



Oracle9i Database

Simple and Quick Reference Guide

SQL and PL/SQL Programming
 SQL*Plus Reference
 Database Administration
 SQL Performance Tuning

Oracle is registered trademark of Oracle Corporation
 Oracle 9i is registered trademark of Oracle Corporation
 PL/SQL is registered trademark of Oracle Corporation
 SQL*Plus is registered trademark of Oracle Corporation

written by
 Roverli P. Ziwich
 Oracle Certified Professional
 roverli@roverli.net
 www.roverli.net

Revision 1.0 (Jun-2005)

types	char		
	varchar2	varchar2(100)	
	number	number(10)	number(16,4)
	date	timestamp	
	clob	blob	

STATEMENT SYNTAX

if

```
if (... and ...) or (... and ...) then
    commands
elsif (... or ...) then
    commands
else
    commands
end if;
```

while

```
while (... and ...) or (... and ...) loop
    commands
end loop;
```

for

```
for variable in 1..999 loop
    commands
end loop;
```

cursor

```
for alias in (select field from table) loop
    v_variable := alias.field;
    commands
end loop;
```

OBJECT SYNTAX

drop procedure PROC_NAME;

create or replace procedure PROC_NAME

```
( ... ,
  p_param IN OUT table.field%TYPE := def_value
)
declare
  v_variable type1 := default_value;
  err_num number;
  err_msg varchar2(100);
begin
  v_variable := 10;
  if condition then
    return;
  end if;
  ...commands...
  raise_application_error(-20101, 'erro');
  rollback;
exception
  when others then begin
    err_num := SQLCODE;
    err_msg := SUBSTR(SQLERRM, 1, 100);
  end;
end;
```

drop function FUNC_NAME;

create or replace function FUNC_NAME

```
( ... ,
  p_param IN OUT table.field%TYPE := def_value
)
return type
is
  v_var type := default_value;
begin
  ...commands...
  return v_var;
end;
```

```

drop trigger TRIG_NAME;
create or replace trigger TRIG_NAME
after insert or update or delete on table_name
for each row
declare
v_var1      type1 := def_value;
v_var2      type2 := default_value;
begin
if inserting then
v_var1 := :new.table_field;
elsif updating then
v_var1 := :new.table_field;
v_var2 := :old.table_field;
elsif deleting then
v_var2 := :old.table_field;
end if;
end;

```

```

drop view VIEW_NAME;
create or replace [force] view VIEW_NAME as subquery [with read only];

```

```

drop table TABLE_NAME;
create [global temporary] table TABLE_NAME
( filed1 type1 [NULL] default value, ... )
tablespace tbs_name
[on commit preserve rows];

```

```

drop synonym SYNON_NAME;
create [public] synonym SYNON_NAME for schema.object_name;

```

OPERATORS

arithmetic operators

+ - * /

logical operators

not and or

comparison operators

< > <> != = <= >= [not] in any some all
[not] between x and y [not] exists [not] like is [not] null

set operators

UNION UNION ALL INTERSECT MINUS

string operators

|| concatenation

FUNCTIONS

numeric functions

ABS(n) absolute value of n
CEIL(n) smallest integer greater than or equal to n
FLOOR(n) largest integer equal to or less than n
LOG(n,m) logarithm, base m, of n
MOD(m,n) remainder of m divided by n, returns m if n is 0
POWER(m,n) m raised to the nth power
ROUND(n[,m]) n rounded to m places right of the decimal point
SQRT(n) Returns square root of n
TRUNC(n[,m]) n truncated to m decimal places
TO_CHAR(d[,fmt]) converts n to VARCHAR2, using format fmt

string functions

ASCII(s) decimal representation of the first byte of s
CHR(n) character having the binary equivalent to n
CONCAT(s1,s2) s1 concatenated with s2
INITCAP(s) s with the first letter of each word in uppercase
INSTR (s1,s2[,n[,m]]) searches s1 beginning with n character for the mth occurrence of s2 and returns the position
LENGTH(s) length of s in characters
LOWER(s) s with all letters lowercase
LPAD(s1,n[,s2]) s1 left-padded to length n with s2
RPAD(s1,n[,s2]) s1 right-padded to length n with s2
LTRIM(char1,n) removes characters from the left of char
RTRIM(s) s with all the rightmost characters in set removed
REPLACE(s,search_str[,replace_str]) s with search_str's replaced with replac_str

SOUNDEX(s) character string that represents the phonetic of s
SUBSTR(s,m[,n]) a portion of char, beginning at m, n characters long
UPPER(s) s with all letters uppercase

date functions

ADD_MONTHS(d,n) date d plus n months
LAST_DAY(d) last day of the month that contains d
MONTHS_BETWEEN(d1, d2) number of months between d1 and d2
ROUND(d[,fmt]) d rounded to the unit specified by fmt
SYSDATE current date and time
SYSTIMESTAMP current date and time in timestamp type
TRUNC(d[,fmt]) d with date truncated to the unit in fmt
TO_CHAR(d[,fmt]) converts d to VARCHAR2 using format fmt
TO_DATE(s[,fmt]) converts s to DATE using format fmt
TO_NUMBER(char[,fmt]) converts s to a NUMBER using format fmt

group functions

DISTINCT COUNT MAX MIN SUM AVG ALL

lob functions

DBMS_LOB.GETLENGTH(table.lob_field)

other functions

NVL(e1,e2) If e1 is null, returns e2; if e1 is not null, returns e1
USERENV('option')
option: 'TERMINAL' machine name
'SESSIONID' session id
'INSTANCE' instance name
SYS_CONTEXT('USERENV', 'IP_ADDRESS') IP address of the connected machine

variables

UID an integer that uniquely identifies the current user
USER the current Oracle user
SQL%ROWCOUNT number of rows affected by a DML command

FORMATS

date/time formats

date type dd/mm/yyyy hh24:mi:ss
d day of week (1-7)
ddd day of year (1-366)
SSSSS seconds past midnight (0-86399)
w week of month (1-5)
ww week of year (1-53)
ffn fraction of seconds (n digits)
timestamp type dd/mm/yyyy hh24:mi:ss:ff6

```

alter session set NLS_DATE_FORMAT = 'dd/mm/yyyy hh24:mi';
to_char(value, '99.999,99', 'NLS_NUMERIC_CHARACTERS=', '' )

```

OBJECT COMMANDS

object commands

disable alter trigger trig_name disable;
enable alter trigger trig_name enable;
compile alter procedure proc_name compile;
alter function func_name compile;
alter trigger trig_name compile;
alter view view_name compile;

dbms commands

```

dbms_output.put_line( 'message' );
prints a message inside a PL/SQL block

```

SQL*Plus Reference

set options

```
set lines 999
set pages 999
set long 15728640
set heading off
set feedback off
set escape '\'
set verify off
set timing on
set serveroutput on
```

variable options

```
&var_name
&&var_name
undef var_name
```

commands

```
ed          edit buffer
/           execute a command
```

Database Administration

USER

user

```
create user user_name
  identified by passw
  [default tablespace table_space_name]
  [temporary tablespace temp_tspace_name]
  [quota unlimited on tspace_name];
```

```
alter user user_name
  [identified by passw]
  [default tablespace table_space_name]
  [temporary tablespace temp_tspace_name]
  [quota unlimited on tspace_name];
```

```
alter user user_name default role all except role_name;
```

```
grant connect, resource, dba to user_name;
```

consult views

```
dba_users | all_users
```

GRANTS AND ROLES

grants

```
grant role      grant role_name to user_name;
grant objects   grant select,update on table_name to user_name;
                grant insert,delete on view_name to role_name;
                grant all on table_name to user_name;
                grant execute on proc_name to user_name;
                grant execute on func_name to user_name;
```

roles

```
create role     create role role_name;
drop role       drop role role_name;
```

revoke

```
revoke role     revoke role_name from user_name;
revoke object   revoke privilege on object_name from user_name;
```

consult views

```
dba_role_privs | dba_tab_privs
```

OBJECTS

tablespaces and datafiles

```
create tablespace tbs_name datafile 'u01/.../data1.dbf' size 5 M
  minimum extent 5 M
  extent management local uniform size 256 K;
  extent management dictionary default storage
  (initial 1 M next 1 M pctincrease 0);
```

```
alter tablespace add datafile 'u02/.../data02.dbf' size 40M;
```

```
alter tablespace
  [offline normal / offline immediate / online]
  [egin backup]
  [read only / read write];
```

```
alter tablespace tbs_name rename datafile 'u02/.../data01.dbf'
  to 'u03/.../data01.dbf';
```

```
alter database datafile 'u02/.../data01.dbf'
```

```
  [resize 10 MB]
  [autoextend on]
  [next 2M maxsize 200M];
```

```
alter database rename file 'u02/.../data01.dbf' to 'u03/.../data01.dbf';
```

```
drop tablespace tbs_name [including contents and datafiles];
```

```
create undo tablespace undo_tbs_name
  datafile 'u01/.../undo01.dbf' size 50 M;
```

```
create temporary tablespace temp_tbs_name
  tempfile 'u01/.../temp01.dbf' size 50 M;
```

```
alter database default temporary tablespace temp_tbs_name;
```

```
dbms_space_admin.tablespace_migrate_to_local('SYSTEM');
```

tables

```
drop table tab_name [cascade constraints];
truncate table tbs_name [cascade constraints];
create [global temporary] table tab_name
  ( filed1 type1 [NULL] default value, ... )
  tablespace tbs_name
  [on commit preserve rows];
```

```
alter table tab_name
```

```
  rename to newtab_name;
  move tablespace newtbs_name;
  rename column col_name to newcol_name;
  add col_name type [NULL];
  modify column col_name newtype [NULL];
  drop column col_name;
```

```
alter table tab_name drop primary key
```

```
alter table tab_name add (constraint constr_name
  primary key (columns, ...))
```

```
alter table tab_name drop constraint constr_name
```

```
alter table tab_name add (constraint constr_name
  foreign key (columns, ...)
  references fk_tab_name (columns, ...)
  [on delete cascade]);
unique (columns, ...);
check (column in ('S', 'N'));
```

indexes

```
create [bitmap] index index_name
  on tab_name (columns, ...)
  [storage (initial 200K next 200K maxextents 50)]
  [tablespace tbs_name];
```

```
alter index index_name
```

```
  coalesce;
  rebuild [online];
  [no]monitoring usage;
```

drop index *index_name*;
analyze index *index_name* validate structure;

consult views

dba_tablespaces	dba_tables
dba_data_files	dba_tab_columns
dba_segments	dba_constraints
dba_extents	dba_cons_columns
dba_free_space	
dba_objects	v\$tablespace
dba_indexes	v\$datafile
dba_ind_columns	v\$object_usabe (to index usage)

DATABASE MANAGEMENT

show parameter *name*;
shutdown [normal | transactional | immediate | abort];
startup [nomount | mount];
alter database open;

redo log / archive log / undo segments

archive log list;
alter system switch logfile;
alter system checkpoint;
alter system archive log [start / stop];
alter database [no]archivelog;

alter database add logfile group *n* ('u02/.../log3a.rdo') size 5 M;
alter database drop logfile group *n*;
alter database add logfile member ('u02/.../log3a.rdo') to group 1, ...;
alter database drop logfile member 'u02/.../log3a.rdo';
alter database rename file 'u02/.../log3a.rdo' to 'u03/.../log3a.rdo';
alter database clear logfile group *n*;
alter database clear unarchived logfile group *n*;

parameter BACKGROUND_DUMP_DEST
parameter UNDO_SUPPRESS_ERRORS
alter system set UNDO_TABLESPACE = *undo_tbs_name*;
alter system set UNDO_RETENTION = *n_seconds*;

sga

show sga;

roles

parameter MAX_ENABLED_ROLES

consult views

dict / dictionary	v\$fixed_table
database_properties	v\$parameter
dba_temp_files	v\$spparameter
	v\$controlfile
v\$database	v\$controlfile_record_section
v\$instance	v\$session
v\$sga	v\$version
v\$log	v\$thread
v\$logfile	v\$undostat
v\$loghist	v\$rollname
v\$archive	v\$rollstat
v\$archived_log	v\$transaction

NETWORK

tnsping

listener

start / stop
status
service
status *listener_name*
show all
show trc_file

windows services

C:\> net stop oracleserviceSID to stop windows oracle service
C:\> net start oracleserviceSID to start windows oracle service

SQL Performance Tuning

hints

syntax: /*+ *hint* */

example: /*+ ORDERED FIRST_ROWS */

Hints for Optimization Approaches and Goals

ALL_ROWS
FIRST_ROWS
RULE
CHOOSE

Hints for Access Methods

FULL(*alias*)
INDEX(*alias, index_name*)
NO_INDEX(*alias*)

Hints for Join Order

ORDERED specify the tables order to access
LEADING specify the first main table to access

Hints for Join Operation

USE_NL(*alias*)
USE_HASH(*alias*)
USE_MERGE(*alias*)

Other Hints

NO_EXPAND used to not expand OR predicates
PUSH_SUBQ force the subqueries to run first
CURSOR_SHARING_EXACT
CACHE
NOCACHE

optimizer modes

alter session set optimizer_mode=rule;
alter session set optimizer_mode=choose;
alter session set optimizer_mode=all_rows;
alter session set optimizer_mode=first_rows;

explain plans

set autot on shows plan and statistics using SQL*PLUS
set autot on exp shows only the plan
set autot on stat shows only the statistics
set autot trace do not show the query's result-set

explain plan for select ... from ...

select operation, options, object_name, id, parent_id order by id;

trace in session

alter session set sql_trace = true;
alter session set sql_trace = false;
dbms_system.set_sql_trace_in_session SID;

tkprof

cd \$ORACLE_BASE/admin/INST_NAME/udump/
tkprof sid_ora_nnnn.trc plan.txt explain = user/passw@host

consult views

index_stats	v\$sqlarea
v\$db_cache_advice	v\$sql
v\$sgastat	v\$sql_plan
v\$sesstat	
v\$session_wait	
v\$system_event	
v\$sysstat	
v\$waitstat	