP	3.2K/7K/1K	653
SQL Server	4K/5K/5.6K/1K	"SQL Server" drop off
DB2	744/208K/4K/.4K	Not Accurate
MySQL	2K/1.6K/3K/.3	361 – 22%
MariaDB	2K	

- Momentum Key: >20% Hot Sun Rising
15% Mid Day

<10% "Cooling Off Sun Setting – less being Published"
MySQL has 22%?

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