第六章

第六章 SQL 执行计划

6.1 解释计划

6.1.1 使用解释计划

eg:

```
explain plan for
select e.last_name ||', '||e.first_name as full_name,
e.phone_number, e.email, e.department_id,
d.department_name, c.country_name, l.city, l.state_province, r.region_name
from hr.employees e, hr.departments d, hr.countries c, hr.locations l, hr.regions r
where e.department_id = d.department_id
    and d.location_id = l.location_id
    and l.country_id = c.country_id
    and c.region_id = r.region_id;
select * from table(dbms_xplan.display);
set autotrace traceonly explain
1
/
```

eg:

```
desc plan_table
select id, parent_id, lpad(' ',level) || operation || ' ' || options || ' ' ||
object_name as operation
from plan_table
start with id = 0
connect by prior id = parent_id;
```

eg: 按照执行顺序显示的计划运算

```
select id, parent_id, operation
from (
select level lvl, id, parent_id, lpad(' ',level) || operation || ' ' || options
    || ' ' || object_name as operation
from plan_table
start with id = 0
connect by prior id = parent_id
)
order by lvl desc, id;
```

eg: 获取最近执行的SQL语句的V$SQL 查询

```
select /* recentsql */ sql_id, child_number, hash_value, address, executions, sql_text
from v$sql
where parsing_user_id = (select user_id
    from all_users
    where username = 'SCOTT')
and command_type in (2,3,6,7,189)
and upper(sql_text) not like upper('%recentsql%')
/
```

6.2.2 查看相关执行计划

eg: 使用dbms_xplan.display_cursor函数

```
select /*+ gather_plan_statistics */ empno, ename from scott.emp where ename = 'KING';
set serveroutput off
select * from t able(dbms_xplan.display_cursor(null,null,'ALLSTAT LAST'));
```

eg: 使用没有gather_plan_statistics提示的dbms_xplan.display_cursor函数

```
select ename from scott.emp where ename = 'KING';
select * from table(dbms_xplan.display_cursor(null,null,'ALLSTAT LAST'));
```

eg: 通过一段注释来唯一标识SQL语句

```
select /* KM-EMPTEST1 */ empno, ename from emp
where job = 'MANGER';
select sql_id, child_number, sql_text
from v$sql
where sql_text like '%KM-EMPTEST1%';
select * from table(dbms_xplan.display_cursor(''sql_id'',0,'ALLSTATS LAST'));
    `
```

eg: 自动为任何SQL语句取出执行计划

```
select /* KM-EMPTEST2 */ empno, ename
from emp where job = 'CLERK';
get pln.sql
@pln KM-EMPTEST2
```

eg: 显示使用FORMAT参数的选项

```
explain plan for
select * from emp e, dept d
where e.deptno = d.deptno
and e.ename = 'JONES';
select * from table(dbms_xplan.display(format=>'ALL'));
select empno, ename from emp e, dept d
where e.deptno = d.deptno
and e.ename = 'JONES';
select * from table(dbms_xplan.display_cursor(null,null,format=>'ALLSTATS LAST -COST -BYTES'));
variable v_empno number
exec :v_empno := 7566;
select * from emp where empno = :v_empno;
select * from table(dbms_xplan.display_cursor(null,null,format=>'+PEEKED_BINDS'));
eg:
select /*+ parallel (d, 4) parallel (e, 4) */ d.dname, avg(e.sal), max(e.sal)
from dept d, emp e
where d.deptno = e.deptno
group by d.dname
order by max(e.sal), avg(e.sal) desc;
select * from table(dbms_xplan.display_cursor(null, null, 'TYPICAL BYTES -COST'));
```

6.2.6 使用计划信息来解决问题
eg: 使用计划信息来确定索引的确实和次优索引

```
select /* KM1 */ job_id, department_id, last_name
from employees
where job_id = 'SA_REP'
and department_id is null;
@pln MK1
```

eg:

```
create index emp_job_dept_ix on employees (department_id, job_id) compute statistics;
select /* KM2 */ job_id, department_id, last_name
from meployees
where job_id = 'SA_REP'
and department_id is null;
@pln KM2
```

eg:

```
select /* KM3 */ last_name, phone_number
from employees
where phone_number = '650.507.9822';
@pln KM3

eg:
column column_name format a22 heading 'Column Name'
column index_name heading 'Index Name'
column column_position format 999999999 heading 'Pos#'
column descend format a5 heading 'Order'
column column_expression format a40 heading 'Expression'
break on index_name skip 1
select lower(b.index_name) index_name, b.column_position,
b.descend, lower(b.column_name) column_name
from all_ind_columns b
where b.table_owner = 'HR'
and b.table_name = 'EMPLOYEES'
order by index_name, b.column_position, b.column_name
/

eg:
create index emp_phone_ix on employees (phone_number) compute statistics;
select /* KM4 */ last_name, phone_number
from employees
where phone_number = '650.507.9822';
@pln KM4

eg: 使用计划信息来确定统计信息何时过时
select column_name, num_distinct, density
from user_tab_cols
where table_name = 'MY_OBJECTS';
select /* KM7 */ object_id, object_name
from my_objects
where object_type = 'TABLE';
@pln KM7

eg:
select num_rows
from dba_tables
where table_name = 'MY_OBJECTS';
select count(*)
from my_objects;

eg: update statistics
exec dbms_stats.gather_table_stats(user, 'MY_OBJECTS', estimate_percent => 100, cascade => true, method_opt => 'FOR ALL COLUMNS
SIZE 1');
select /* KM8 */ object_id, object_name
from my_objects
where object_type = 'TABLE';
@pln KM8

eg: collect histogram statistics
exec dbms_stats.gather_table_stats(user, 'MY_OBJECTS',estimate_percent=>100,cascade=>true,method_opt=>'FOR ALL COLUMNS SIZE
AUTO');
select /* KM9 */ object_id, object_name
from my_objects
where object_type = 'TABLE';
@pln KM9
```