SQL Star International Limited

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Using SQL*Plus

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Objectives

After completing this appendix, you should be able to do the following:

- Log in to SQL*Plus
- Edit SQL commands
- Format output using SQL*Plus commands
- Interact with script files

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Objectives

You might want to create SELECT statements that can be used again and again. This appendix also covers the use of SQL*Plus commands to execute SQL statements. You learn how to format output using SQL*Plus commands, edit SQL commands, and save scripts in SQL*Plus.

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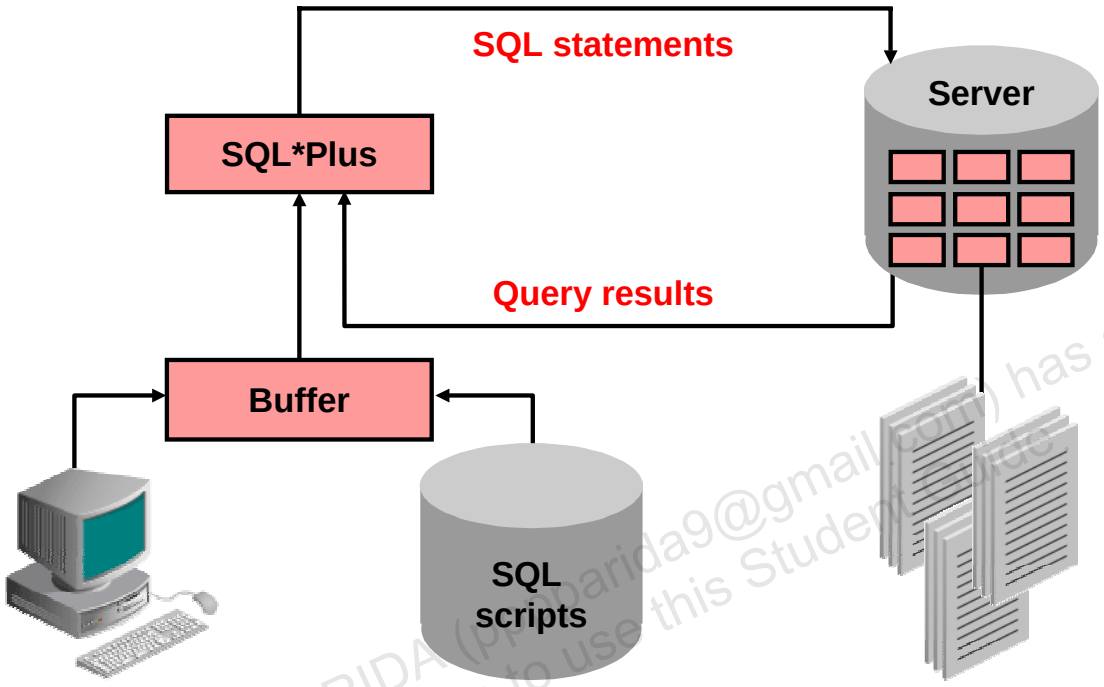
SQL and SQL*Plus Interaction



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SQL and SQL*Plus

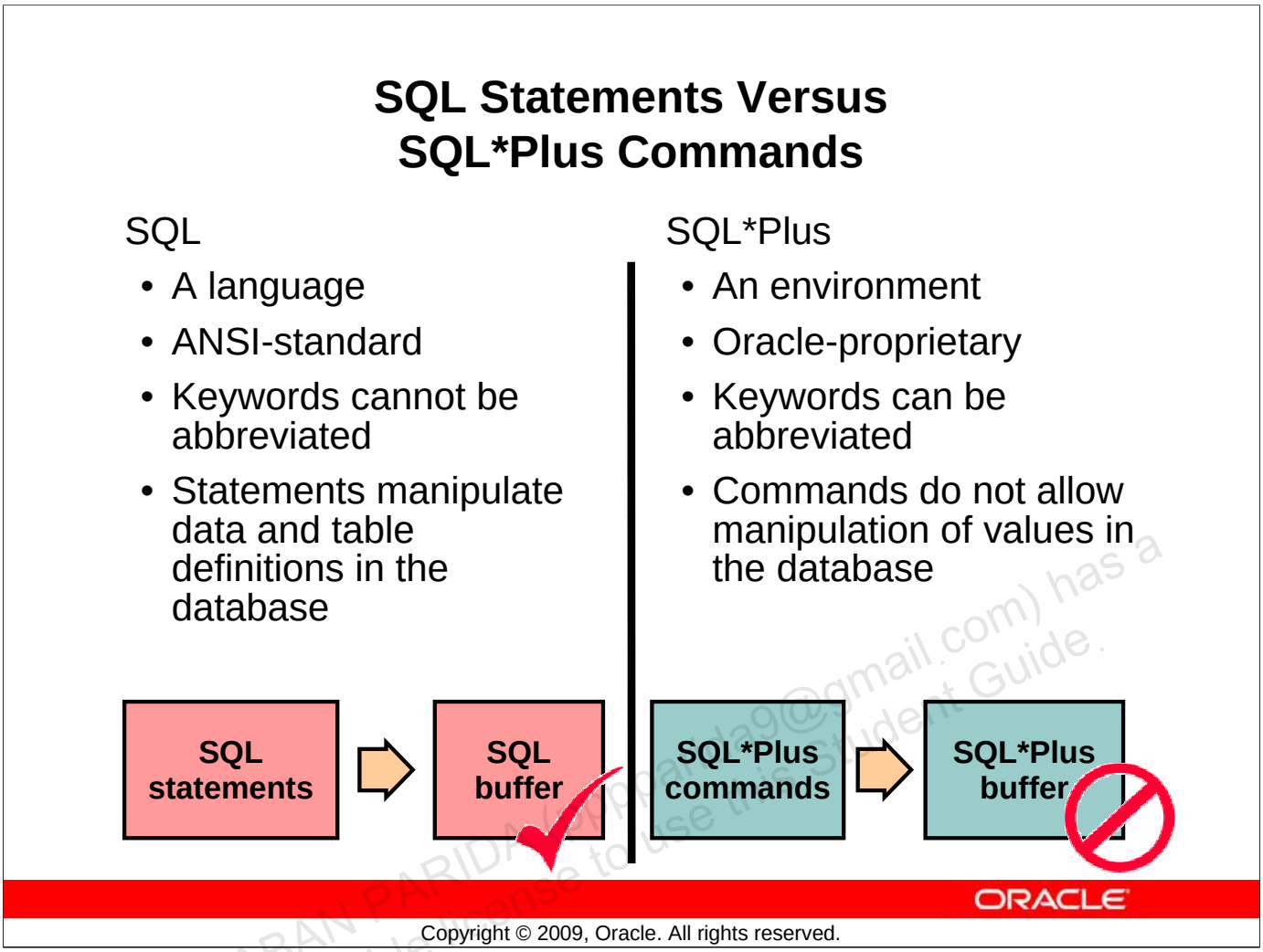
SQL is a command language for communication with the Oracle9*i* Server from any tool or application. Oracle SQL contains many extensions. When you enter a SQL statement, it is stored in a part of memory called the *SQL buffer* and remains there until you enter a new SQL statement. SQL*Plus is an Oracle tool that recognizes and submits SQL statements to the Oracle9*i* Server for execution. It contains its own command language.

Features of SQL

- Can be used by a range of users, including those with little or no programming experience
- Is a nonprocedural language
- Reduces the amount of time required for creating and maintaining systems
- Is an English-like language

Features of SQL*Plus

- Accepts ad hoc entry of statements
- Accepts SQL input from files
- Provides a line editor for modifying SQL statements
- Controls environmental settings
- Formats query results into basic reports
- Accesses local and remote databases



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SQL and SQL*Plus (continued)

The following table compares SQL and SQL*Plus:

SQL	SQL*Plus
Is a language for communicating with the Oracle server to access data	Recognizes SQL statements and sends them to the server
Is based on American National Standards Institute (ANSI)–standard SQL	Is the Oracle-proprietary interface for executing SQL statements
Manipulates data and table definitions in the database	Does not allow manipulation of values in the database
Is entered into the SQL buffer on one or more lines	Is entered one line at a time, not stored in the SQL buffer
Does not have a continuation character	Uses a dash (–) as a continuation character if the command is longer than one line
Cannot be abbreviated	Can be abbreviated
Uses a termination character to execute commands immediately	Does not require termination characters; executes commands immediately
Uses functions to perform some formatting	Uses commands to format data

Overview of SQL*Plus

- Log in to SQL*Plus
- Describe the table structure
- Edit your SQL statement
- Execute SQL from SQL*Plus
- Save SQL statements to files and append SQL statements to files
- Execute saved files
- Load commands from file to buffer to edit

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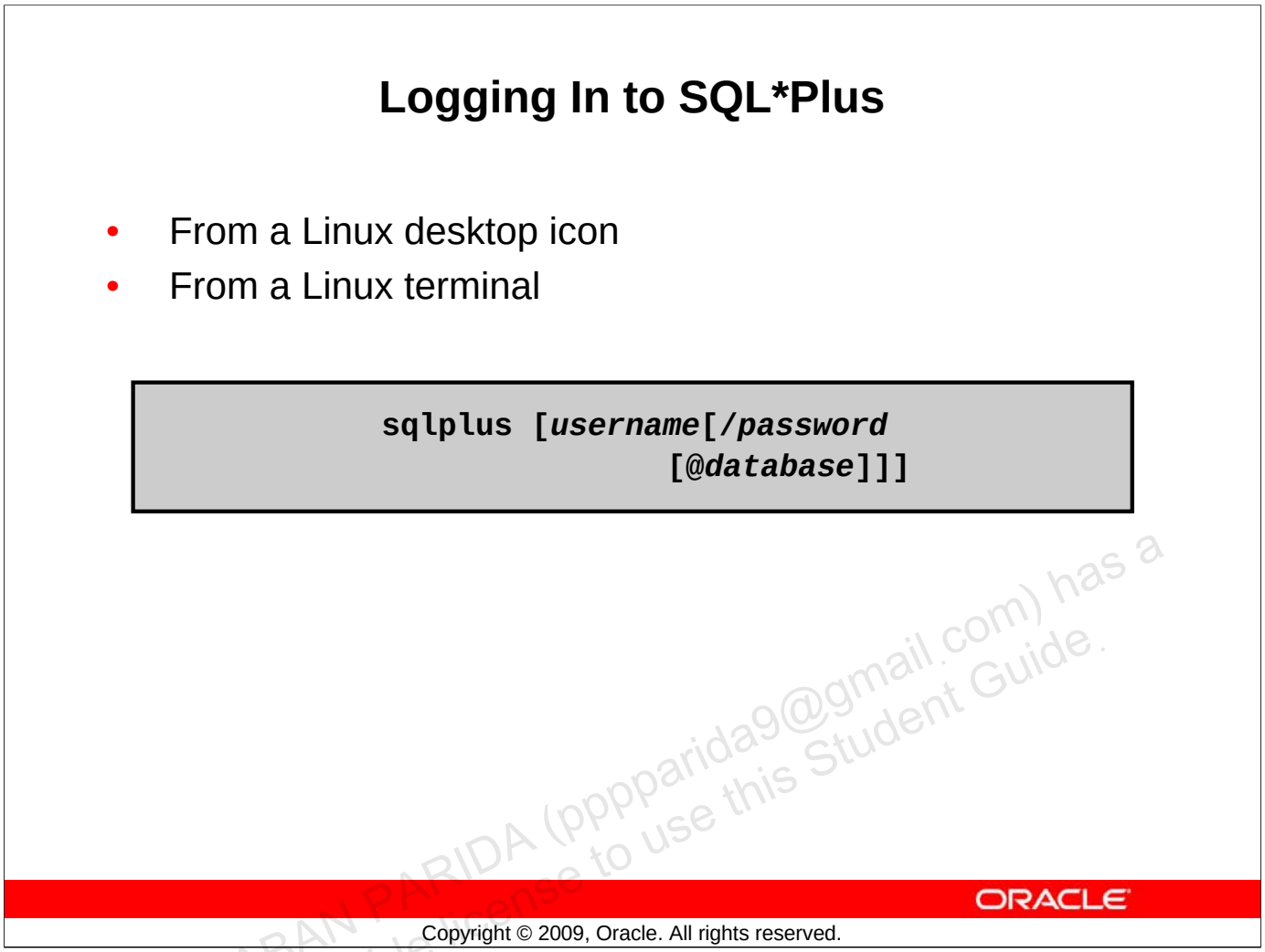
SQL*Plus

SQL*Plus is an environment in which you can do the following:

- Execute SQL statements to retrieve, modify, add, and remove data from the database
- Format, perform calculations on, store, and print query results in the form of reports
- Create script files to store SQL statements for repeated use in the future

SQL*Plus commands can be divided into the following main categories:

Category	Purpose
Environment	Affect the general behavior of SQL statements for the session
Format	Format query results
File manipulation	Save, load, and run script files
Execution	Send SQL statements from the SQL buffer to the Oracle server
Edit	Modify SQL statements in the buffer
Interaction	Create and pass variables to SQL statements, print variable values, and print messages to the screen
Miscellaneous	Connect to the database, manipulate the SQL*Plus environment, and display column definitions



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Logging In to SQL*Plus

How you invoke SQL*Plus depends on which type of operating system or environment you are running.

To log in using a desktop icon:

1. Double-click the sqlplus desktop icon.
2. Enter the username, password, and database name.

To log in from a Linux terminal:

1. Log on to your machine and open a terminal.
2. Enter the SQL*Plus command shown in the slide.

In the syntax:

username	Your database username
password	Your database password (Your password is visible if you enter it here.)
@database	The database connect string

Note: To ensure the integrity of your password, do not enter it at the operating system prompt. Instead, enter only your username. Enter your password at the password prompt.

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Displaying Table Structure

Use the SQL*Plus DESCRIBE command to display the structure of a table:

```
DESC[RIBE] tablename
```

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Displaying Table Structure

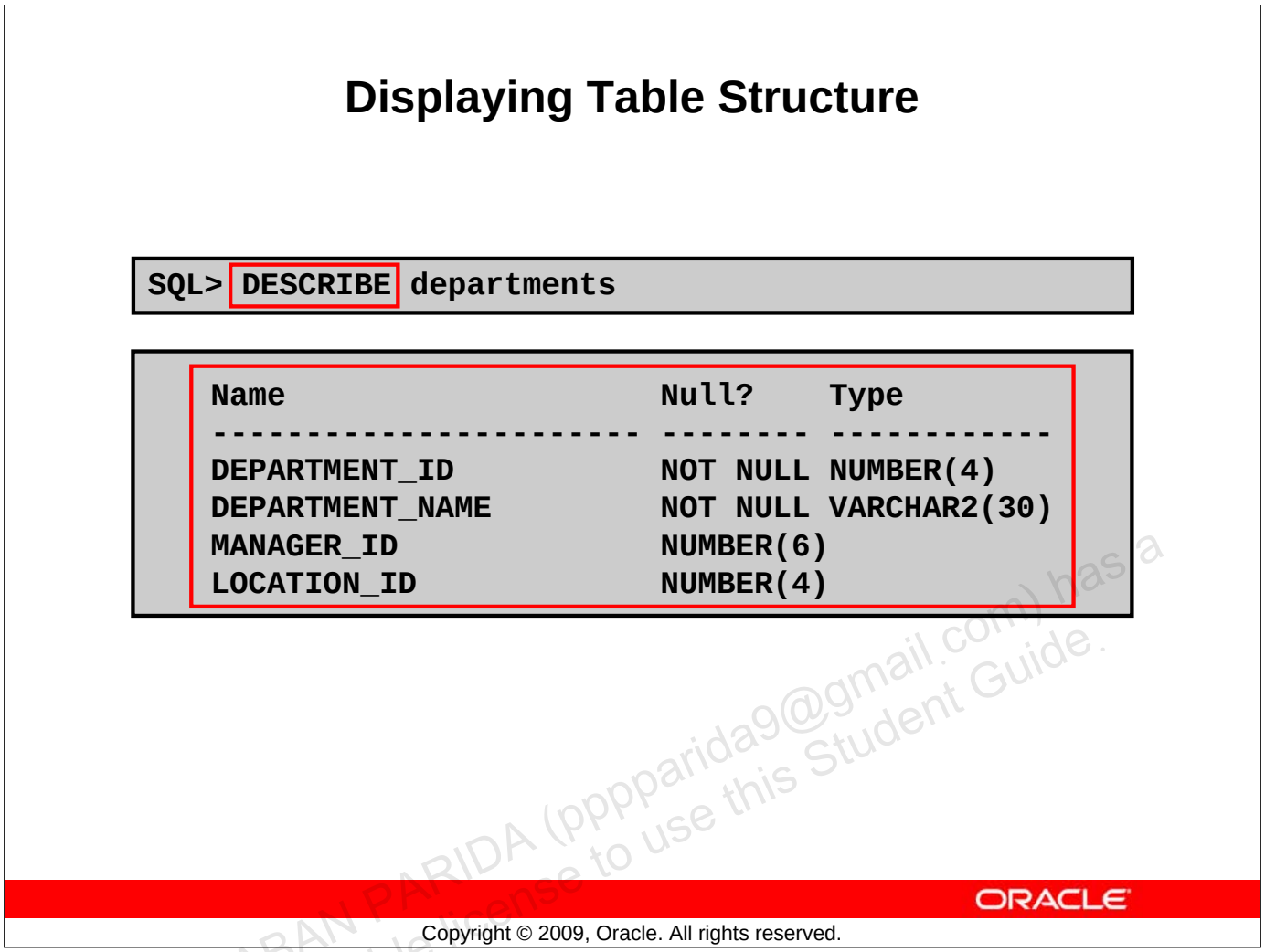
In SQL*Plus, you can display the structure of a table using the DESCRIBE command. The result of the command is a display of column names and data types as well as an indication if a column must contain data.

In the syntax:

tablename The name of any existing table, view, or synonym that is accessible to the user

To describe the JOB_GRADES table, use this command:

```
SQL> DESCRIBE job_grades
Name                                      Null?      Type
----------------------------------------  --------  -----------
GRADE_LEVEL                                         VARCHAR2(3)
LOWEST_SAL                                          NUMBER
HIGHEST_SAL                                         NUMBER
```



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Displaying Table Structure (continued)

The example in the slide displays the information about the structure of the DEPARTMENTS table.

In the result:

Null?	Specifies whether a column must contain data (NOT NULL indicates that a column must contain data.)
Type	Displays the data type for a column

The following table describes the data types:

Data Type	Description
NUMBER(*p*,*s*)	Number value that has a maximum number of digits *p*, which is the number of digits to the right of the decimal point *s*
VARCHAR2(*s*)	Variable-length character value of maximum size *s*
DATE	Date and time value between January 1, 4712 B.C., and December 31, 9999 A.D.
CHAR(*s*)	Fixed-length character value of size *s*

SQL*Plus Editing Commands

- A[PPEND] text
- C[HANGE] / old / new
- C[HANGE] / text /
- CL[EAR] BUFF[ER]
- DEL
- DEL n
- DEL m n

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SQL*Plus Editing Commands

SQL*Plus commands are entered one line at a time and are not stored in the SQL buffer.

Command	Description
A[PPEND] *text*	Adds text to the end of the current line
C[HANGE] / *old* / *new*	Changes *old* text to *new* in the current line
C[HANGE] / *text* /	Deletes *text* from the current line
CL[EAR] BUFF[ER]	Deletes all lines from the SQL buffer
DEL	Deletes current line
DEL *n*	Deletes line *n*
DEL *m n*	Deletes lines *m* to *n* inclusive

Guidelines

- If you press [Enter] before completing a command, SQL*Plus prompts you with a line number.
- You terminate the SQL buffer either by entering one of the terminator characters (semicolon or slash) or by pressing [Enter] twice. The SQL prompt then appears.

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SQL*Plus Editing Commands

- I[NPUT]
- I[NPUT] text
- L[IST]
- L[IST] n
- L[IST] m n
- R[UN]
- n
- n text
- 0 text

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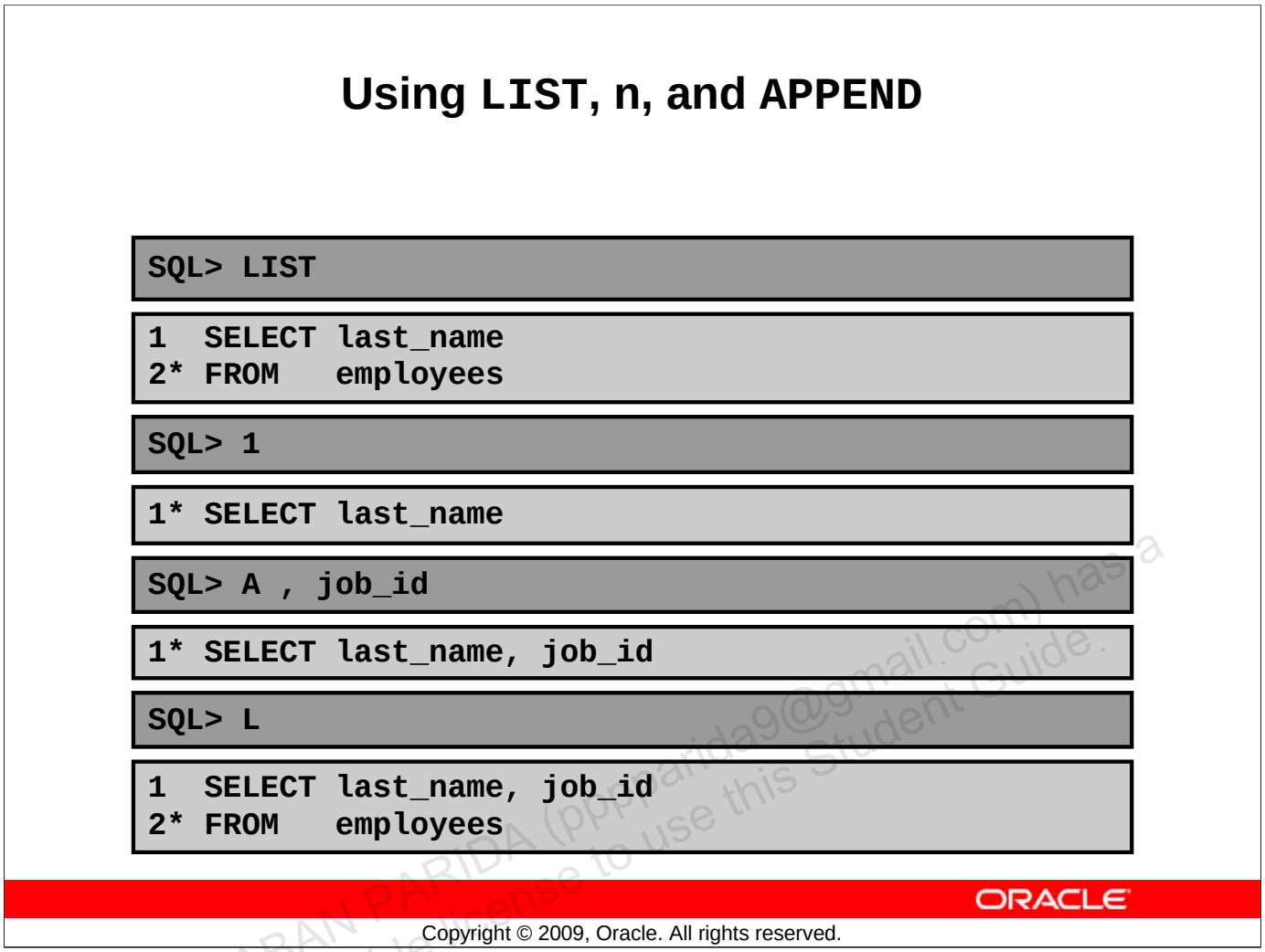
SQL*Plus Editing Commands (continued)

Command	Description
I[NPUT]	Inserts an indefinite number of lines
I[NPUT] *text*	Inserts a line consisting of *text*
L[IST]	Lists all lines in the SQL buffer
L[IST] *n*	Lists one line (specified by *n*)
L[IST] *m n*	Lists a range of lines (*m* to *n*) inclusive
R[UN]	Displays and runs the current SQL statement in the buffer
n	Specifies the line to make the current line
n text	Replaces line *n* with *text*
0 *text*	Inserts a line before line 1

Note: You can enter only one SQL*Plus command for each SQL prompt. SQL*Plus commands are not stored in the buffer. To continue a SQL*Plus command on the next line, end the first line with a hyphen (-).



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Using LIST, n, and APPEND

- Use the L[IST] command to display the contents of the SQL buffer. The asterisk (*) beside line 2 in the buffer indicates that line 2 is the current line. Any edits that you made apply to the current line.
- Change the number of the current line by entering the number (n) of the line that you want to edit. The new current line is displayed.
- Use the A[PPEND] command to add text to the current line. The newly edited line is displayed. Verify the new contents of the buffer by using the LIST command.

Note: Many SQL*Plus commands, including LIST and APPEND, can be abbreviated to just their first letter. LIST can be abbreviated to L; APPEND can be abbreviated to A.

Using the CHANGE Command

```
SQL> L
1* SELECT * from employees
SQL> c/employees/departments
1* SELECT * from departments
SQL> L
1* SELECT * from departments
```

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Using the CHANGE Command

- Use L[IST] to display the contents of the buffer.
- Use the C[HANGE] command to alter the contents of the current line in the SQL buffer. In this case, replace the employees table with the departments table. The new current line is displayed.
- Use the L[IST] command to verify the new contents of the buffer.

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SQL*Plus File Commands

- SAVE filename
- GET filename
- START filename
- @ filename
- EDIT filename
- SPOOL filename
- EXIT

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SQL*Plus File Commands

SQL statements communicate with the Oracle server. SQL*Plus commands control the environment, format query results, and manage files. You can use the commands described in the following table:

Command	Description
SAV[E] *filename* [.ext] [REP[LACE]APP[END]]	Saves current contents of SQL buffer to a file. Use APPEND to add to an existing file; use REPLACE to overwrite an existing file. The default extension is .sql.
GET *filename* [.ext]	Writes the contents of a previously saved file to the SQL buffer. The default extension for the file name is .sql.
STA[RT] *filename* [.ext]	Runs a previously saved command file
@ *filename*	Runs a previously saved command file (same as START)
ED[IT]	Invokes the editor and saves the buffer contents to a file named afiedt.buf
ED[IT] [*filename*[.ext]]	Invokes the editor to edit the contents of a saved file
SPO[OL] [*filename*[.ext]| OFF|OUT]	Stores query results in a file. OFF closes the spool file. OUT closes the spool file and sends the file results to the printer.
EXIT	Quits SQL*Plus

Using the SAVE and START Commands

```
SQL> L
  1  SELECT last_name, manager_id, department_id
  2* FROM   employees
SQL> SAVE my_query
```

```
Created file my_query
```

```
SQL> START my_query
```

```
LAST_NAME                 MANAGER_ID DEPARTMENT_ID
------------------------- ---------- -------------
King                                         90
Kochhar                         100          90
...
20 rows selected.
```

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SAVE

Use the SAVE command to store the current contents of the buffer in a file. In this way, you can store frequently used scripts for use in the future.

START

Use the START command to run a script in SQL*Plus.

EDIT

Use the EDIT command to edit an existing script. This opens an editor with the script file in it. When you have made the changes, quit the editor to return to the SQL*Plus command line.

Summary

In this appendix, you should have learned how to use SQL*Plus as an environment to do the following:

- Execute SQL statements
- Edit SQL statements
- Format output
- Interact with script files

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Summary

SQL*Plus is an execution environment that you can use to send SQL commands to the database server and to edit and save SQL commands. You can execute commands from the SQL prompt or from a script file.

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