



Managing Data

Objectives

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

- **Manipulate data through SQL**
- **Use Data Pump to export data**
- **Use Data Pump to import data**
- **Load data with SQL Loader**

Manipulating Data Through SQL

```
SQL> INSERT INTO employees VALUES  
2  (9999,'Bob','Builder','bob@abc.net',NULL,SYSDATE,  
3  'IT_PROG',NULL,NULL,100,90);
```

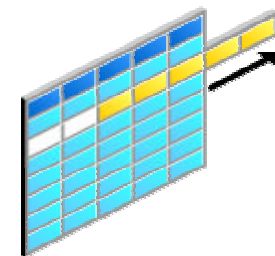
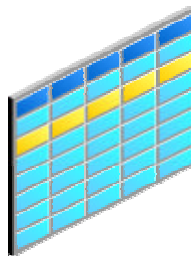
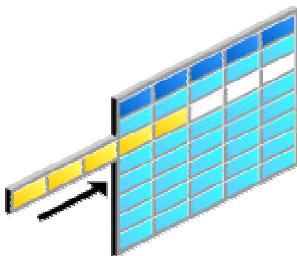
1 row created.

```
SQL> UPDATE employees SET SALARY=6000  
2  WHERE EMPLOYEE_ID = 9999;
```

1 row updated.

```
SQL> DELETE from employees  
2  WHERE EMPLOYEE_ID = 9999;
```

1 row deleted.



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The INSERT Command

- Create one row at a time.
- Insert many rows from another table.

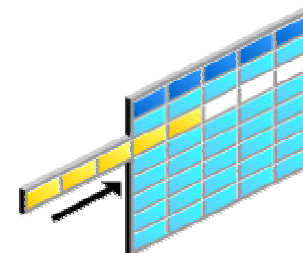
Workspace

Enter SQL, PL/SQL and SQL*Plus statements.

```
insert into dept_80  
(select * from employees  
where department_id = 80)
```

Execute Load Script Save Script Cancel

34 rows created.



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The UPDATE Command

Use to change zero or more rows of a table.

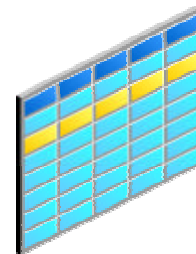
Workspace

Enter SQL, PL/SQL and SQL*Plus statements.

```
update employees  
set salary = salary * 1.1  
where department_id = 90;
```

Execute Load Script Save Script Cancel

4 rows updated.



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The DELETE Command

Use to remove zero or more rows from a table.

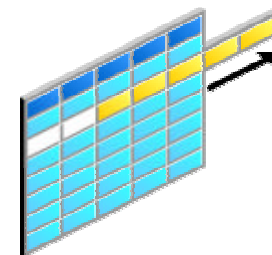
Workspace

Enter SQL, PL/SQL and SQL*Plus statements.

```
delete from employees  
where department_id = 200
```

Execute Load Script Save Script Cancel

0 rows deleted.

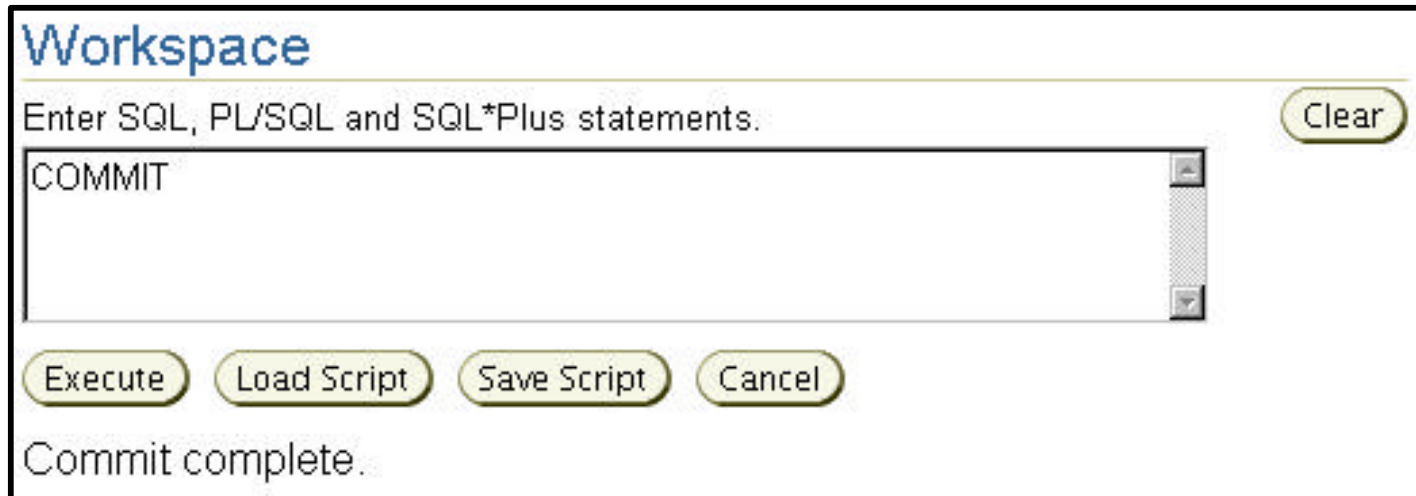


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The COMMIT and ROLLBACK Commands

Used to finish a transaction.

- **Commit:** Makes the change permanent
- **Rollback:** Undoes the change



The screenshot shows the Oracle SQL*Plus 'Workspace' window. At the top, the title 'Workspace' is in blue. Below it, a text area contains the instruction 'Enter SQL, PL/SQL and SQL*Plus statements.' To the right of this text area is a 'Clear' button. The main text area below contains the command 'COMMIT'. At the bottom of the window, there are four buttons: 'Execute', 'Load Script', 'Save Script', and 'Cancel'. Below these buttons, the status message 'Commit complete.' is displayed.

Integrity Constraints and DML

Workspace

Enter SQL, PL/SQL and SQL*Plus statements.

```
update employees
set department_id = 99
where last_name = 'King'
```

```
update employees
*
```

ERROR at line 1:
ORA-02291: integrity constraint (HR.EMP_DEPT_FK) violated - parent key not found

Data Pump Export

Database: orcl.us.oracle.com

Home Performance Administration **Maintenance**

Utilities

- Export to Files
- Import from Files
- Import from Database
- Load Data from File
- Gather Statistics
- Reorganize Objects
- Make Tablespace Locally Managed



Database: orcl.us.oracle.com > Export: Export Type

Export: Export Type

Database **orcl.us.oracle.com** Cancel Continue

☐ Database
Exports the entire database.

☐ Schemas
Allows you to choose one or more schemas and to export the objects in those schemas.

☒ Tables
Allows you to choose one or more tables to export from a selected schema.

Host Credentials

* Username

* Password

☒ Save as Preferred Credential

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Data Pump Import

Database: orcl.us.oracle.com > Import: Files

Import: Files

Database **orcl.us.oracle.com** Cancel Continue

Database Version of Files to Import 10g or later Go
Changing the version affects attributes below.

Files

Specify the directory name and file name of the import files on the database server machine. Create Directory Object

Remove

| Select | Directory Object | File Name |
|----------------------------------|----------------------------|--------------|
| <input checked="" type="radio"/> | DATA_FILE_DIR | EXPDAT%U.DMP |

Add Another Row

You can wildcard a set of dump files using '%U' in the filename.

Import Type

☒ Entire files

☐ Schemas
Allows you to choose one or more schemas and to import the objects in those schemas.

☐ Tables
Allows you to choose one or more tables to import from a selected schema.

Host Credentials

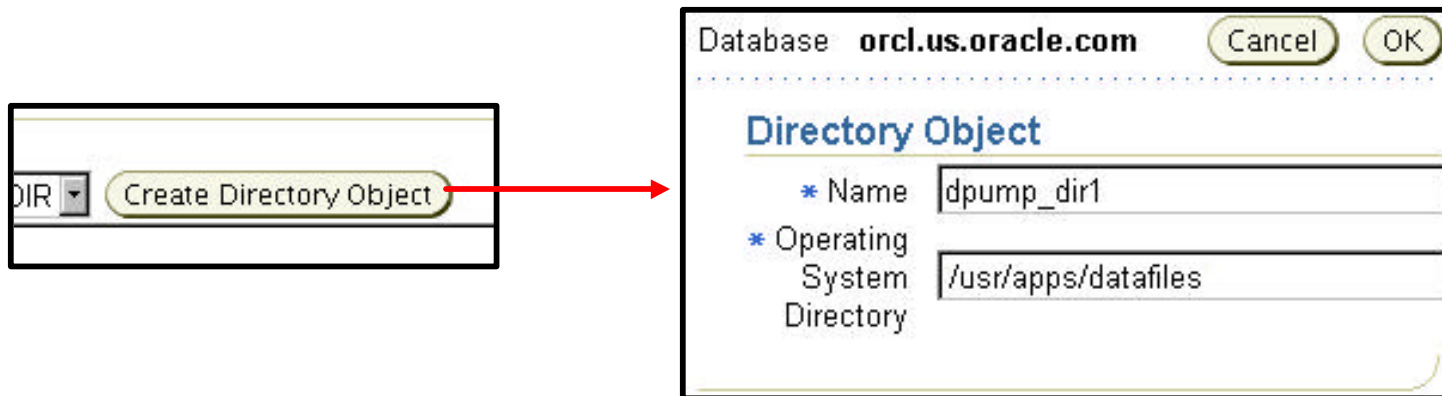
* Username

* Password

☒ Save as Preferred Credential

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DIRECTORY Objects



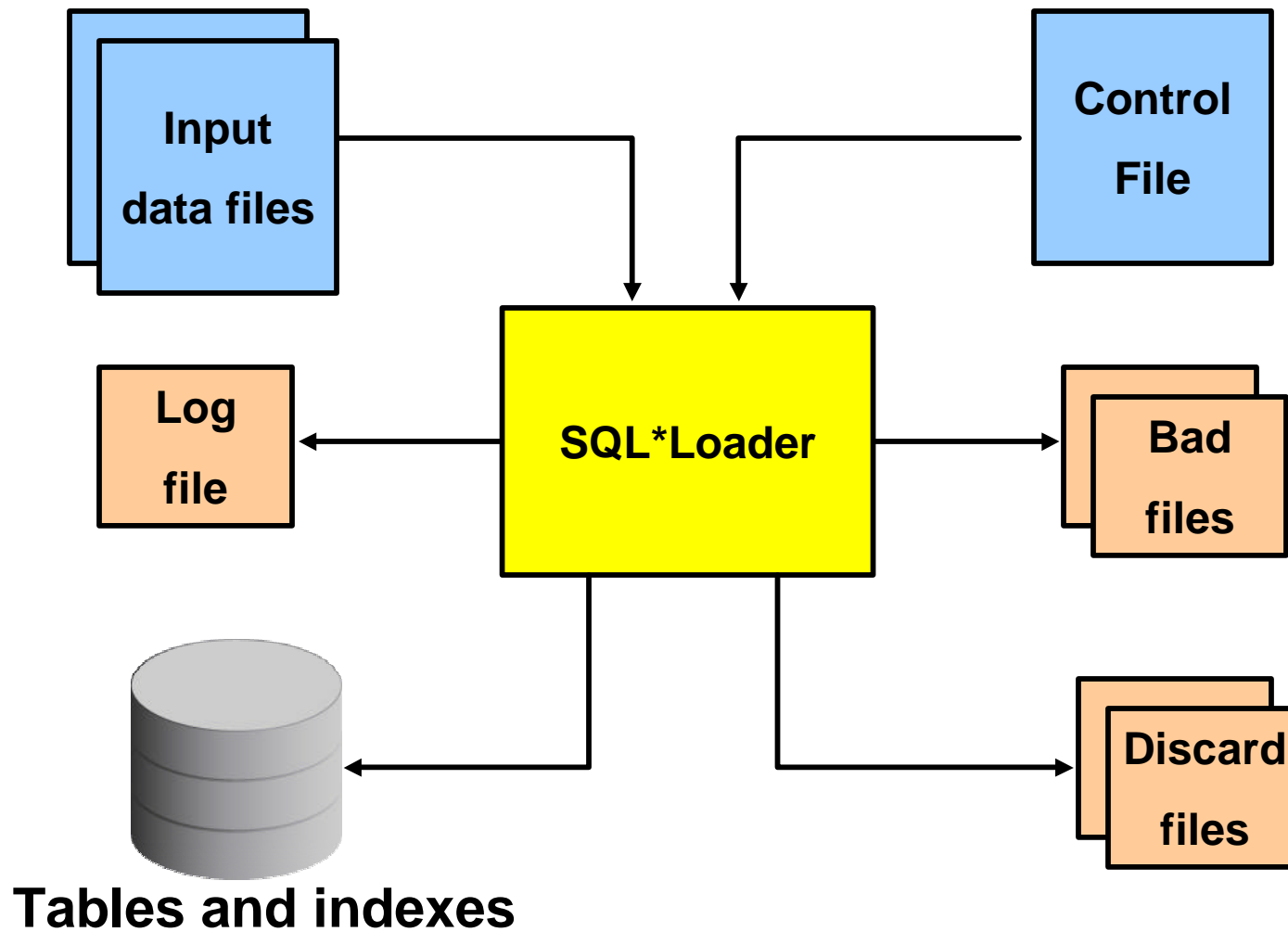
```
SQL> CREATE DIRECTORY dpump_dir1
      2 AS '/usr/apps/datafiles';
```

Directory created.

```
SQL> SELECT * FROM DBA_DIRECTORIES
      2 WHERE DIRECTORY_NAME = 'DPUMP_DIR1';
```

| OWNER | DIRECTORY_NAME | DIRECTORY_PATH |
|-------|----------------|---------------------|
| SYS | DPUMP_DIR1 | /usr/apps/datafiles |

SQL*Loader



The SQL*Loader Control File

The loader control file tells SQL*Loader:

- Where to find the load data
- The data format
- Configuration details:
 - Memory management
 - Record rejection
 - Interrupted load handling details
- How to manipulate the data



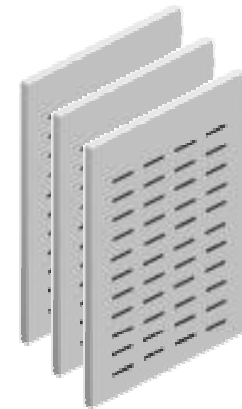
Control File Syntax Considerations

- The syntax is free-format.
- Syntax is not case sensitive.
- Comments extend from the two hyphens (--) that mark the beginning of the comment to the end of the line.
- The `CONSTANT` keyword is reserved.

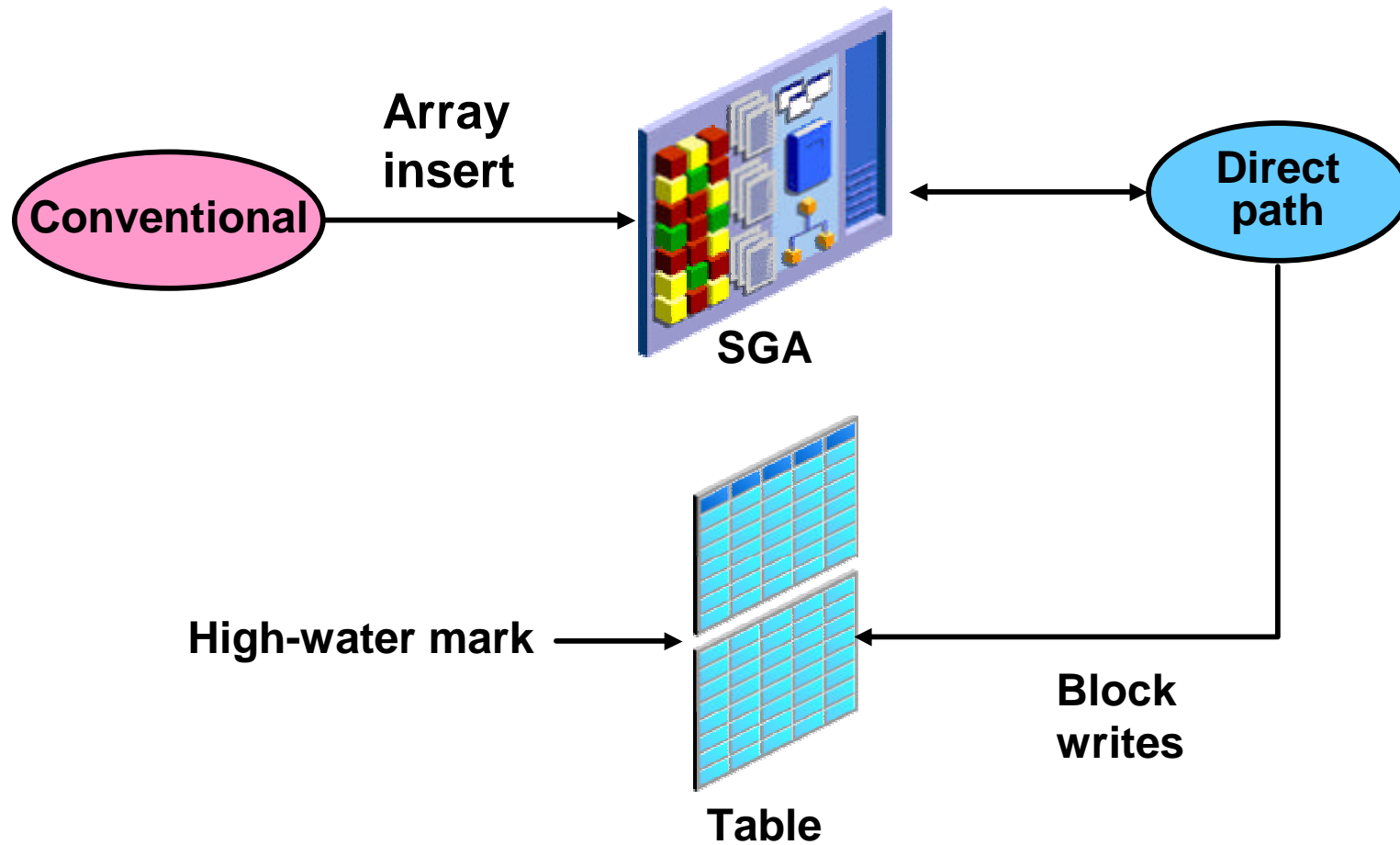


Input Data and Data Files

- **SQL*Loader reads data from one or more files specified in the control file.**
- **From SQL*Loader's perspective, the data in the data file is organized as records.**
- **A data file can be in one of three formats:**
 - **Fixed-record format**
 - **Variable-record format**
 - **Stream-record format**



Loading Methods



Comparing Direct and Conventional Path Loads

| Conventional Load | Direct Path Load |
|--|---|
| Uses COMMIT to make changes permanent | Uses data saves |
| Redo entries always generated | Generates redo only under specific conditions |
| Enforces all constraints | Enforces only PRIMARY KEY, UNIQUE, and NOT NULL |
| INSERT triggers fire | INSERT triggers do not fire |
| Can load into clustered tables | Cannot load into clustered tables |
| Other users can make changes to tables | Other users cannot make changes to tables |

Loading Data with SQL*Loader

ORACLE® Enterprise Manager 10g Database Control

Setup Preferences Help Logout

Database

Control File Data File Load Method Options Schedule Review

Load Data: Control File

Database **orcl.oracle.com** Cancel Finish Step 1 of 6 Next

A control file is used to describe what will be loaded and how. Specify the full path and name of the control file on the database server machine.

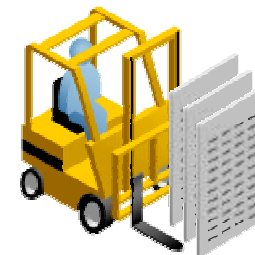
/u01/app/oracle/oradata/orcl/LOAD.CTL

Host Credentials

* Username oracle

* Password *****

☒ Save as Preferred Credential



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Summary

In this lesson, you should have learned how to:

- **Manipulate data through SQL**
- **Use Data Pump to export data**
- **Use Data Pump to import data**
- **Load data with SQL Loader**

Practice 9:

Using Data Pump Export and Import

This practice covers the following:

- **Creating a directory object**
- **Extracting the HR schema objects**
- **Using Data Pump import to load tables into a different schema**