SQL in Oracle

CS157A

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Oct. 24, 2005.

Outline

- Executing Commands in SQL*PLUS
- Formatting Query Results
- Dropping and Creating tables
- Alter table

Introduction

- Today's lecture revisits some of the stuff we just learned in ElMasri and Navathe about SQL standard.

- Today though we will be concerned with the specific syntax used by Oracle.

Example Database from Oracle 9i book

- Book's grade book schema consists of:

  CATALOG(CNO, TITLE)

  STUDENTS(SID, FNAME, LNAME, MINIT)

  COURSES(TERM, LINENO, A, B, C, D)

  COMPONENTS(TERM, LINENO, COMPNAME, MAXPOINTS, WEIGHT)

  ENROLLS(SID, TERM, LINENO)

  SCORES(SID, TERM, LINENO, COMPNAME, POINTS)

Executing Commands in SQL*PLUS

- At the SQL> prompt there are three kinds of commands which can be entered:
  - SQL statements, to access the database
  - PL/SQL blocks, also to access the database
  - SQL*PLUS commands, for editing and storing SQL statements and PL/SQL blocks, setting options, and formatting query results.

More on Commands

- We went over SQL*PLUS commands on Oct 19, when we talked about connecting to Oracle.

- Some loose ends we did not discuss:
  - If type a SQL line without a ; or a / and hit <return> one gets a prompt for a second line. i.e.,

    SQL> select pno, pname, price <return>

    2   from parts /

  - The / will cause the command to execute.
  - Besides SQL and PL/SQL commands, there are SQL*PLUS commands. These must all be on one line. If you need to extend such a command beyond one line use - .

    SQL> column price format -
    > $99.99 heading "SALE PRICE"

Formatting Query Results

- **column** is a basic formatting command.
- Its syntax is:

  column <column-name> heading <column-heading>
  format <format-model>

- Some examples:

  column sid heading "Student ID" format 99999
  --output is a 5 digit number--
  column lname heading "Last Name" format A15
  --output is a 15 characters--
  column price format $9,99.99

Formatting and reports

- To generate a report one might group together several formatting commands.
- In addition, one can further organize the results output using:

  break - creates a subset of rows in the results each of which corresponds to a given value for the sort column

  skip -- skips a line after the end of a break subset

  compute -- generate a summary for a given subset

  clear -- get rid of a columns, break, or computes command

  ttitle and btitle -- used to put titles at the top of a report

Example Report

```
spool report.dat
clear columns
clear breaks
clear computes
set headsep ! --character to use to split lines--
ttitle 'StudentReport!Fall1996!Csc226'
btitle 'Report from R.Sunderram's book'
column sid heading 'SID' format a5 word_wrapped
column lname heading 'Last Name' format a12 word_wrapped
column fname heading 'First Name' format a10 word_wrapped
column compname heading 'Component' -
     format a10 word_wrapped
column points heading 'Points' format 9990
break on sid skip 2 on lname on fname
compute sum of points on sid
set linesize 79
set pagesize 50
set neqpage 0
select E.SID, S.lname, S.fname, C.compname, T.points from enroll E, students S, component
     C, scores T where S.sid =T. sid and S.sid = E.sid and E.term=C.term and E.lineno =
     C.lineno and E.term = T.term and E.lineno = T.lineno and C.compname = T.compname
     and E.term ='F96' and E.lineno =1031;
spool off
```

Drop table

- Two basic ways to drop tables in Oracle are:

    drop table <table_name>;

    drop table <table_name> cascade constraints;

- If there are any foreign key constraints the first one will fail; on the other hand, the second one will succeed.

Create Table in Oracle

drop table components cascade constraints;

create table components (

    term varchar2(10), --varchar2 database charset--

    lineno number(4) check (lineno >=1000)

    compname varchar2(15),

    maxpoints number(4) not null check (maxpoints >=0),

    weight number(2) check(weight >= 0),

    primary key (term, lineno, compname),

    foreign key (term, lineno) references, courses);

Constraints in Oracle

- Can be given an optional name:

  maxpoints number(4) constraint maxptconstraint not null
    check(maxpoints >=0)

- Besides the constraints from previous slide can also use the unique constraints for secondary keys:

  ctitle varchar2(50) unique

- maxpoints example above is a column level constraint. One can also have table wide constraints (usually primary key, foreign key, secondary key constraints). These are listed after all the columns. These are allowed to have the optional tag: on delete cascade.

Alter table

- Some alter table in examples for Oracle:

```
alter table customers add(
    fax char(12),
    ctype char check(ctype in ('I', 'B'))
);


alter table customers modify(
    street varchar2(50)
);
```