

Oracle SQL*plus

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Overview

- ◆ SQL: Structured Query Language, pronounced S. Q. L. or sequel.
- ◆ A standard language for relational, object-relational databases: SQL-86 by ANSI, SQL1 by ISO (87), SQL-89, SQL2 (92), SQL-1999. Web site: www.ansi.org
- ◆ Implemented by all commercial R/OR DBMSs: Oracle, Sybase, Ingres, Informix, DB2, SQL Server, ... (with various degree of conformity)
- ◆ We focus on SQL2 & SQL-1999 features and also Oracle SQL.

Components of SQL

- ◆ Have statements for
 - ▲ Schema definition & update
 - ✦ tables, indexes, views, ...
 - ▲ Data Manipulation
 - ✦ query, insertion, deletion, update, ...
 - ▲ Data integrity
 - ✦ constraints, ...
 - ▲ System administration
 - ✦ users, data security, performance tuning, ...
 - ▲ Application development
 - ✦ procedures, transaction, embedded SQL, ...
 - ▲ ...

SQL: A Simple Example

- ◆ Create a Students table

```
create table Students (  
  SSN char(9) not null,  
  Name varchar2(20),  
  GPA number(3,2),  
  Age number(2),  
  primary key (SSN));
```
- ◆ Insert a Student tuple

```
insert into Students  
values (312334455, 'John Smith', 3.25, 29);
```

SQL: A Simple Example (cont.)

- ◆ Retrieve names of students whose GPA is higher than 3.0 and Age is less than 30.

```
select Name  
from Students  
where GPA > 3.0 and Age < 30;
```

- ☛ What data types are supported?
- ☛ What constraints can be expressed? How?
- ☛ What if I want to change the schema?
- ☛ How to change data?
- ☛ How to express more complex queries?

Outline

- ◆ Oracle SQL interface: sqlplus
- ◆ SQL DDL
- ◆ Interactive SQL queries, update, view
- ◆ PL/SQL for procedures, constraints, triggers
- ◆ Embedded SQL (Oracle Pro*C/C++, JDBC)
- ☛ Oracle SQL ≠ Standard SQL
- ☛ Oracle manual: Oracle SQL Reference Manual (on-line).

Oracle DBMS

- ◆ A major commercial DBMS from Oracle (Object-Relational), supporting SQL.
- ◆ Components: Oracle server, SQL*Plus, Precompilers (Pro*C/C++, ...), JDBC driver, SQLJ, WebDB, Forms, Report, ...
- ◆ Platforms: Client-server, PC, Unix or Windows, Distributed, Parallel, ...
- ◆ Multiuser, Security, Transactions, Recovery,
- ◆ We use it for course project and homework assignments.

Oracle SQL*Plus

- ◆ Interactive user environment.
 - ▲ Runs SQL statements, PL/SQL statements, and other SQL*Plus commands
 - ▲ Allow simple command editing
- ◆ Documentation:
 - ▲ On-line "help" command within sqlplus
 - ▲ On-line manual.
- ◆ User login: Unix\$`sqlplus userid/pwd@cs`
SQL> exit

Use SQL*Plus to Run SQL

- ◆ SQL*plus understands only Oracle SQL.
- ◆ An SQL statement must end with *semicolon ;* a *slash / on a line by itself*, or a *blank line*.
- ◆ An SQL statement can be typed in, or loaded from a .sql file (*get* filename).
- ◆ An SQL can be executed from the command buffer (*run*), or from a .sql file (*@filename*)
- ◆ SQL statement in buffer can be written to a .sql file (*save* filename)

Common SQL*Plus Commands

- ◆ Display schema: *describe* table_name
- ◆ Run Unix commands: *!command*
- ◆ Run editor on .sql file: *edit* filename
 - ▲ Set host editor: *define_editor=vi*
- ◆ Save a journal file: *spool* filename
spool off
- ◆ Customize environment: *set* option
 - ▲ Options: *echo on*, *pause on*, *pagesize 30*, ...
 - ▲ View current settings: *show all*
 - ▲ Configuration file: *login.sql*

SQL*Plus Command Editing

- ◆ Show command in buffer: *list*
- ◆ A set of simple line editing commands.
- ◆ Better use external editor, say, vi or emacs.