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Sample Schemas

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Preface

Oracle used the schema SCOTT with its two prominent tables EMP and DEPT for many years. With advances in Oracle Database technology, these tables have become inadequate to show even the most basic features of Oracle Database and other Oracle products. As a result, many other schemas have been created over the years to suit the needs of product documentation, courseware, software development, and application demos.

This preface contains these topics:

- [Intended Audience](#)
- [Documentation Accessibility](#)
- [Customer Benefits of Sample Schemas](#)
- [About Sample Schemas](#)
- [Oracle Database Sample Schemas Design Principles](#)
- [Structure](#)
- [Related Documents](#)
- [Conventions](#)

Intended Audience

Sample Schemas is for all users of the seed database, which is installed when you install the Oracle Database.

Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Accessibility standards will continue to evolve over time, and Oracle is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For more information, visit the Oracle Accessibility Program Web site at

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Customer Benefits of Sample Schemas

Benefits of Sample Schemas are as follows:

- **Continuity of context.** When encountering the same set of tables everywhere, users, students, and developers can spend less time becoming familiar with the schema and more time understanding or explaining the technical concepts.
- **Usability.** Customers can use these schemas in the seed database to run examples that are shown in Oracle documentation and training materials. This first-hand access to examples facilitates both conceptual understanding and application development.
- **Quality.** Through central maintenance and testing of both the creation scripts that build Sample Schemas and the examples that run against the schemas, the quality of Oracle documentation and training materials is enhanced.

About Sample Schemas

The Oracle Database Sample Schemas provide a common platform for examples in each release of the Oracle Database. All Oracle Database documentation and training materials are being converted to Sample Schemas environment as those materials are updated.

The Oracle Database Sample Schemas are a set of interlinked schemas. This set of schemas provides a layered approach to complexity:

- A simple schema Human Resources (HR) is useful for introducing basic topics. An extension to this schema supports Oracle Internet Directory demos.
- A second schema Order Entry (OE) is useful for dealing with matters of intermediate complexity. Many data types are available in this schema, including nonscalar data types.
- The Online Catalog (OC) subschema is a collection of object-relational database objects built inside the OE schema.
- The Product Media (PM) schema is dedicated to multimedia data types.
- A set of schemas gathered under the main schema name Information Exchange (IX) can demonstrate Oracle Advanced Queuing capabilities.

- The Sales History (SH) schema is designed to allow for demos with large amounts of data. An extension to this schema provides support for advanced analytic processing.

Oracle Database Sample Schemas Design Principles

Sample Schemas have been created and enhanced with the following design principles in mind:

- **Simplicity and ease of use.** The HR and OE schemas are intentionally simple. They will not become overly complex by the addition of features. Rather, they are intended to provide a graduated path from the simple to intermediate levels of database use.
- **Relevance for typical users.** The base schemas and the extensions bring to the foreground the functionality that customers typically use. Only the most commonly used database objects are built automatically in the schemas. The entire set of schemas provides a foundation upon which one can expand to illustrate additional functionality.
- **Extensibility.** Sample Schemas provide a logical and physical foundation for adding objects to demonstrate functionality beyond the fundamental scope.
- **Relevance.** Sample Schemas are designed to be applicable to e-business and other significant industry trends (for example, XML). When this goal conflicts with the goal of simplicity, schema extensions are used to showcase the trends in focus.

Structure

This document contains the following chapters:

Chapter 1, "Installation"

This chapter describes how to install the Oracle Database Sample Schemas.

Chapter 2, "Rationale"

This chapter describes the fictitious company on which Sample Schemas are based.

Chapter 3, "Diagrams"

This chapter contains diagrams of Sample Schemas.

Chapter 4, "Sample Schema Scripts and Object Descriptions"

This chapter lists the Sample Schema creation scripts and describes the Sample Schema objects.

Related Documents

Printed documentation is available for sale in the Oracle Store at

<http://oraclestore.oracle.com/>

To download free release notes, installation documentation, white papers, or other collateral, please visit the Oracle Technology Network (OTN). You must register online before using OTN registration is free and can be done at

<http://www.oracle.com/technology/membership/index.html>

If you already have a username and password for OTN, then you can go directly to the documentation section of the OTN Web site at

<http://www.oracle.com/technology/documentation/index.html>

Conventions

This section describes the conventions used in the text and code examples of this documentation set. It describes:

- [Conventions in Text](#)
- [Conventions in Code Examples](#)

Conventions in Text

We use various conventions in text to help you more quickly identify special terms. The following table describes those conventions and provides examples of their use.

Convention	Meaning	Example
Bold	Bold typeface indicates terms that are defined in the text or terms that appear in a glossary, or both.	When you specify this clause, you create an index-organized table .
<i>Italics</i>	Italic typeface indicates book titles or emphasis.	<i>Oracle Database Concepts</i> Ensure that the recovery catalog and target database do <i>not</i> reside on the same disk.
UPPERCASE monospace (fixed-width) font	Uppercase monospace typeface indicates elements supplied by the system. Such elements include parameters, privileges, data types, RMAN keywords, SQL keywords, SQL*Plus or utility commands, packages and methods, as well as system-supplied column names, database objects and structures, usernames, and roles.	You can specify this clause only for a NUMBER column. You can back up the database by using the BACKUP command. Query the TABLE_NAME column in the USER_TABLES data dictionary view. Use the DBMS_STATS.GENERATE_STATS procedure.
lowercase monospace (fixed-width) font	Lowercase monospace typeface indicates executables, filenames, directory names, and sample user-supplied elements. Such elements include computer and database names, net service names, and connect identifiers, as well as user-supplied database objects and structures, column names, packages and classes, usernames and roles, program units, and parameter values. Note: Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	Enter sqlplus to start SQL*Plus. The password is specified in the orapwd file. Back up the datafiles and control files in the /disk1/oracle/dbs directory. The department_id, department_name, and location_id columns are in the hr.departments table. Set the QUERY_REWRITE_ENABLED initialization parameter to true. Connect as oe user. The JRepUtil class implements these methods.
<i>lowercase italic monospace (fixed-width) font</i>	Lowercase italic monospace font represents placeholders or variables.	You can specify the <i>parallel_clause</i> . Run <i>old_release.SQL</i> where <i>old_release</i> refers to the release you installed prior to upgrading.

Conventions in Code Examples

Code examples illustrate SQL, PL/SQL, SQL*Plus, or other command-line statements. They are displayed in a monospace (fixed-width) font and separated from normal text as shown in this example:

```
SELECT username FROM dba_users WHERE username = 'MIGRATE';
```

The following table describes typographic conventions used in code examples and provides examples of their use.

Convention	Meaning	Example
[]	Brackets enclose one or more optional items. Do not enter the brackets.	DECIMAL (<i>digits</i> [, <i>precision</i>])
{ }	Braces enclose two or more items, one of which is required. Do not enter the braces.	{ENABLE DISABLE}
	A vertical bar represents a choice of two or more options within brackets or braces. Enter one of the options. Do not enter the vertical bar.	{ENABLE DISABLE} [COMPRESS NOCOMPRESS]
...	Horizontal ellipsis points indicate either: <ul style="list-style-type: none"> That we have omitted parts of the code that are not directly related to the example That you can repeat a portion of the code 	CREATE TABLE ... AS <i>subquery</i> ; SELECT <i>col1</i> , <i>col2</i> , ... , <i>coln</i> FROM employees;
.	Vertical ellipsis points indicate that we have omitted several lines of code not directly related to the example.	SQL> SELECT NAME FROM V\$DATAFILE; NAME ----- /fs1/dbs/tbs_01.dbf /fs1/dbs/tbs_02.dbf . . . /fs1/dbs/tbs_09.dbf 9 rows selected.
Other notation	You must enter symbols other than brackets, braces, vertical bars, and ellipsis points as shown.	acctbal NUMBER(11,2); acct CONSTANT NUMBER(4) := 3;
<i>Italics</i>	Italicized text indicates placeholders or variables for which you must supply particular values.	CONNECT SYSTEM/ <i>system_password</i> DB_NAME = <i>database_name</i>
UPPERCASE	Uppercase typeface indicates elements supplied by the system. We show these terms in uppercase in order to distinguish them from terms you define. Unless terms appear in brackets, enter them in the order and with the spelling shown. However, because these terms are not case sensitive, you can enter them in lowercase.	SELECT last_name, employee_id FROM employees; SELECT * FROM USER_TABLES; DROP TABLE hr.employees;

Convention	Meaning	Example
lowercase	Lowercase typeface indicates programmatic elements that you supply. For example, lowercase indicates names of tables, columns, or files. Note: Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	<pre>SELECT last_name, employee_id FROM employees; sqlplus hr/hr CREATE USER mjones IDENTIFIED BY ty3MU9;</pre>

Installation

During a complete installation of Oracle Database, Sample Schemas can be installed automatically with the seed database. If the seed database is removed from your system, then you will need to reinstall Sample Schemas before you can duplicate the examples you find in Oracle documentation and training materials.

This chapter describes how to install Sample Schemas. It contains the following sections:

- [Using the Database Configuration Assistant](#)
- [Manually Installing Sample Schemas](#)
- [Resetting Sample Schemas](#)

Caution: By installing any of the Oracle Database Sample Schemas, you will destroy any previously installed schemas that use any of the following user names:

- HR
- OE
- PM
- SH
- IX

Data contained in any of these schemas will be lost if you run any of the installation scripts described in this section. You should not use Oracle Database Sample Schemas for your personal or business data and applications. They are meant to be used for demonstration purposes only.

Using the Database Configuration Assistant

When you install Oracle with the Oracle Universal Installer, the sample schemas are installed by default when you select the Basic Installation option. If you have installed your database with the Advanced Option and did not choose to install the sample schemas, you can install the Sample Schemas with the Database Configuration Assistant (DBCA). When you run DBCA, selecting the Sample Schemas option installs all five schemas (HR, OE, PM, IX, SH) in your database.

At the end of the installation process, a window displays the accounts that have been created and their lock status. All Sample Schemas are locked by default. You can unlock the accounts at this point in the installation process. Alternatively, after the

installation is complete, you can unlock the schemas with an `ALTER USER ... ACCOUNT UNLOCK` statement.

The sample schemas available to you depend on the edition of Oracle that you have installed and its configuration. Refer to the following table:

Schema	Oracle Database Personal edition	Oracle Database Standard edition	Oracle Database Enterprise edition
HR	OK	OK	OK
OE	OK	OK	OK
PM	OK	OK	OK
IX	OK	OK	OK
SH	Not available	Not available	Needs Partitioning Option installed

Manually Installing Sample Schemas

You can also create Sample Schemas manually by running SQL scripts, rather than using DBCA. The scripts are included in the companion directory on the installation medium.

Schema Dependencies

Various dependencies have been established among the schemas. Therefore, when you create the schemas manually, you must create them in the following order: HR, OE, PM, IX, and SH.

Use this sequence to create the schemas:

1. Create the HR schema.
2. Create the OE schema: The HR schema is already present, and you must know the password for the HR schema to grant HR object privileges to OE. Some HR tables are visible to the OE user by using private synonyms. In addition, some OE tables have foreign key relationships to HR tables.

Note: The OE schema requires the database to be enabled for spatial data. You can accomplish this during installation or later using the Database Configuration Assistant.

3. Create the PM schema: Foreign key relationships require that the OE schema already exist when the PM schema is created. You need to know the password for OE to grant to PM the right to establish and use these foreign keys.

Note: The PM schema requires the database to be enabled for the Java Virtual Machine (JVM) and *interMedia*. You can accomplish this during installation or later using the Database Configuration Assistant.

4. Create the IX schema: The information exchange schema IX is based on order entry data in OE. Again, foreign key relationships require that the OE schema

already be present when the IX schema is created. You need to know the password for OE to grant to IX the right to establish and use the foreign keys.

5. Create the SH schema. The SH schema logically depends on the OE schema, though you can create this schema without creating the other four schemas.

Installing the HR Schema

All scripts necessary to create Human Resource (HR) schema reside in `$ORACLE_HOME/demo/schema/human_resources`.

You need to call only one script, `hr_main.sql`, to create all the objects and load the data. Running `hr_main.sql` accomplishes the following tasks:

1. Prompts for passwords and tablespace names used within the scripts
2. Removes any previously installed HR schema
3. Creates the user HR and grants the necessary privileges
4. Connects as HR
5. Calls the scripts that create and populate the schema objects

For a complete listing of the scripts and their functions, refer to [Table 4-1](#) on page 4-4.

A pair of optional scripts, `hr_dn_c.sql` and `hr_dn_d.sql`, is provided as a schema extension. To prepare the HR schema for use with the directory capabilities of Oracle Internet Directory, run the `hr_dn_c.sql` script. If you want to return to the initial setup of the HR schema, then use the `hr_dn_d.sql` script to undo the effects of the `hr_dn_c.sql` script.

The `hr_drop.sql` script is used to drop the HR schema.

Installing the OE Schema and its OC Subschema

All scripts necessary to create the Order Entry (OE) schema and its Online Catalog (OC) subschema reside in `$ORACLE_HOME/demo/schema/order_entry`.

You need to call only one script, `oe_main.sql`, to create all the objects and load the data. Running `oe_main.sql` accomplishes the following tasks:

1. Prompts for passwords and tablespace names used within the scripts
2. Removes any previously installed OE schema
3. Creates the user OE and grants the necessary privileges
4. Connects as OE
5. Calls the scripts that create and populate the schema objects

For a complete listing of the scripts and their functions, refer to [Table 4-2](#) on page 4-7, respectively.

The `oe_drop.sql` and `oc_drop.sql` scripts are used to drop the OE schema and OC subschema.

Installing the PM Schema

All files necessary to create Product Media (PM) schema reside in `$ORACLE_HOME/demo/schema/product_media`.

You need to call only one script, `pm_main.sql`, to create all the objects and load the data. Running `pm_main.sql` accomplishes the following tasks:

1. Prompts for passwords and tablespace names used within the scripts, as well as datafile and log file directories
2. Removes any previously installed PM schema
3. Creates the user PM and grants the necessary privileges
4. Connects as PM
5. Calls the following scripts that create and populate the schema objects

For a complete listing of the scripts and their functions, refer to [Table 4-3](#) on page 4-12.

The `pm_drop.sql` script is used to drop the PM schema.

Note: The SQL*Loader data file `pm_p_lob.dat` contains hard-coded absolute path names that have been set during installation. Before attempting to load the data in a different environment, you should first edit the path names in this file.

Installing the IX Schema

To install the Information Exchange (IX) schema, you need to call only one script, `ix_main.sql`, to create all the objects and load the data. Running `ix_main.sql` accomplishes the following tasks:

1. Prompts for passwords and tablespace names used within the scripts
2. Removes any previously installed IX schema
3. Creates the user IX and grants the necessary privileges
4. Connects as IX
5. Calls the scripts that create and populate the schema objects

For a complete listing of the scripts and their functions, refer to [Table 4-4](#) on page 4-14.

The `ix_drop.sql` script is used for dropping the IX schema.

Installing the SH Schema

All files necessary to create the Sales History (SH) schema reside in `$ORACLE_HOME/demo/schema/sales_history`.

You need to call only one script, `sh_main.sql`, to create all the objects and load the data. Running `sh_main.sql` accomplishes the following tasks:

1. Prompts for passwords and tablespace names used within the scripts, as well as datafile and log file directories
2. Removes any previously installed SH schema
3. Creates the user SH and grants the necessary privileges
4. Connects as SH
5. Calls the scripts that create and populate the schema objects

For a complete listing of the scripts and their functions, refer to [Table 4-5](#) on page 4-18.

Note: The dimension tables `PROMOTIONS`, `CUSTOMERS`, `PRODUCTS` and the fact table `SALES` are loaded by `SQL*Loader`, after which directory paths are created inside the database to point to the load and log file locations. This allows the loading of the `COSTS` table by using the external table `sales_transactions_ext`.

A pair of optional scripts, `sh_olp_c.sql` and `sh_olp_d.sql`, is provided as a schema extension. To prepare the `SH` schema for use with the advanced analytical capabilities of OLAP Services, run the `sh_olp_c.sql` create script. If you want to return to the initial setup of the `SH` schema, then use the script `sh_olp_d.sql` to erase the effects of `sh_olp_c.sql` and reinstate dimensions as they were before.

The file used to drop the `SH` schema is `sh_drop.sql`.

Resetting Sample Schemas

To reset Sample Schemas to their initial state, use the following syntax from the `SQL*Plus` command-line interface:

```
@?/demo/schema/mksample systempwd syspwd hrpwd oepwd pmpwd ixpwd shpwd bipwd
default_tablespace temp_tablespace log_file_directory/
```

The `mksample` script expects 11 parameters. Provide the password for `SYSTEM` and `SYS`, and for the `HR`, `OE`, `PM`, `IX`, `SH`, and `BI` schemas. Specify a temporary and a default tablespace, and make sure to end the name of the log file directory with a trailing slash.

The `mksample` script produces several log files:

- `mkverify.log` is the Sample Schema creation log file.
- `hr_main.log` is the `HR` schema creation log file.
- `oe_oc_main.log` is the `OE` schema creation log file.
- `pm_main.log` is the `PM` schema creation log file.
- `pm_p_lob.log` is the `SQL*Loader` log file for `PM.PRINT_MEDIA`.
- `ix_main.log` is the `IX` schema creation log file.
- `sh_main.log` is the `SH` schema creation log file.
- `cust.log` is the `SQL*Loader` log file for `SH.CUSTOMERS`.
- `prod.log` is the `SQL*Loader` log file for `SH.PRODUCTS`.
- `promo.log` is the `SQL*Loader` log file for `SH.PROMOTIONS`.
- `sales.log` is the `SQL*Loader` log file for `SH.SALES`.
- `sales_ext.log` is the external table log file for `SH.COSTS`.

In most situations, there is no difference between installing a Sample Schema for the first time or reinstalling it over a previously installed version. The `*_main.sql` scripts drop the schema users and all their objects.

In some cases, complex interobject relationships in the `OE` or `IX` schemas prevent the `DROP USER ... CASCADE` operations from completing normally. To correct these rare cases, use one of the following procedures:

For the `OC` catalog subschema of the `OE` schema:

1. Connect as the user OE.
2. Run the `oc_drop.sql` script
3. Connect as SYSTEM.
4. Ensure that no user is connected as OE:

```
SELECT username FROM v$session;
```

5. Drop the user:

```
DROP USER oe CASCADE;
```

For the IX schemas:

1. Connect as SYSTEM.
2. Ensure that no user is connected as an IX user:

```
SELECT username FROM v$session WHERE username like 'IX%';
```
3. Drop the schemas by running the `dix.sql` script. You will be prompted for passwords for the individual users.

The Oracle Database Sample Schemas are based on a fictitious company that sells goods through various channels. This chapter describes the fictitious company and contains the following sections:

- [Overall Description](#)
- [HR](#)
- [OE](#)
- [PM](#)
- [IX](#)
- [SH](#)

Overall Description

The sample company portrayed by the Oracle Database Sample Schemas operates worldwide to fill orders for several products. The company has several divisions:

- The Human Resources division tracks information on the employees and the facilities.
- The Order Entry division tracks product inventories and sales of company's products through various channels.
- The Product Media division maintains descriptions and detailed information on each product sold by the company.
- The Information Exchange division manages shipping through B2B applications.
- The Sales division tracks business statistics to facilitate business decisions.

Each of these divisions is represented by a schema.

HR

In the Human Resource (HR) records, each employee has an identification number, e-mail address, job identification code, salary, and manager. Some employees earn commissions in addition to their salary.

The company also tracks information about jobs within the organization. Each job has an identification code, job title, and a minimum and maximum salary range for the job. Some employees have been with the company for a long time and have held different positions within the company. When an employee resigns, the duration the employee was working, the job identification number, and the department are recorded.

The sample company is regionally diverse, so it tracks the locations of its warehouses and departments. Each employee is assigned to a department, and each department is identified either by a unique department number or a short name. Each department is associated with one location, and each location has a full address that includes the street name, postal code, city, state or province, and the country code.

In places where the departments and warehouses are located, the company records details such as, the country name, currency symbol, currency name, and the region where the country resides geographically.

OE

The company sells several products, such as computer hardware and software, music, clothing, and tools. The company maintains information about these products, such as, product identification numbers, the category into which the product falls, order entry (OE), the weight group (for shipping purposes), the warranty period if applicable, the supplier, the availability status of the product, a list price, a minimum price at which a product will be sold, and a URL address for manufacturer information. Inventory information is also recorded for all products, including the warehouse where the product is available and the quantity on hand. Because products are sold worldwide, the company maintains the names of the products and their descriptions in several languages.

The company maintains warehouses in several locations to fulfill customer needs. Each warehouse has a warehouse identification number, name, facility description, and location identification number.

Customer information is also tracked. Each customer has an identification number. Customer records include customer name, street name, city or province, country, phone numbers (up to five phone numbers for each customer), and postal code. Some customers place orders through the Internet, so e-mail addresses are also recorded. Because of language differences among customers, the company records the native language and territory of each customer.

The company places a credit limit on its customers, to limit the amount of products they can purchase at one time. Some customers have an account manager, and this information is also recorded.

When a customer places an order, the company tracks the date of the order, how the order was placed, the current status of the order, shipping mode, total amount of the order, and the sales representative who helped place the order. The sales representative may or may not be the same person as the account manager for a customer. If an order is placed over the Internet, no sales representative is recorded. In addition to the order information, the company also tracks the number of items ordered, the unit price, and the products ordered.

The OE schema also contains XML purchase order documents. The XML documents are stored in the Oracle XML DB Repository after validation against the registered XML schema `purchaseorder.xsd`. You can access these documents in various ways, such as querying the `PURCHASEORDER` object-relational table using SQL, querying public views `RESOURCE_VIEW` and `PATH_VIEW`, and querying the repository using XPath expressions.

The purchase order XML documents are located in the Oracle XML DB Repository folder `$ORACLE_HOME/rdbms/demo/order_entry/2002/month`, where `month` is a three-letter month abbreviation (for example, Jan, Feb, Mar, and so on).

OC Description

The Online Catalog (OC) subschema of the OE schema addresses an online catalog merchandising scenario. The same customers and products are used in OC as in the OE schema proper, but the OC subschema organizes the products into a hierarchy of parent categories and subcategories. This hierarchy corresponds to the arrangement on an e-commerce portal site, where users navigate to specific products by drilling down through increasingly specialized categories of products.

PM

The company stores multimedia and print information about its products in the database. Product Media (PM) schema is used to store such data. Examples of such information are:

- Promotional audio and video clips
- Product images and thumbnails for Web publishing
- Press release texts
- Print media advertisements
- Other promotion texts and translations

IX

The company has decided to test the use of messaging to manage its proposed B2B applications. The plan calls for a small test that will allow a user from outside the firewall to place an order and track its status. The order needs to be booked into the main system. Then, depending on the location of the customer, the order is routed to the nearest region for shipping. The (IX) schema stores such information.

Eventually, the company intends to expand beyond its current in-house distribution system to a system that will allow other businesses to provide the shipping. The messages sent must be in a self-contained format. XML is the perfect format for sending messages, and both Advanced Queueing Servlet and Oracle Internet Directory provide the appropriate routing between the queues.

After the orders are either shipped or back ordered, a message must be sent back to the employee concerned to inform about the status of the order and to initiate the billing cycle. It is important that the message be delivered only once and that there be a system for tracking and reviewing messages to facilitate resolution of any discrepancies with the order.

For the purpose of this test application, the company uses a single database server and a single application server. The application provides a mechanism for examining the XML messages, as well as looking at the queues. To demonstrate connectivity from outside the firewall, both the generation of a new order and customer service reporting are performed using queues. The new order application directly enables a queue, while the customer service queries require XML messaging to disable a queue.

SH

The sample company does a high volume of business, so it runs business statistics reports to aid in decision making. Many of these reports are time-based and nonvolatile. That is, they analyze past data trends. The company loads data into its data warehouse regularly to gather statistics for these reports. These reports include

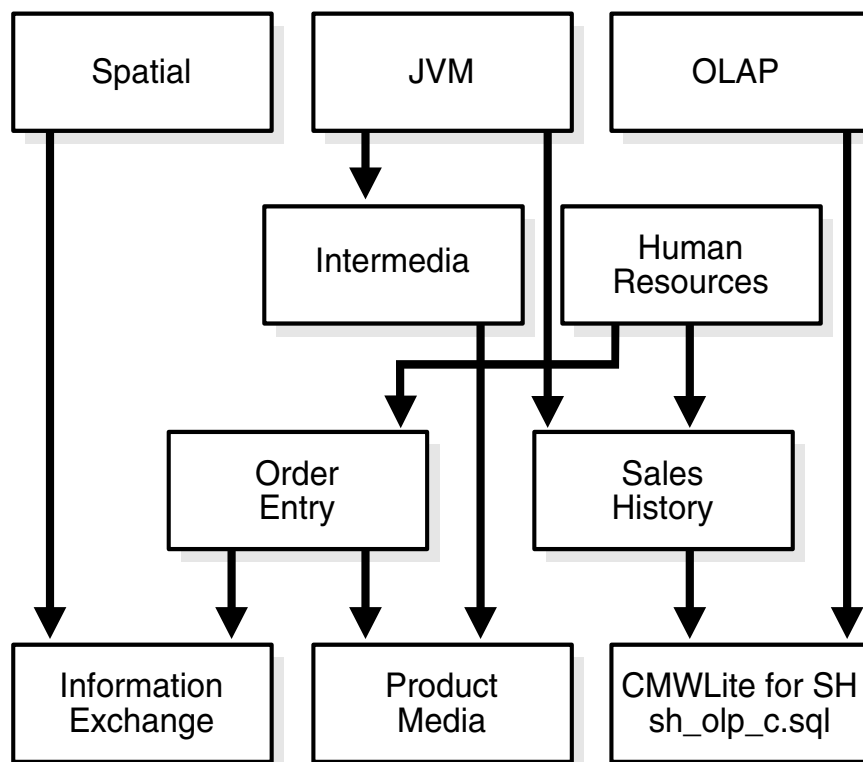
annual, quarterly, monthly, and weekly sales figures by product. These reports are stored with the help of Sales History (SH) schema.

The company also runs reports on distribution channels through which its sales are delivered. When the company runs special promotions on its products, it analyzes the impact of the promotions on sales. It also analyzes sales by geographical area.

This chapter contains diagrams of Sample Schemas. The first diagram shows the build order and prerequisites of Sample Schemas. The remaining diagrams illustrate the configuration of the various components of each schema.

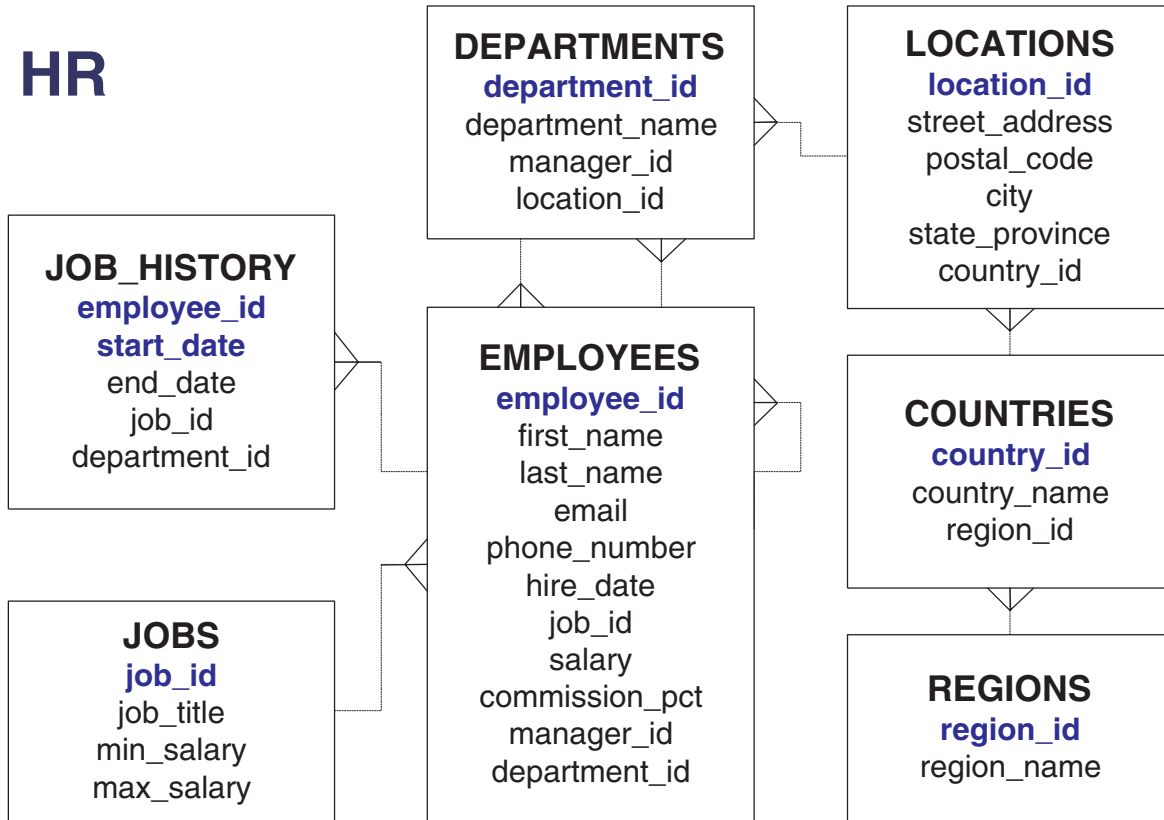
Sample Schema Diagrams

This diagram shows the build order and prerequisites of Sample Schemas.

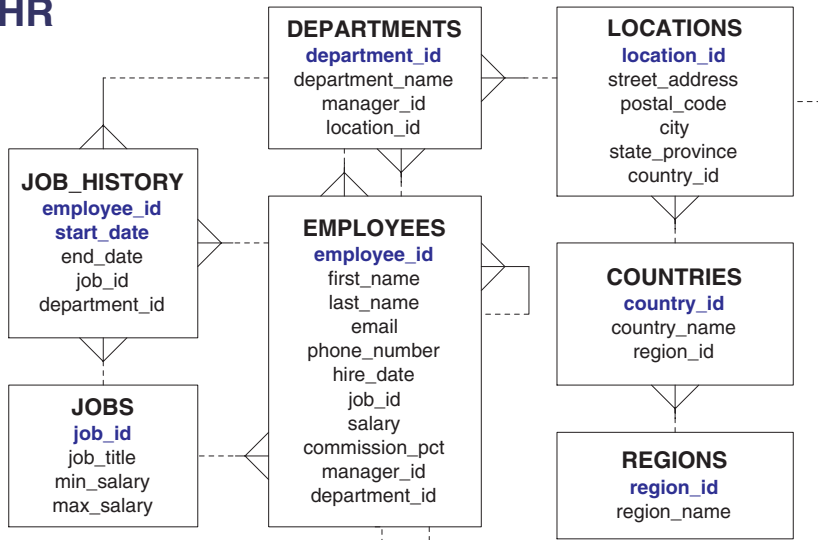


The following diagrams illustrate the configuration of the components of each schema.

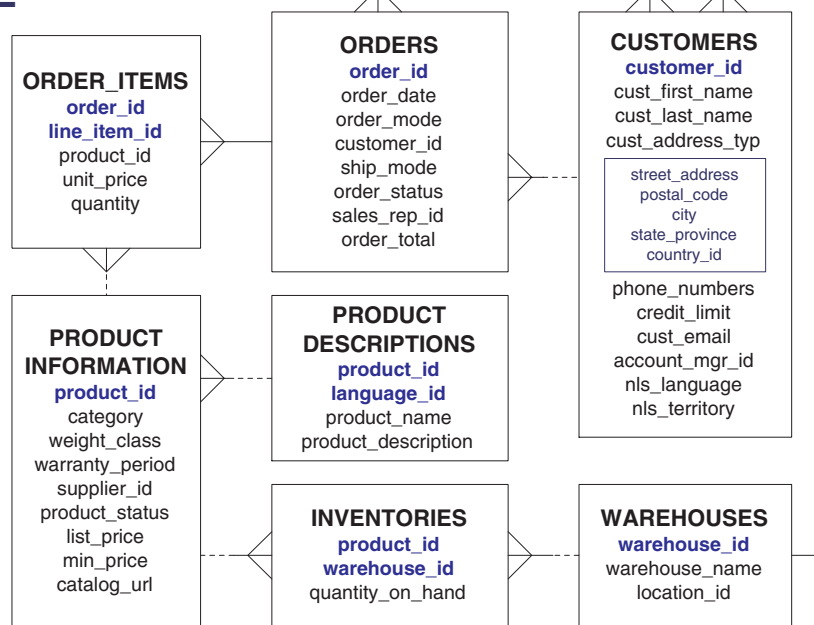
HR

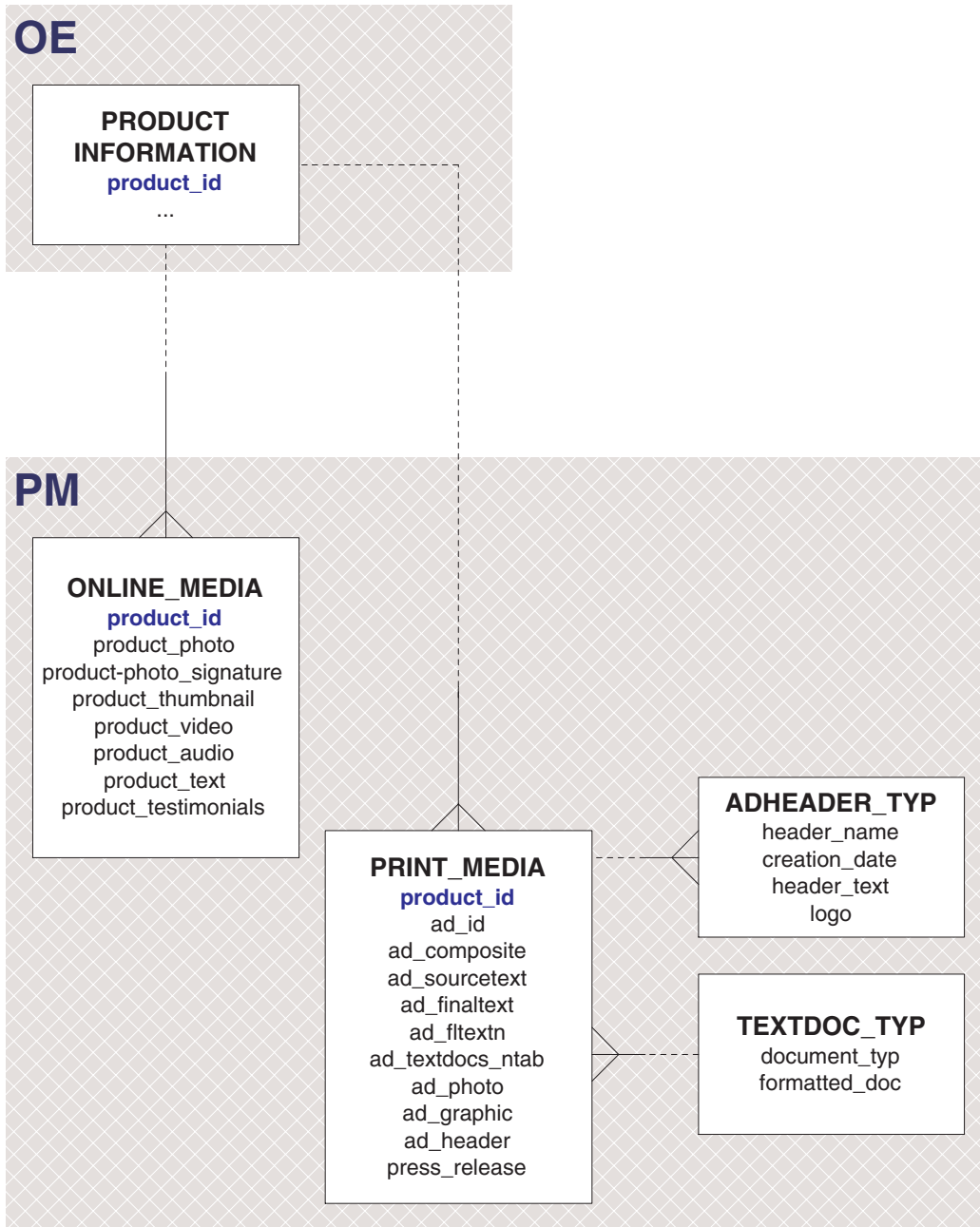


HR

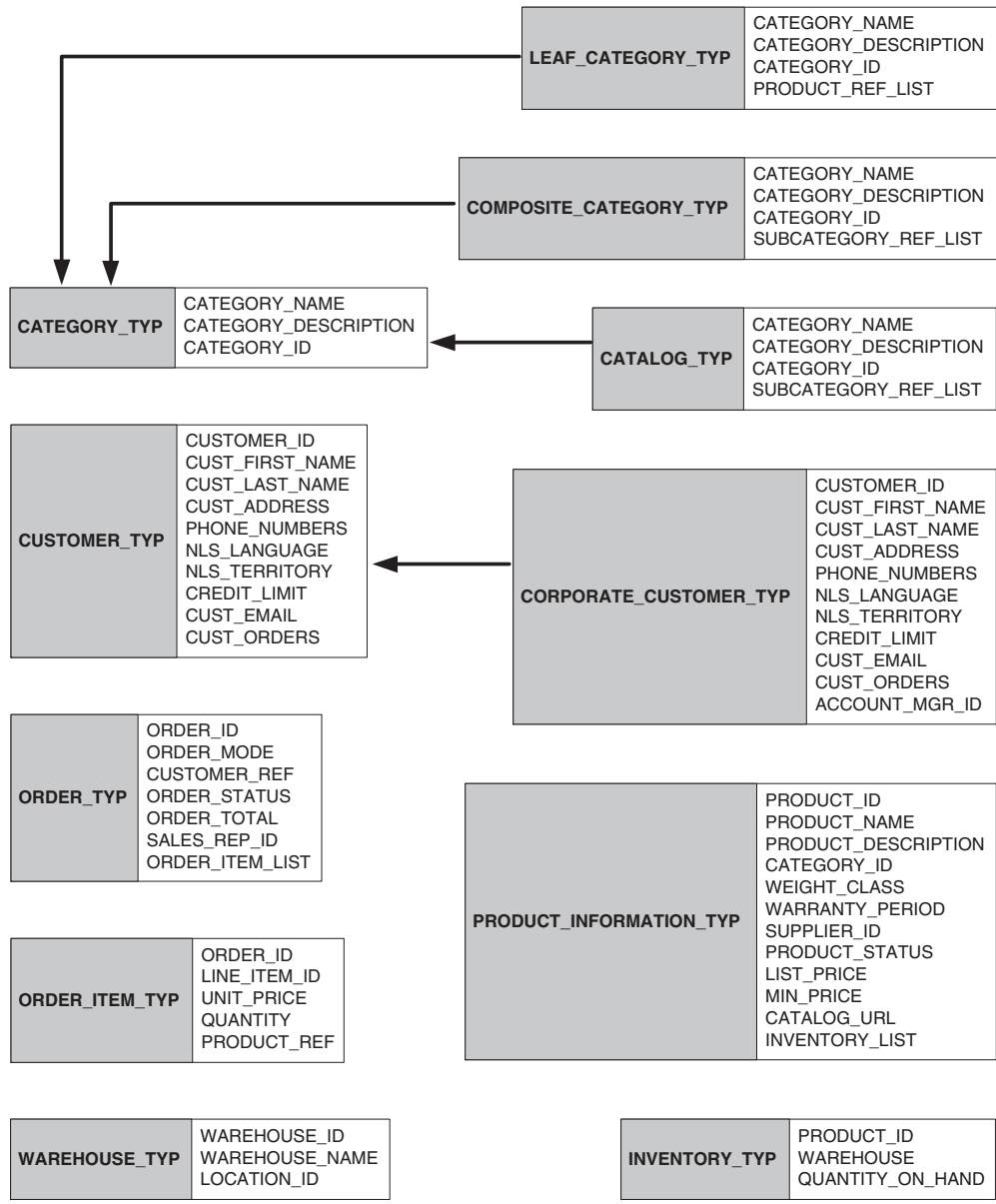


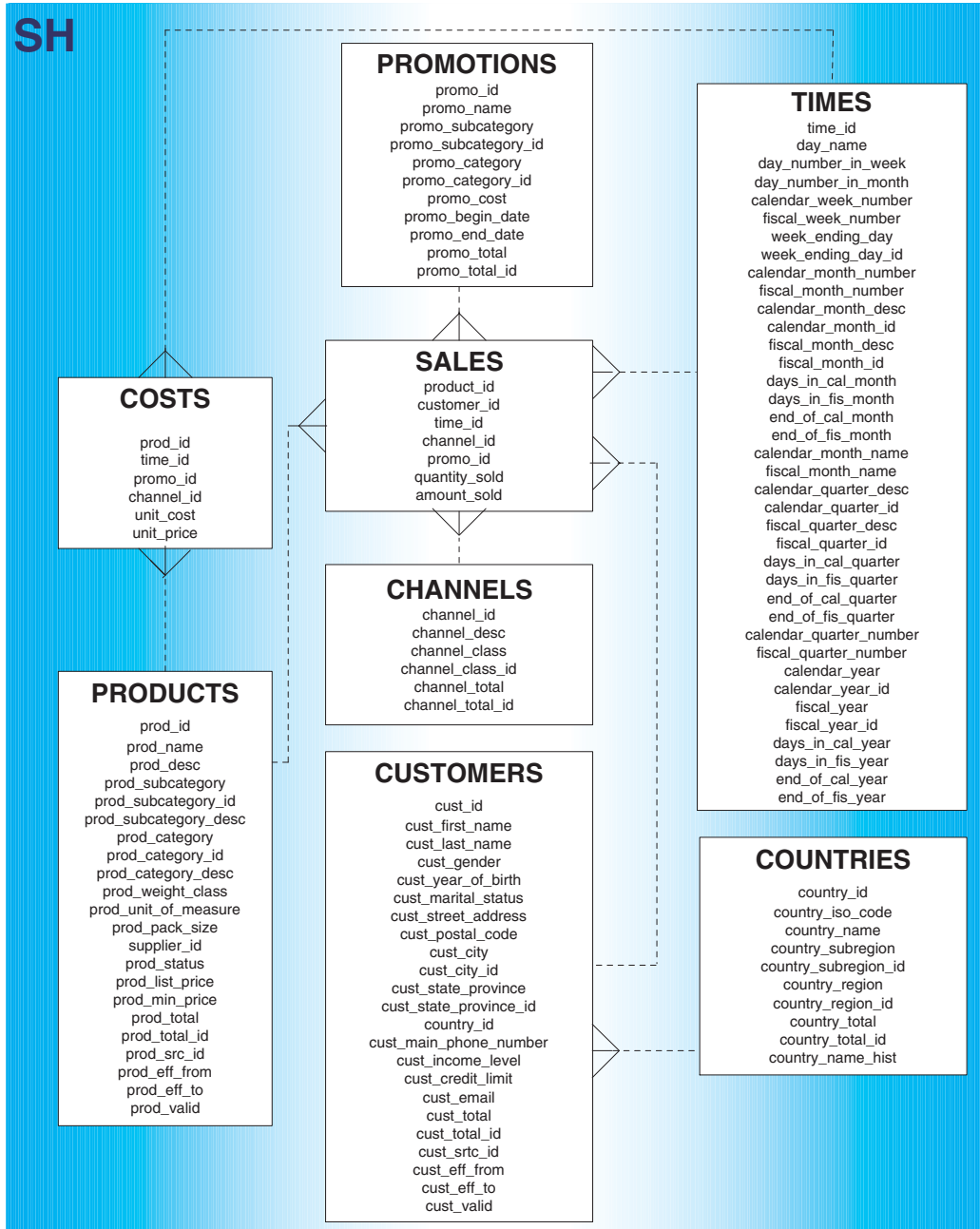
OE





Online Catalog (OC) Subschema: Object Type Diagram





Sample Schema Scripts and Object Descriptions

This chapter describes the scripts used to generate the Oracle Database Sample Schemas. It contains the following sections:

- [About the Scripts](#)
- [Master Script](#)
- [HR Schema](#)
- [OE Schema](#)
- [PM Schema](#)
- [IX Schema](#)
- [SH Schema](#)

About the Scripts

Sample Schemas script directories are located in `$ORACLE_HOME/demo/schema`. You need to install the companion CD to populate the directories with the Sample Schema scripts. Each schema has two primary scripts:

- The `xx_main.sql` script, here `xx` is the schema abbreviation, resets and creates all objects and data for a particular schema. This main script calls all other scripts necessary to build and load the schema.
- The script `xx_drop.sql`, where `xx` is the schema abbreviation, removes all objects from a particular schema.

Sample Schemas script directories are located in `$ORACLE_HOME/demo/schema`.

Note: This chapter contains only the master script for the entire sample schemas environment. It does not include the scripts for the individual schemas because these scripts are very lengthy.

Master Script

The master script, `mksample.sql`, sets up the overall Sample Schema environment and creates all the schemas.


```
SET LINESIZE 80
SET TRIMSPOOL ON
SET TAB OFF
SET PAGESIZE 999
SET ECHO OFF
SET CONCAT '.'
SET SHOWMODE OFF

PROMPT
PROMPT specify password for SYSTEM as parameter 1:
DEFINE password_system = &1
PROMPT
PROMPT specify password for SYS as parameter 2:
DEFINE password_sys = &2
PROMPT
PROMPT specify password for HR as parameter 3:
DEFINE password_hr = &3
PROMPT
PROMPT specify password for OE as parameter 4:
DEFINE password_oe = &4
PROMPT
PROMPT specify password for PM as parameter 5:
DEFINE password_pm = &5
PROMPT
PROMPT specify password for IX as parameter 6:
DEFINE password_ix = &6
PROMPT
PROMPT specify password for SH as parameter 7:
DEFINE password_sh = &7
PROMPT
PROMPT specify password for BI as parameter 8:
DEFINE password_bi = &8
PROMPT
PROMPT specify default tablespace as parameter 9:
DEFINE default_ts = &9
PROMPT
PROMPT specify temporary tablespace as parameter 10:
DEFINE temp_ts = &10
PROMPT
PROMPT specify log file directory (including trailing delimiter) as parameter
  11:
DEFINE logfile_dir = &11
PROMPT
PROMPT Sample Schemas are being created ...
PROMPT
DEFINE vrs = v3

CONNECT system/&&password_system

DROP USER hr CASCADE;
DROP USER oe CASCADE;
DROP USER pm CASCADE;
DROP USER ix CASCADE;
DROP USER sh CASCADE;
DROP USER bi CASCADE;

CONNECT system/&&password_system

SET SHOWMODE OFF
```

```

@?/demo/schema/human_resources/hr_main.sql &&password_hr &&default_ts &&temp_ts
&&password_sys &&logfile_dir

CONNECT system/&&password_system
SET SHOWMODE OFF

@?/demo/schema/order_entry/oe_main.sql &&password_oe &&default_ts &&temp_ts
&&password_hr &&password_sys %s_oePath% &&logfile_dir &vrs

CONNECT system/&&password_system
SET SHOWMODE OFF

@?/demo/schema/product_media/pm_main.sql &&password_pm &&default_ts &&temp_ts
&&password_oe &&password_sys %s_pmPath% &&logfile_dir %s_pmPath%

CONNECT system/&&password_system
SET SHOWMODE OFF

@?/demo/schema/info_exchange/ix_main.sql &&password_ix &&default_ts &&temp_ts
&&password_sys &&logfile_dir &vrs

CONNECT system/&&password_system
SET SHOWMODE OFF

@?/demo/schema/sales_history/sh_main &&password_sh &&default_ts &&temp_ts
&&password_sys %s_shPath% &&logfile_dir &vrs

CONNECT system/&&password_system
SET SHOWMODE OFF

@?/demo/schema/bus_intelligence/bi_main &&password_bi &&default_ts &&temp_ts
&&password_sys &&password_oe &&password_sh &&logfile_dir &vrs

CONNECT system/&&password_system

SPOOL OFF

DEFINE veri_spool = &&logfile_dir.mkverify_&vrs..log

@?/demo/schema/mkverify &&password_system &veri_spool

EXIT

```

HR Schema

This section lists the names of the scripts that create the human resources (HR) schema and describes the objects in the schema. [Table 4-1](#) lists the HR scripts in alphabetical order.

Table 4-1 Human Resources (HR) Schema Scripts

Script Name	Description
hr_analz.sql	Collects statistics on the tables in the schema
hr_code.sql	Creates procedural objects in the schema
hr_comnt.sql	Creates comments for each object in the schema
hr_cre.sql	Creates the HR objects

Table 4–1 (Cont.) Human Resources (HR) Schema Scripts

Script Name	Description
hr_dn_c.sql	Adds the distinguished name column used by Oracle Internet Directory to the <code>employees</code> and <code>departments</code> tables
hr_dn_d.sql	Drops the Oracle Internet Directory distinguished name column from <code>employees</code> and <code>departments</code>
hr_drop.sql	Drops the HR schema and all its objects
hr_idx.sql	Creates indexes on the HR tables
hr_main.sql	Main script for the HR schema; calls other scripts
hr_popul.sql	Populates the objects

List of HR Objects

INDEX

COUNTRY_C_ID_PK
 DEPT_ID_PK
 DEPT_LOCATION_IX
 EMP_DEPARTMENT_IX
 EMP_EMAIL_UK
 EMP_EMP_ID_PK
 EMP_JOB_IX
 EMP_MANAGER_IX
 EMP_NAME_IX
 JHIST_DEPARTMENT_IX
 JHIST_EMPLOYEE_IX
 JHIST_EMP_ID_ST_DATE_PK
 JHIST_JOB_IX
 JOB_ID_PK
 LOC_CITY_IX
 LOC_COUNTRY_IX
 LOC_ID_PK
 LOC_STATE_PROVINCE_IX
 REG_ID_PK

PROCEDURE

ADD_JOB_HISTORY
 SECURE_DML

SEQUENCE

DEPARTMENTS_SEQ
 EMPLOYEES_SEQ
 LOCATIONS_SEQ

TABLE

COUNTRIES
 DEPARTMENTS
 EMPLOYEES
 JOBS
 JOB_HISTORY
 LOCATIONS
 REGIONS

TRIGGER

SECURE_EMPLOYEES
 UPDATE_JOB_HISTORY

VIEW

EMP_DETAILS_VIEW

HR Table Descriptions

Table COUNTRIES

Name	Null?	Type
COUNTRY_ID	NOT NULL	CHAR (2)
COUNTRY_NAME		VARCHAR2 (40)
REGION_ID		NUMBER

Table DEPARTMENTS

Name	Null?	Type
DEPARTMENT_ID	NOT NULL	NUMBER (4)
DEPARTMENT_NAME	NOT NULL	VARCHAR2 (30)
MANAGER_ID		NUMBER (6)
LOCATION_ID		NUMBER (4)

Table EMPLOYEES

Name	Null?	Type
EMPLOYEE_ID	NOT NULL	NUMBER (6)
FIRST_NAME		VARCHAR2 (20)
LAST_NAME	NOT NULL	VARCHAR2 (25)
EMAIL	NOT NULL	VARCHAR2 (25)
PHONE_NUMBER		VARCHAR2 (20)
HIRE_DATE		NOT NULL DATE
JOB_ID		NOT NULL VARCHAR2 (10)
SALARY		NUMBER (8,2)
COMMISSION_PCT		NUMBER (2,2)
MANAGER_ID		NUMBER (6)
DEPARTMENT_ID		NUMBER (4)

Table JOBS

Name	Null?	Type
JOB_ID	NOT NULL	VARCHAR2 (10)
JOB_TITLE	NOT NULL	VARCHAR2 (35)
MIN_SALARY		NUMBER (6)
MAX_SALARY		NUMBER (6)

Table JOB_HISTORY

Name	Null?	Type
EMPLOYEE_ID	NOT NULL	NUMBER (6)
START_DATE	NOT NULL	DATE
END_DATE	NOT NULL	DATE
JOB_ID	NOT NULL	VARCHAR2 (10)
DEPARTMENT_ID		NUMBER (4)

Table LOCATIONS

Name	Null?	Type
LOCATION_ID	NOT NULL	NUMBER (4)
STREET_ADDRESS		VARCHAR2 (40)
POSTAL_CODE		VARCHAR2 (12)
CITY	NOT NULL	VARCHAR2 (30)
STATE_PROVINCE		VARCHAR2 (25)
COUNTRY_ID		CHAR (2)

Table REGIONS

Name	Null?	Type
REGION_ID	NOT NULL	NUMBER
REGION_NAME		VARCHAR2 (25)

OE Schema

This section lists the names of the scripts that create the Order Entry (OE) schema and describes the objects in the schema. [Table 4-2](#) lists the OE scripts in alphabetical order.

Table 4-2 Order Entry (OE) Schema Scripts

Script Name	Description
oc_comnt.sql	Adds comments to the online catalog (OC) subschema wherever possible
oc_cre.sql	Creates the OC subschema
oc_drop.sql	Drops the OC subschema
oc_main.sql	Main script for the OC subschema
oc_popul.sql ^a	Populates the object tables
oe_analz.sql	Gathers statistics on the OE objects
oe_comnt.sql	Creates comments for the objects in the schema
oe_cre.sql	Creates the OE objects
oe_drop.sql	Drops the OE schema and all its objects
oe_idx.sql	Creates indexes on the OE tables
oe_main.sql	Main script for the OE schema; calls other scripts
oe_views.sql	Creates the OE schema views

Note: Language-specific statements for product names and descriptions are stored in these files (each representing a different language): , INSERToe_p_us.sql, oe_p_ar.sql, oe_p_cs.sql, oe_p_d.sql, oe_p_dk.sql, oe_p_e.sql, oe_p_el.sql, oe_p_esa.sql, oe_p_f.sql, oe_p_frc.sql, oe_p_hu.sql, oe_p_i.sql, oe_p_iw.sql, oe_p_ja.sql, oe_p_ko.sql, oe_p_n.sql, oe_p_nl.sql, oe_p_pl.sql, oe_p_pt.sql, oe_p_ptb.sql, oe_p_ro.sql, oe_p_ru.sql, oe_p_s.sql, oe_p_sf.sql, oe_p_sk.sql, oe_p_th.sql, oe_p_tr.sql, oe_p_zhs.sql, oe_p_zht.sql.

List of OE Objects

FUNCTION
GET_PHONE_NUMBER_F

INDEX
CUSTOMERS_PK
CUST_ACCOUNT_MANAGER_IX
CUST_EMAIL_IX
CUST_LNAME_IX
CUST_UPPER_NAME_IX

INVENTORY_IX
 INV_PRODUCT_IX
 ITEM_ORDER_IX
 ITEM_PRODUCT_IX
 ORDER_ITEMS_PK
 ORDER_ITEMS_UK
 ORDER_PK
 ORD_CUSTOMER_IX
 ORD_ORDER_DATE_IX
 ORD_SALES_REP_IX
 PRD_DESC_PK
 PRODUCT_INFORMATION_PK
 PROD_NAME_IX
 PROD_SUPPLIER_IX
 PROMO_ID_PK
 REFERENCE_IS_UNIQUE
 SYS_C003584
 SYS_C003587
 SYS_C003588
 SYS_C003589
 SYS_C003590
 WAREHOUSES_PK
 WHS_LOCATION_IX

LOB

SYS_LOB0000045843C00022\$\$
 SYS_LOB0000045843C00023\$\$
 SYS_LOB0000045852C00003\$\$
 SYS_LOB0000045852C00012\$\$
 SYS_LOB0000045852C00013\$\$
 SYS_LOB0000046019C00004\$\$
 SYS_LOB0000046019C00005\$\$
 SYS_LOB0000046019C00007\$\$
 SYS_LOB0000046019C00011\$\$
 SYS_LOB0000046019C00012\$\$
 SYS_LOB0000046019C00015\$\$
 SYS_LOB0000046019C00024\$\$
 SYS_LOB0000046019C00031\$\$
 SYS_LOB0000046019C00032\$\$
 SYS_LOB0000046044C00003\$\$

SEQUENCE

ORDERS_SEQ

SYNONYM

COUNTRIES
 DEPARTMENTS
 EMPLOYEES
 JOBS
 JOB_HISTORY
 LOCATIONS

TABLE

CATEGORIES_TAB
 CUSTOMERS
 INVENTORIES
 ORDERS
 ORDER_ITEMS
 PRODUCT_DESCRIPTIONS
 PRODUCT_INFORMATION

```
PRODUCT_REF_LIST_NESTEDTAB
PROMOTIONS
PURCHASEORDER
STYLESHEET_TAB
SUBCATEGORY_REF_LIST_NESTEDTAB
WAREHOUSES
```

```
TRIGGER
INSERT_ORD_LINE
ORDERS_ITEMS_TRG
ORDERS_TRG
PURCHASEORDER$xd
```

```
TYPE
CATALOG_TYP
CATALOG_TYP
CATEGORY_TYP
CATEGORY_TYP
COMPOSITE_CATEGORY_TYP
COMPOSITE_CATEGORY_TYP
CORPORATE_CUSTOMER_TYP
CUSTOMER_TYP
CUST_ADDRESS_TYP
INVENTORY_LIST_TYP
INVENTORY_TYP
LEAF_CATEGORY_TYP
LEAF_CATEGORY_TYP
ORDER_ITEM_LIST_TYP
ORDER_ITEM_TYP
ORDER_LIST_TYP
ORDER_TYP
PHONE_LIST_TYP
PRODUCT_INFORMATION_TYP
PRODUCT_REF_LIST_TYP
SUBCATEGORY_REF_LIST_TYP
SYS_YOID0000046073$
SYS_YOID0000046075$
SYS_YOID0000046077$
SYS_YOID0000046079$
SYS_YOID0000046081$
WAREHOUSE_TYP
XDBPO_ACTIONS_TYPE
XDBPO_ACTION_COLLECTION
XDBPO_ACTION_TYPE
XDBPO_LINEITEMS_TYPE
XDBPO_LINEITEM_COLLECTION
XDBPO_LINEITEM_TYPE
XDBPO_PART_TYPE
XDBPO_REJECTION_TYPE
XDBPO_SHIPINSTRUCTIONS_TYPE
XDBPO_TYPE
```

```
TYPE BODY
CATALOG_TYP
COMPOSITE_CATEGORY_TYP
LEAF_CATEGORY_TYP
```

```
VIEW
ACCOUNT_MANAGERS
BOMBAY_INVENTORY
```

CUSTOMERS_VIEW
 DEPTVIEW
 OC_CORPORATE_CUSTOMERS
 OC_CUSTOMERS
 OC_INVENTORIES
 OC_ORDERS
 OC_PRODUCT_INFORMATION
 ORDERS_VIEW
 PRODUCTS
 PRODUCT_PRICES
 SYDNEY_INVENTORY
 TORONTO_INVENTORY

OE Table Descriptions

Table CATEGORIES_TAB

Name	Null?	Type
CATEGORY_NAME		VARCHAR2(50)
CATEGORY_DESCRIPTION		VARCHAR2(1000)
CATEGORY_ID	NOT NULL	NUMBER(2)
PARENT_CATEGORY_ID		NUMBER(2)

Table CUSTOMERS

Name	Null?	Type
CUSTOMER_ID	NOT NULL	NUMBER(6)
CUST_FIRST_NAME	NOT NULL	VARCHAR2(20)
CUST_LAST_NAME	NOT NULL	VARCHAR2(20)
CUST_ADDRESS		CUST_ADDRESS_TYP
PHONE_NUMBERS		PHONE_LIST_TYP
NLS_LANGUAGE		VARCHAR2(3)
NLS_TERRITORY		VARCHAR2(30)
CREDIT_LIMIT		NUMBER(9,2)
CUST_EMAIL		VARCHAR2(30)
ACCOUNT_MGR_ID		NUMBER(6)
CUST_GEO_LOCATION		MDSYS.SDO_GEOMETRY
DATE_OF_BIRTH		DATE
MARITAL_STATUS		VARCHAR2(20)
GENDER		VARCHAR2(1)
INCOME_LEVEL		VARCHAR2(20)

Table INVENTORIES

Name	Null?	Type
PRODUCT_ID	NOT NULL	NUMBER(6)
WAREHOUSE_ID	NOT NULL	NUMBER(3)
QUANTITY_ON_HAND	NOT NULL	NUMBER(8)

Table ORDERS

Name	Null?	Type
ORDER_ID	NOT NULL	NUMBER(12)
ORDER_DATE	NOT NULL	TIMESTAMP(6) WITH LOCAL TIME ZONE
ORDER_MODE		VARCHAR2(8)
CUSTOMER_ID	NOT NULL	NUMBER(6)
ORDER_STATUS		NUMBER(2)
ORDER_TOTAL		NUMBER(8,2)
SALES_REP_ID		NUMBER(6)
PROMOTION_ID		NUMBER(6)

Table ORDER_ITEMS

Name	Null?	Type
ORDER_ID	NOT NULL	NUMBER(12)
LINE_ITEM_ID	NOT NULL	NUMBER(3)
PRODUCT_ID	NOT NULL	NUMBER(6)
UNIT_PRICE		NUMBER(8,2)
QUANTITY		NUMBER(8)

Table PRODUCT_DESCRIPTIONS

Name	Null?	Type
PRODUCT_ID	NOT NULL	NUMBER(6)
LANGUAGE_ID	NOT NULL	VARCHAR2(3)
TRANSLATED_NAME	NOT NULL	NVARCHAR2(50)
TRANSLATED_DESCRIPTION	NOT NULL	NVARCHAR2(2000)

Table PRODUCT_INFORMATION

Name	Null?	Type
PRODUCT_ID	NOT NULL	NUMBER(6)
PRODUCT_NAME		VARCHAR2(50)
PRODUCT_DESCRIPTION		VARCHAR2(2000)
CATEGORY_ID		NUMBER(2)
WEIGHT_CLASS		NUMBER(1)
WARRANTY_PERIOD		INTERVAL YEAR(2) TO MONTH
SUPPLIER_ID		NUMBER(6)
PRODUCT_STATUS		VARCHAR2(20)
LIST_PRICE		NUMBER(8,2)
MIN_PRICE		NUMBER(8,2)
CATALOG_URL		VARCHAR2(50)

PRODUCT_REF_LIST_NESTEDTAB

Name	Null?	Type
COLUMN_VALUE		NUMBER(6)

Table PROMOTIONS

Name	Null?	Type
PROMO_ID	NOT NULL	NUMBER(6)
PROMO_NAME		VARCHAR2(20)

Table PURCHASEORDER

Name	Null?	Type
------	-------	------

TABLE of SYS.XMLTYPE(XMLSchema

<http://localhost:8080/source/schemas/poSource/xsd/purchaseOrder.xsd>

Element "PurchaseOrder")

STORAGE Object-relational

TYPE "PURCHASEORDER_T"

Table STYLESHEET_TAB

Name	Null?	Type
ID		NUMBER
STYLESHEET		XMLTYPE

Table SUBCATEGORY_REF_LIST_NESTEDTAB

Name	Null?	Type
COLUMN_VALUE		REF OF CATEGORY_TYP

Table WAREHOUSES		
Name	Null?	Type
WAREHOUSE_ID	NOT NULL	NUMBER(3)
WAREHOUSE_SPEC		SYS.XMLTYPE
WAREHOUSE_NAME		VARCHAR2(35)
LOCATION_ID		NUMBER(4)
WH_GEO_LOCATION		MDSYS.SDO_GEOMETRY

PM Schema

This section lists the names of the scripts that create the Product Media (PM) schema and describes the objects in the schema. [Table 4-3](#) lists the OE scripts in alphabetical order.

Table 4-3 Product Media (PM) Schema Scripts

Script Name	Description
pm_analz.sql	Gathers statistics on the PM objects
pm_cre.sql	Creates the PM objects
pm_drop.sql	Drops the PM schema and all its objects
pm_p_ord.sql, pm_p_lob.sql, pm_p_lobctl, pm_p_lob.dat	Populates the objects in the schema
pm_main.sql	Main script for the PM schema that calls other scripts

Note: The SQL*Loader data file `pm_p_lob.dat` contains hard-coded absolute path names that have been set during installation. Before attempting to load the data in a different environment, you should first edit the path names in this file.

List of PM Objects

```

INDEX
ONLINEMEDIA_PK
PRINTMEDIA_PK
SYS_C003538

LOB
SYS_LOB0000045882C00003$$
SYS_LOB0000045882C00017$$
SYS_LOB0000045882C00019$$
SYS_LOB0000045882C00034$$
SYS_LOB0000045882C00042$$
SYS_LOB0000045882C00054$$
SYS_LOB0000045882C00062$$
SYS_LOB0000045882C00069$$
SYS_LOB0000045882C00071$$
SYS_LOB0000045882C00080$$
SYS_LOB0000045907C00003$$
SYS_LOB0000045907C00004$$
    
```



```

SYS_LOB0000045907C00005$$
SYS_LOB0000045907C00006$$
SYS_LOB0000045907C00009$$
SYS_LOB0000045907C00015$$
SYS_LOB0000045908C00004$$

```

```

TABLE
  ONLINE_MEDIA
  PRINT_MEDIA
  TEXTDOCS_NESTEDTAB

```

```

TYPE
  ADHEADER_TYP
  TEXTDOC_TAB
  TEXTDOC_TYP

```

PM Table Descriptions

Table ONLINE_MEDIA

Name	Null?	Type
PRODUCT_ID	NOT NULL	NUMBER (6)
PRODUCT_PHOTO		ORDSYS.ORDIMAGE
PRODUCT_PHOTO_SIGNATURE		ORDSYS.ORDIMAGESIGNATURE
PRODUCT_THUMBNAIL		ORDSYS.ORDIMAGE
PRODUCT_VIDEO		ORDSYS.ORDVIDEO
PRODUCT_AUDIO		ORDSYS.ORDAUDIO
PRODUCT_TEXT		CLOB
PRODUCT_TESTIMONIALS		ORDSYS.ORDDOC

Table PRINT_MEDIA

Name	Null?	Type
PRODUCT_ID	NOT NULL	NUMBER (6)
AD_ID	NOT NULL	NUMBER (6)
AD_COMPOSITE		BLOB
AD_SOURCETEXT		CLOB
AD_FINALTEXT		CLOB
AD_FLTEXTN		NCLOB
AD_TEXTDOCS_NTAB		TEXTDOC_TAB
AD_PHOTO		BLOB
AD_GRAPHIC		BINARY FILE LOB
AD_HEADER		ADHEADER_TYP

Table TEXTDOCS_NESTEDTAB

Name	Null?	Type
DOCUMENT_TYP		VARCHAR2 (32)
FORMATTED_DOC		BLOB

IX Schema

This section lists the names of the scripts that create the Information Exchange (IX) schema group and describes the objects in the schemas. [Table 4-4](#) lists the IX scripts in alphabetical order.

Table 4–4 Information Exchange (IX) Schema Scripts

Script Name	Description
cix_v3.sql	Creates the IX schema objects
dix_v3.sql	Drops the IX schema objects
ix_main.sql	Main script for the IX schema calls other scripts
vix_v3.sql	Enables, disables, and verifies IX objects

List of IX Objects

EVALUATION CONTEXT

AQ\$_ORDERS_QUEUE_TABLE_V
 AQ\$_STREAMS_QUEUE_TABLE_V

INDEX

SYS_C003540
 SYS_C003543
 SYS_C003548
 SYS_C003551
 SYS_IOT_TOP_45932
 SYS_IOT_TOP_45934
 SYS_IOT_TOP_45936
 SYS_IOT_TOP_45939
 SYS_IOT_TOP_45949
 SYS_IOT_TOP_45951
 SYS_IOT_TOP_45953
 SYS_IOT_TOP_45956

LOB

SYS_LOB0000045926C00036\$\$
 SYS_LOB0000045941C00028\$\$
 SYS_LOB0000045941C00029\$\$

QUEUE

AQ\$_ORDERS_QUEUE_TABLE_E
 AQ\$_STREAMS_QUEUE_TABLE_E
 ORDERS_QUEUE
 STREAMS_QUEUE

RULE SET

ORDERS_QUEUE_N
 ORDERS_QUEUE_R
 STREAMS_QUEUE_N
 STREAMS_QUEUE_R

SEQUENCE

AQ\$_ORDERS_QUEUE_TABLE_N
 AQ\$_STREAMS_QUEUE_TABLE_N

TABLE

AQ\$_ORDERS_QUEUE_TABLE_G
 AQ\$_ORDERS_QUEUE_TABLE_H
 AQ\$_ORDERS_QUEUE_TABLE_I
 AQ\$_ORDERS_QUEUE_TABLE_S
 AQ\$_ORDERS_QUEUE_TABLE_T
 AQ\$_STREAMS_QUEUE_TABLE_G
 AQ\$_STREAMS_QUEUE_TABLE_H
 AQ\$_STREAMS_QUEUE_TABLE_I

AQ\$_STREAMS_QUEUE_TABLE_S
 AQ\$_STREAMS_QUEUE_TABLE_T
 ORDERS_QUEUE_TABLE
 STREAMS_QUEUE_TABLE
 SYS_IOT_OVER_45936
 SYS_IOT_OVER_45953

TYPE
 ORDER_EVENT_TYP

VIEW
 AQ\$ORDERS_QUEUE_TABLE
 AQ\$ORDERS_QUEUE_TABLE_R
 AQ\$ORDERS_QUEUE_TABLE_S
 AQ\$STREAMS_QUEUE_TABLE
 AQ\$STREAMS_QUEUE_TABLE_R
 AQ\$STREAMS_QUEUE_TABLE_S

IX Table Descriptions

Table AQ\$_ORDERS_QUEUE_TABLE_G

Name	Null?	Type
MSGID	NOT NULL	RAW(16)
SUBSCRIBER#	NOT NULL	NUMBER
NAME	NOT NULL	VARCHAR2(30)
ADDRESS#	NOT NULL	NUMBER
SIGN		SYS.AQ\$_SIG_PROP
DBS_SIGN		SYS.AQ\$_SIG_PROP

Table AQ\$_ORDERS_QUEUE_TABLE_H

Name	Null?	Type
MSGID	NOT NULL	RAW(16)
SUBSCRIBER#	NOT NULL	NUMBER
NAME	NOT NULL	VARCHAR2(30)
ADDRESS#	NOT NULL	NUMBER
DEQUEUE_TIME		TIMESTAMP(6) WITH LOCAL TIME ZONE
TRANSACTION_ID		VARCHAR2(30)
DEQUEUE_USER		VARCHAR2(30)
PROPAGATED_MSGID		RAW(16)
RETRY_COUNT		NUMBER
HINT		ROWID
SPARE		RAW(16)

Table AQ\$_ORDERS_QUEUE_TABLE_I

Name	Null?	Type
SUBSCRIBER#	NOT NULL	NUMBER
NAME	NOT NULL	VARCHAR2(30)
QUEUE#	NOT NULL	NUMBER
MSG_ENQ_TIME	NOT NULL	TIMESTAMP(6) WITH LOCAL TIME ZONE
MSG_STEP_NO	NOT NULL	NUMBER
MSG_CHAIN_NO	NOT NULL	NUMBER
MSG_LOCAL_ORDER_NO	NOT NULL	NUMBER
MSGID NOT NULL		RAW(16)
HINT		ROWID
SPARE		RAW(16)

Table AQ\$_ORDERS_QUEUE_TABLE_S

Name	Null?	Type
SUBSCRIBER_ID	NOT NULL	NUMBER
QUEUE_NAME	NOT NULL	VARCHAR2 (30)
NAME		VARCHAR2 (30)
ADDRESS		VARCHAR2 (1024)
PROTOCOL		NUMBER
SUBSCRIBER_TYPE		NUMBER
RULE_NAME		VARCHAR2 (30)
TRANS_NAME		VARCHAR2 (61)
RULESET_NAME		VARCHAR2 (65)
NEGATIVE_RULESET_NAME		VARCHAR2 (65)

Table AQ\$_ORDERS_QUEUE_TABLE_T

Name	Null?	Type
NEXT_DATE	NOT NULL	TIMESTAMP (6) WITH LOCAL TIME ZONE
TXN_ID NOT NULL		VARCHAR2 (30)
MSGID NOT NULL		RAW (16)
ACTION		NUMBER

Table AQ\$_STREAMS_QUEUE_TABLE_G

Name	Null?	Type
MSGID	NOT NULL	RAW (16)
SUBSCRIBER#	NOT NULL	NUMBER
NAME	NOT NULL	VARCHAR2 (30)
ADDRESS#	NOT NULL	NUMBER
SIGN		SYS.AQ\$_SIG_PROP
DBS_SIGN		SYS.AQ\$_SIG_PROP

Table AQ\$_STREAMS_QUEUE_TABLE_H

Name	Null?	Type
MSGID	NOT NULL	RAW (16)
SUBSCRIBER#	NOT NULL	NUMBER
NAME	NOT NULL	VARCHAR2 (30)
ADDRESS#	NOT NULL	NUMBER
DEQUEUE_TIME		TIMESTAMP (6) WITH LOCAL TIME ZONE
TRANSACTION_ID		VARCHAR2 (30)
DEQUEUE_USER		VARCHAR2 (30)
PROPAGATED_MSGID		RAW (16)
RETRY_COUNT		NUMBER
HINT		ROWID
SPARE		RAW (16)

Table AQ\$_STREAMS_QUEUE_TABLE_I

Name	Null?	Type
SUBSCRIBER#	NOT NULL	NUMBER
NAME	NOT NULL	VARCHAR2 (30)
QUEUE#	NOT NULL	NUMBER
MSG_ENQ_TID	NOT NULL	VARCHAR2 (30)
SENDER#	NOT NULL	NUMBER
TXN_STEP#	NOT NULL	NUMBER
MSG_ENQ_TIME	NOT NULL	TIMESTAMP (6) WITH LOCAL TIME ZONE
MSG_STEP_NO	NOT NULL	NUMBER
MSG_CHAIN_NO	NOT NULL	NUMBER
MSG_LOCAL_ORDER_NO	NOT NULL	NUMBER
MSGID	NOT NULL	RAW (16)

HINT
SPARE

ROWID
RAW(16)

Table AQ\$_STREAMS_QUEUE_TABLE_S

Name	Null?	Type
SUBSCRIBER_ID	NOT NULL	NUMBER
QUEUE_NAME	NOT NULL	VARCHAR2(30)
NAME		VARCHAR2(30)
ADDRESS		VARCHAR2(1024)
PROTOCOL		NUMBER
SUBSCRIBER_TYPE		NUMBER
RULE_NAME		VARCHAR2(30)
TRANS_NAME		VARCHAR2(61)
RULESET_NAME		VARCHAR2(65)
NEGATIVE_RULESET_NAME		VARCHAR2(65)

Table AQ\$_STREAMS_QUEUE_TABLE_T

Name	Null?	Type
NEXT_DATE	NOT NULL	TIMESTAMP(6) WITH LOCAL TIME ZONE
TXN_ID	NOT NULL	VARCHAR2(30)
MSGID	NOT NULL	RAW(16)
ACTION		NUMBER

Table ORDERS_QUEUE_TABLE

Name	Null?	Type
Q_NAME		VARCHAR2(30)
MSGID	NOT NULL	RAW(16)
CORRID		VARCHAR2(128)
PRIORITY		NUMBER
STATE		NUMBER
DELAY		TIMESTAMP(6) WITH LOCAL TIME ZONE
EXPIRATION		NUMBER
TIME_MANAGER_INFO		TIMESTAMP(6) WITH LOCAL TIME ZONE
LOCAL_ORDER_NO		NUMBER
CHAIN_NO		NUMBER
CSCN		NUMBER
DSCN		NUMBER
ENQ_TIME		TIMESTAMP(6) WITH LOCAL TIME ZONE
ENQ_UID		VARCHAR2(30)
ENQ_TID		VARCHAR2(30)
DEQ_TIME		TIMESTAMP(6) WITH LOCAL TIME ZONE
DEQ_UID		VARCHAR2(30)
DEQ_TID		VARCHAR2(30)
RETRY_COUNT		NUMBER
EXCEPTION_QSCHEMA		VARCHAR2(30)
EXCEPTION_QUEUE		VARCHAR2(30)
STEP_NO		NUMBER
RECIPIENT_KEY		NUMBER
DEQUEUE_MSGID		RAW(16)
SENDER_NAME		VARCHAR2(30)
SENDER_ADDRESS		VARCHAR2(1024)
SENDER_PROTOCOL		NUMBER
USER_DATA		ORDER_EVENT_TYP
USER_PROP		SYS.ANYDATA

Table STREAMS_QUEUE_TABLE

Name	Null?	Type
------	-------	------

Column Name	Data Type
Q_NAME	VARCHAR2 (30)
MSGID	NOT NULL RAW (16)
CORRID	VARCHAR2 (128)
PRIORITY	NUMBER
STATE	NUMBER
DELAY	TIMESTAMP (6) WITH LOCAL TIME ZONE
EXPIRATION	NUMBER
TIME_MANAGER_INFO	TIMESTAMP (6) WITH LOCAL TIME ZONE
LOCAL_ORDER_NO	NUMBER
CHAIN_NO	NUMBER
CSCN	NUMBER
DSCN	NUMBER
ENQ_TIME	TIMESTAMP (6) WITH LOCAL TIME ZONE
ENQ_UID	VARCHAR2 (30)
ENQ_TID	VARCHAR2 (30)
DEQ_TIME	TIMESTAMP (6) WITH LOCAL TIME ZONE
DEQ_UID	VARCHAR2 (30)
DEQ_TID	VARCHAR2 (30)
RETRY_COUNT	NUMBER
EXCEPTION_QSCHEMA	VARCHAR2 (30)
EXCEPTION_QUEUE	VARCHAR2 (30)
STEP_NO	NUMBER
RECIPIENT_KEY	NUMBER
DEQUEUE_MSGID	RAW (16)
SENDER_NAME	VARCHAR2 (30)
SENDER_ADDRESS	VARCHAR2 (1024)
SENDER_PROTOCOL	NUMBER
USER_PROP	SYS.ANYDATA
USER_DATA	SYS.ANYDATA

SH Schema

This section lists the names of the scripts that create the Sales History (SH) schema and describes the objects in the schema. [Table 4-5](#) lists the SH scripts in alphabetical order.

Table 4-5 Sales History (SH) Schema Scripts

Script Name	Description
sh_analz.sql	Gathers statistics on the schema objects
sh_comnt.sql	Creates comments for the objects in the schema
sh_cons.sql	Modifies constraints on objects in the schema
sh_cre.sql	Creates the objects in the schema
sh_cremv.sql	Creates materialized views and bitmapped indexes
sh_drop.sql	Drops the SH schema and all its objects
sh_idx.sql	Creates indexes on tables in the schema
sh_main.sql	Main script for the SH schema calls other scripts
olp_v3.sql	Creates dimensions and hierarchies used by the OLAP server
sh_olp_d.sql	Drops the objects used by the OLAP server

List of SH Objects

DIMENSION
CHANNELS_DIM

```
CUSTOMERS_DIM
PRODUCTS_DIM
PROMOTIONS_DIM
TIMES_DIM

INDEX
CHANNELS_PK
COSTS_PROD_BIX
COSTS_TIME_BIX
COUNTRIES_PK
CUSTOMERS_GENDER_BIX
CUSTOMERS_MARITAL_BIX
CUSTOMERS_PK
CUSTOMERS_YOB_BIX
DR$SUP_TEXT_IDX$X
FW_PSC_S_MV_CHAN_BIX
FW_PSC_S_MV_PROMO_BIX
FW_PSC_S_MV_SUBCAT_BIX
FW_PSC_S_MV_WD_BIX
PRODUCTS_PK
PRODUCTS_PROD_CAT_IX
PRODUCTS_PROD_STATUS_BIX
PRODUCTS_PROD_SUBCAT_IX
PROMO_PK
SALES_CHANNEL_BIX
SALES_CUST_BIX
SALES_PROD_BIX
SALES_PROMO_BIX
SALES_TIME_BIX
SUP_TEXT_IDX
SYS_IOT_TOP_45927
SYS_IOT_TOP_45932
TIMES_PK

INDEX PARTITION
COSTS_PROD_BIX
COSTS_TIME_BIX
SALES_CHANNEL_BIX
SALES_CUST_BIX
SALES_PROD_BIX
SALES_PROMO_BIX
SALES_TIME_BIX

LOB
SYS_LOB0000045924C00006$$
SYS_LOB0000045929C00002$$

MATERIALIZED VIEW
CAL_MONTH_SALES_MV
FWEEK_PSCAT_SALES_MV

TABLE
CAL_MONTH_SALES_MV
CHANNELS
COSTS
COUNTRIES
CUSTOMERS
DR$SUP_TEXT_IDX$I
DR$SUP_TEXT_IDX$K
DR$SUP_TEXT_IDX$N
```

DR\$SUP_TEXT_IDX\$R
 FWEEK_PSCAT_SALES_MV
 MVIEW\$_EXCEPTIONS
 PRODUCTS
 PROMOTIONS
 SALES
 SALES_TRANSACTIONS_EXT
 SUPPLEMENTARY_DEMOGRAPHICS
 TIMES

TABLE PARTITION
 COSTS
 SALES

VIEW
 PROFITS

SH Table Descriptions

Table CAL_MONTH_SALES_MV

Name	Null?	Type
CALENDAR_MONTH_DESC	NOT NULL	VARCHAR2 (8)
DOLLARS		NUMBER

Table CHANNELS

Name	Null?	Type
CHANNEL_ID	NOT NULL	NUMBER
CHANNEL_DESC	NOT NULL	VARCHAR2 (20)
CHANNEL_CLASS	NOT NULL	VARCHAR2 (20)
CHANNEL_CLASS_ID	NOT NULL	NUMBER
CHANNEL_TOTAL	NOT NULL	VARCHAR2 (13)
CHANNEL_TOTAL_ID	NOT NULL	NUMBER

Table COSTS

Name	Null?	Type
PROD_ID	NOT NULL	NUMBER
TIME_ID	NOT NULL	DATE
PROMO_ID	NOT NULL	NUMBER
CHANNEL_ID	NOT NULL	NUMBER
UNIT_COST	NOT NULL	NUMBER (10,2)
UNIT_PRICE	NOT NULL	NUMBER (10,2)

Table COUNTRIES

Name	Null?	Type
COUNTRY_ID	NOT NULL	NUMBER
COUNTRY_ISO_CODE	NOT NULL	CHAR (2)
COUNTRY_NAME	NOT NULL	VARCHAR2 (40)
COUNTRY_SUBREGION	NOT NULL	VARCHAR2 (30)
COUNTRY_SUBREGION_ID	NOT NULL	NUMBER
COUNTRY_REGION	NOT NULL	VARCHAR2 (20)
COUNTRY_REGION_ID	NOT NULL	NUMBER
COUNTRY_TOTAL	NOT NULL	VARCHAR2 (11)
COUNTRY_TOTAL_ID	NOT NULL	NUMBER
COUNTRY_NAME_HIST		VARCHAR2 (40)

Table CUSTOMERS

Name	Null?	Type
CUST_ID	NOT NULL	NUMBER
CUST_FIRST_NAME	NOT NULL	VARCHAR2 (20)
CUST_LAST_NAME	NOT NULL	VARCHAR2 (40)
CUST_GENDER	NOT NULL	CHAR (1)
CUST_YEAR_OF_BIRTH	NOT NULL	NUMBER (4)
CUST_MARITAL_STATUS		VARCHAR2 (20)
CUST_STREET_ADDRESS	NOT NULL	VARCHAR2 (40)
CUST_POSTAL_CODE	NOT NULL	VARCHAR2 (10)
CUST_CITY	NOT NULL	VARCHAR2 (30)
CUST_CITY_ID	NOT NULL	NUMBER
CUST_STATE_PROVINCE	NOT NULL	VARCHAR2 (40)
CUST_STATE_PROVINCE_ID	NOT NULL	NUMBER
COUNTRY_ID	NOT NULL	NUMBER
CUST_MAIN_PHONE_NUMBER	NOT NULL	VARCHAR2 (25)
CUST_INCOME_LEVEL		VARCHAR2 (30)
CUST_CREDIT_LIMIT		NUMBER
CUST_EMAIL		VARCHAR2 (30)
CUST_TOTAL	NOT NULL	VARCHAR2 (14)
CUST_TOTAL_ID	NOT NULL	NUMBER
CUST_SRC_ID		NUMBER
CUST_EFF_FROM		DATE
CUST_EFF_TO		DATE
CUST_VALID		VARCHAR2 (1)

Table DR_\$\$SUP_TEXT_IDX\$I

Name	Null?	Type
TOKEN_TEXT	NOT NULL	VARCHAR2 (64)
TOKEN_TYPE	NOT NULL	NUMBER (3)
TOKEN_FIRST	NOT NULL	NUMBER (10)
TOKEN_LAST	NOT NULL	NUMBER (10)
TOKEN_COUNT	NOT NULL	NUMBER (10)
TOKEN_INFO		BLOB

Table DR\$\$SUP_TEXT_IDX\$K

Name	Null?	Type
DOCID		NUMBER (38)
TEXTKEY	NOT NULL	ROWID

Table DR\$\$SUP_TEXT_IDX\$N

Name	Null?	Type
NLT_DOCID	NOT NULL	NUMBER (38)
NLT_MARK	NOT NULL	CHAR (1)

Table DR\$\$SUP_TEXT_IDX\$R

Name	Null?	Type
ROW_NO		NUMBER (3)
DATA		BLOB

Table FWEEK_PSCAT_SALES_MV

Name	Null?	Type
WEEK_ENDING_DAY	NOT NULL	DATE
PROD_SUBCATEGORY	NOT NULL	VARCHAR2 (50)
DOLLARS		NUMBER

CHANNEL_ID	NOT NULL NUMBER
PROMO_ID	NOT NULL NUMBER

Table MVIEW\$_EXCEPTIONS

Name	Null?	Type
OWNER	NOT NULL	VARCHAR2 (30)
TABLE_NAME	NOT NULL	VARCHAR2 (30)
DIMENSION_NAME	NOT NULL	VARCHAR2 (30)
RELATIONSHIP	NOT NULL	VARCHAR2 (11)
BAD_ROWID	NOT NULL	ROWID

Table PRODUCTS

Name	Null?	Type
PROD_ID	NOT NULL	NUMBER (6)
PROD_NAME	NOT NULL	VARCHAR2 (50)
PROD_DESC	NOT NULL	VARCHAR2 (4000)
PROD_SUBCATEGORY	NOT NULL	VARCHAR2 (50)
PROD_SUBCATEGORY_ID	NOT NULL	NUMBER
PROD_SUBCATEGORY_DESC	NOT NULL	VARCHAR2 (2000)
PROD_CATEGORY	NOT NULL	VARCHAR2 (50)
PROD_CATEGORY_ID	NOT NULL	NUMBER
PROD_CATEGORY_DESC	NOT NULL	VARCHAR2 (2000)
PROD_WEIGHT_CLASS	NOT NULL	NUMBER (3)
PROD_UNIT_OF_MEASURE		VARCHAR2 (20)
PROD_PACK_SIZE	NOT NULL	VARCHAR2 (30)
SUPPLIER_ID	NOT NULL	NUMBER (6)
PROD_STATUS	NOT NULL	VARCHAR2 (20)
PROD_LIST_PRICE	NOT NULL	NUMBER (8, 2)
PROD_MIN_PRICE	NOT NULL	NUMBER (8, 2)
PROD_TOTAL	NOT NULL	VARCHAR2 (13)
PROD_TOTAL_ID	NOT NULL	NUMBER
PROD_SRC_ID		NUMBER
PROD_EFF_FROM		DATE
PROD_EFF_TO		DATE
PROD_VALID		VARCHAR2 (1)

Table PROMOTIONS

Name	Null?	Type
PROMO_ID	NOT NULL	NUMBER (6)
PROMO_NAME	NOT NULL	VARCHAR2 (30)
PROMO_SUBCATEGORY	NOT NULL	VARCHAR2 (30)
PROMO_SUBCATEGORY_ID	NOT NULL	NUMBER
PROMO_CATEGORY	NOT NULL	VARCHAR2 (30)
PROMO_CATEGORY_ID	NOT NULL	NUMBER
PROMO_COST	NOT NULL	NUMBER (10, 2)
PROMO_BEGIN_DATE	NOT NULL	DATE
PROMO_END_DATE	NOT NULL	DATE
PROMO_TOTAL	NOT NULL	VARCHAR2 (15)
PROMO_TOTAL_ID	NOT NULL	NUMBER

Table SALES

Name	Null?	Type
PROD_ID	NOT NULL	NUMBER
CUST_ID	NOT NULL	NUMBER
TIME_ID	NOT NULL	DATE
CHANNEL_ID	NOT NULL	NUMBER

PROMO_ID	NOT NULL	NUMBER
QUANTITY_SOLD	NOT NULL	NUMBER(10,2)
AMOUNT_SOLD	NOT NULL	NUMBER(10,2)

Table SALES_TRANSACTIONS_EXT

Name	Null?	Type
PROD_ID		NUMBER
CUST_ID		NUMBER
TIME_ID		DATE
CHANNEL_ID		NUMBER
PROMO_ID		NUMBER
QUANTITY_SOLD		NUMBER
AMOUNT_SOLD		NUMBER(10,2)
UNIT_COST		NUMBER(10,2)
UNIT_PRICE		NUMBER(10,2)

Table SUPPLEMENTARY_DEMOGRAPHICS

Name	Null?	Type
CUST_ID	NOT NULL	NUMBER
EDUCATION		VARCHAR2(21)
OCCUPATION		VARCHAR2(21)
HOUSEHOLD_SIZE		VARCHAR2(21)
YRS_RESIDENCE		NUMBER
AFFINITY_CARD		NUMBER(10)
BULK_PACK_DISKETTES		NUMBER(10)
FLAT_PANEL_MONITOR		NUMBER(10)
HOME_THEATER_PACKAGE		NUMBER(10)
BOOKKEEPING_APPLICATION		NUMBER(10)
PRINTER_SUPPLIES		NUMBER(10)
Y_BOX_GAMES		NUMBER(10)
OS_DOC_SET_KANJI		NUMBER(10)
COMMENTS		VARCHAR2(4000)

Table TIMES

Name	Null?	Type
TIME_ID	NOT NULL	DATE
DAY_NAME	NOT NULL	VARCHAR2(9)
DAY_NUMBER_IN_WEEK	NOT NULL	NUMBER(1)
DAY_NUMBER_IN_MONTH	NOT NULL	NUMBER(2)
CALENDAR_WEEK_NUMBER	NOT NULL	NUMBER(2)
FISCAL_WEEK_NUMBER	NOT NULL	NUMBER(2)
WEEK_ENDING_DAY	NOT NULL	DATE
WEEK_ENDING_DAY_ID	NOT NULL	NUMBER
CALENDAR_MONTH_NUMBER	NOT NULL	NUMBER(2)
FISCAL_MONTH_NUMBER	NOT NULL	NUMBER(2)
CALENDAR_MONTH_DESC	NOT NULL	VARCHAR2(8)
CALENDAR_MONTH_ID	NOT NULL	NUMBER
FISCAL_MONTH_DESC	NOT NULL	VARCHAR2(8)
FISCAL_MONTH_ID	NOT NULL	NUMBER
DAYS_IN_CAL_MONTH	NOT NULL	NUMBER
DAYS_IN_FIS_MONTH	NOT NULL	NUMBER
END_OF_CAL_MONTH	NOT NULL	DATE
END_OF_FIS_MONTH	NOT NULL	DATE
CALENDAR_MONTH_NAME	NOT NULL	VARCHAR2(9)
FISCAL_MONTH_NAME	NOT NULL	VARCHAR2(9)
CALENDAR_QUARTER_DESC	NOT NULL	CHAR(7)
CALENDAR_QUARTER_ID	NOT NULL	NUMBER

FISCAL_QUARTER_DESC	NOT NULL CHAR(7)
FISCAL_QUARTER_ID	NOT NULL NUMBER
DAYS_IN_CAL_QUARTER	NOT NULL NUMBER
DAYS_IN_FIS_QUARTER	NOT NULL NUMBER
END_OF_CAL_QUARTER	NOT NULL DATE
END_OF_FIS_QUARTER	NOT NULL DATE
CALENDAR_QUARTER_NUMBER	NOT NULL NUMBER(1)
FISCAL_QUARTER_NUMBER	NOT NULL NUMBER(1)
CALENDAR_YEAR	NOT NULL NUMBER(4)
CALENDAR_YEAR_ID	NOT NULL NUMBER
FISCAL_YEAR	NOT NULL NUMBER(4)
FISCAL_YEAR_ID	NOT NULL NUMBER
DAYS_IN_CAL_YEAR	NOT NULL NUMBER
DAYS_IN_FIS_YEAR	NOT NULL NUMBER
END_OF_CAL_YEAR	NOT NULL DATE
END_OF_FIS_YEAR	NOT NULL DATE

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