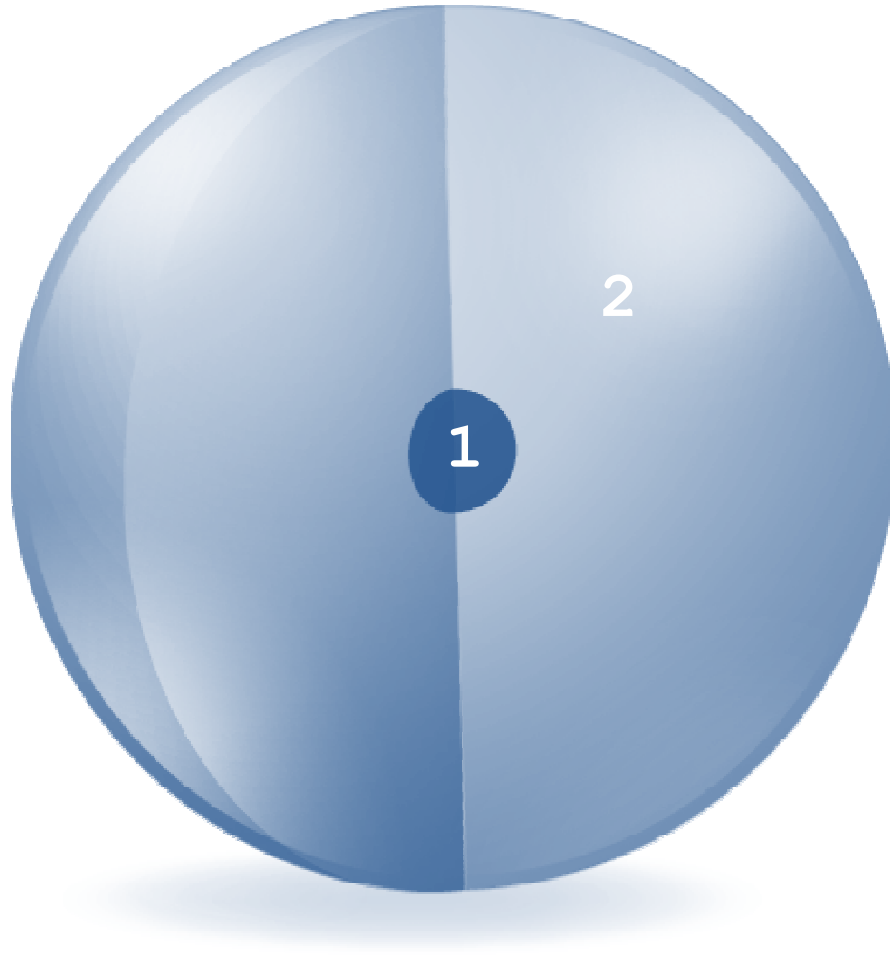


Retrieving Data Using the SQL SELECT Statement

What You will Learn at the end of this Session ?



**1 List the capabilities of SQL
SELECT statements**

**2 Execute a basic SELECT
statement**

Capabilities of SQL SELECT Statements

Projection

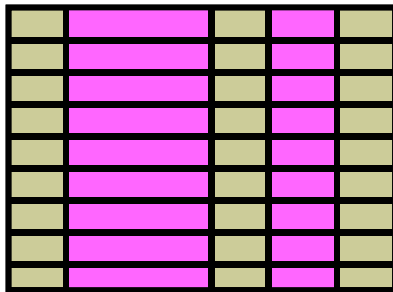


Table 1

Selection

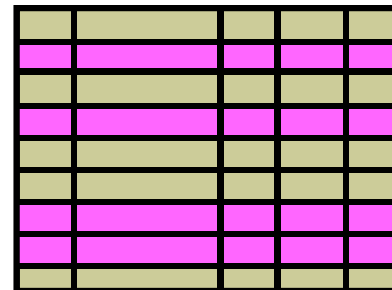


Table 1

Join

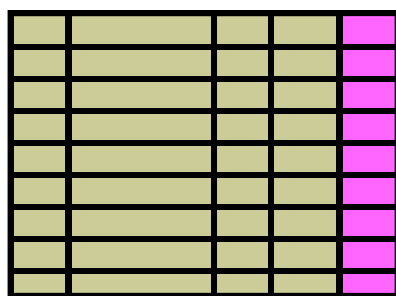


Table 1

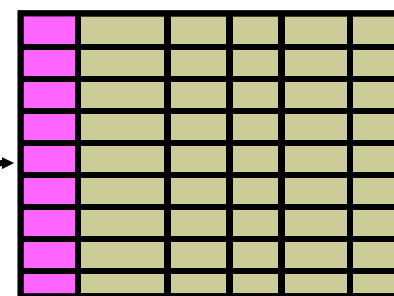


Table 2

Basic SELECT Statement

```
SELECT * | {[DISTINCT] column|expression [alias],...}  
FROM    table;
```



SELECT identifies the columns to be displayed.

FROM identifies the table containing those columns.

Selecting All Columns

```
SELECT *  
FROM inventories ;
```

	PRODUCT_ID	WAREHOUSE_ID	QUANTITY_ON_HAND
1	3108	8	122
2	3110	8	123
3	3112	8	123
4	3117	8	124
5	3124	8	125
6	3127	8	125
7	3129	8	126
8	3134	8	149
9	3139	8	150
10	3140	8	150
11	3143	8	151

...

Selecting Specific Columns

```
SELECT product_id, quantity_on_hand  
FROM inventories ;
```

	PRODUCT_ID	QUANTITY_ON_HAND
1	3108	122
2	3110	123
3	3112	123
4	3117	124
5	3124	125
6	3127	125
7	3129	126
8	3134	149
9	3139	150
10	3140	150
11	3143	151

...

SQL statements are not case sensitive

SQL statements can be entered on one or more lines.

Keywords cannot be abbreviated or split across lines.

In SQL Developer, SQL statements can be optionally terminated by a semicolon (;). Semicolons are required when you execute multiple SQL statements

Clauses are usually placed on separate lines.

Indents are used to enhance readability.

In SQL*Plus, you are required to end each SQL statement with a semicolon (;).





Column Heading Defaults



SQL Developer






Default heading alignment: Left-aligned
Default heading display: Uppercase



SQL*Plus

Character and Date column headings are left-aligned.
Number column headings are right-aligned.
Default heading display: Uppercase

Column Heading Defaults

	 EMPLOYEE_ID	 FIRST_NAME	 LAST_NAME	 EMAIL	 PHONE_NUMBER
1	100	Steven	King	SKING	515.123.4567
2	101	Neena	Kochhar	NKOCHHAR	515.123.4568
3	102	Lex	De Haan	LDEHAAN	515.123.4569
4	103	Alexander	Hunold	AHUNOLD	590.423.4567
5	104	Bruce	Ernst	BERNST	590.423.4568
6	105	David	Austin	DAUSTIN	590.423.4569
7	106	Valli	Pataballa	VPATABAL	590.423.4560
8	107	Diana	Lorentz	DLORENTZ	590.423.5567
9	108	Nancy	Greenberg	NGREENBE	515.124.4569
10	109	Daniel	Faviet	DFAVIET	515.124.4169

SQL Developer sample screenshot

Worksheet

Query Result

History

The screenshot displays the Oracle SQL Developer interface. At the top is a 'Worksheet' tab with a SQL query: `Select * from emp;`. Below the worksheet is the 'Query Result' tab, which shows a table with 11 rows of employee data. The columns are: ORDER ID, ORDER DATE, ORDER AMOUNT, CUSTOMER ID, ORDER STATUS, ORDER TOTAL, QUANTITY, and PROMOTION ID. The bottom section is the 'History' tab, which lists the executed queries and their details.

ORDER ID	ORDER DATE	ORDER AMOUNT	CUSTOMER ID	ORDER STATUS	ORDER TOTAL	QUANTITY	PROMOTION ID
1	2007-07-06 09:00:00	100.00	1000	OPEN	100.00	100	1000
2	2007-07-06 09:00:00	100.00	1000	OPEN	100.00	100	1000
3	2007-07-06 09:00:00	100.00	1000	OPEN	100.00	100	1000
4	2007-07-06 09:00:00	100.00	1000	OPEN	100.00	100	1000
5	2007-07-06 09:00:00	100.00	1000	OPEN	100.00	100	1000
6	2007-07-06 09:00:00	100.00	1000	OPEN	100.00	100	1000
7	2007-07-06 09:00:00	100.00	1000	OPEN	100.00	100	1000
8	2007-07-06 09:00:00	100.00	1000	OPEN	100.00	100	1000
9	2007-07-06 09:00:00	100.00	1000	OPEN	100.00	100	1000
10	2007-07-06 09:00:00	100.00	1000	OPEN	100.00	100	1000
11	2007-07-06 09:00:00	100.00	1000	OPEN	100.00	100	1000

SQL	Text	Type	Executed	Elapsed
SELECT * FROM emp;		Text	1	0.00
SELECT * FROM emp;		Text	1	0.00
SELECT * FROM emp;		Text	1	0.00
SELECT * FROM emp;		Text	1	0.00
SELECT * FROM emp;		Text	1	0.00
SELECT * FROM emp;		Text	1	0.00
SELECT * FROM emp;		Text	1	0.00
SELECT * FROM emp;		Text	1	0.00
SELECT * FROM emp;		Text	1	0.00
SELECT * FROM emp;		Text	1	0.00
SELECT * FROM emp;		Text	1	0.00

ORACLE

Defining a Null Value

- Null is a value that is unavailable, unassigned, unknown, or inapplicable.
- Null is not the same as zero or a blank space.

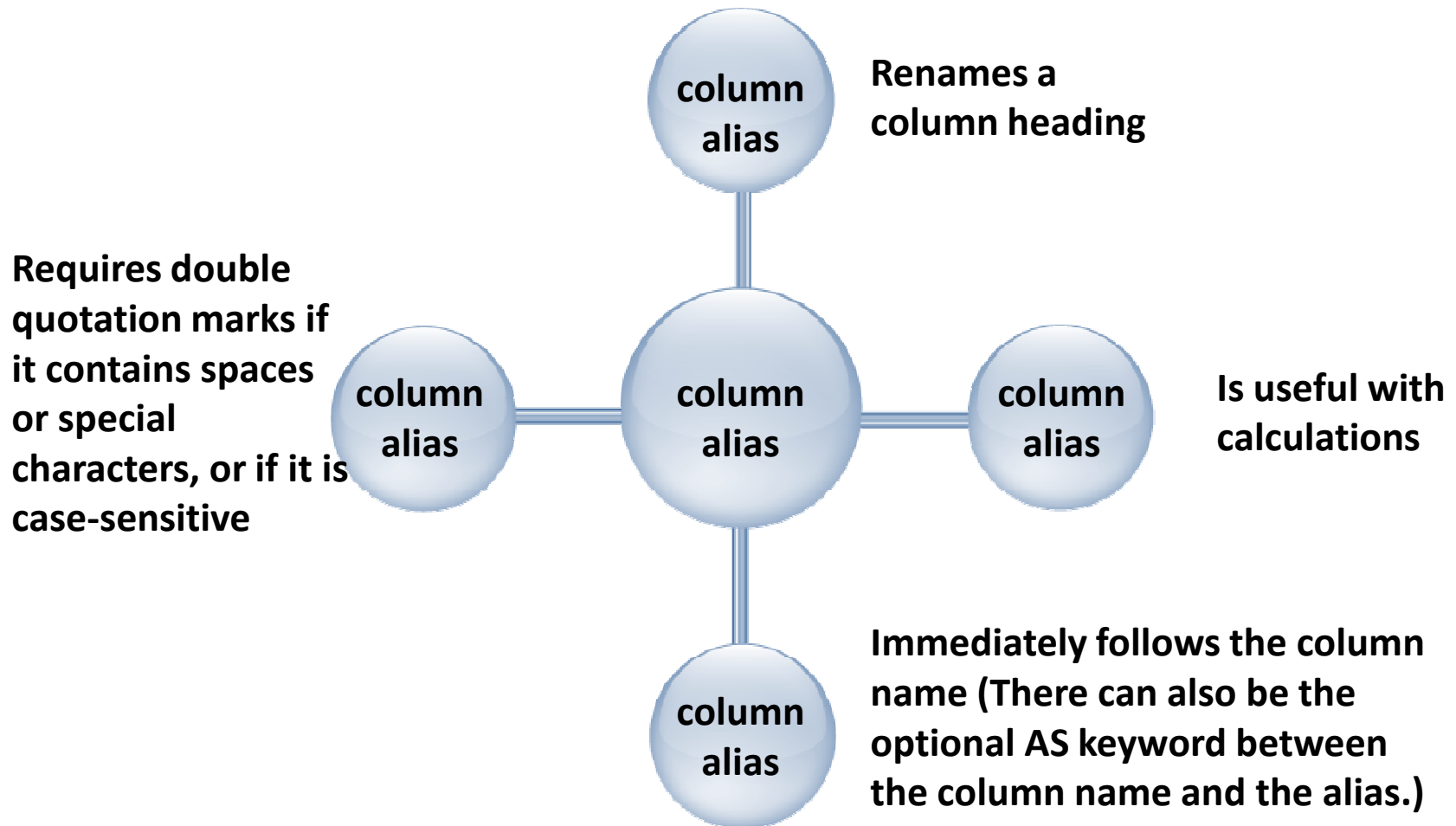
```
SELECT order_id, ROUND (order_date) "ORDER_DATE",  
       customer_id, promotion_id  
FROM orders ;
```

	<small>AZ</small>	ORDER_ID	<small>AZ</small>	ORDER_DATE	<small>AZ</small>	CUSTOMER_ID	<small>AZ</small>	PROMOTION_ID
1		2458		17-AUG-99		101		(null)
2		2397		20-NOV-99		102		(null)
3		2454		03-OCT-99		103		(null)
4		2354		15-JUL-00		104		(null)
5		2358		09-JAN-00		105		(null)

■ ■ ■

Note: Round() will be explained later during the course of the presentation.

Defining a Column Alias



```
SELECT product_id AS Product, quantity_on_hand Quantity  
FROM inventories;
```

	PRODUCT	QUANTITY
1	3108	122
2	3110	123
3	3112	123
4	3117	124

■ ■ ■

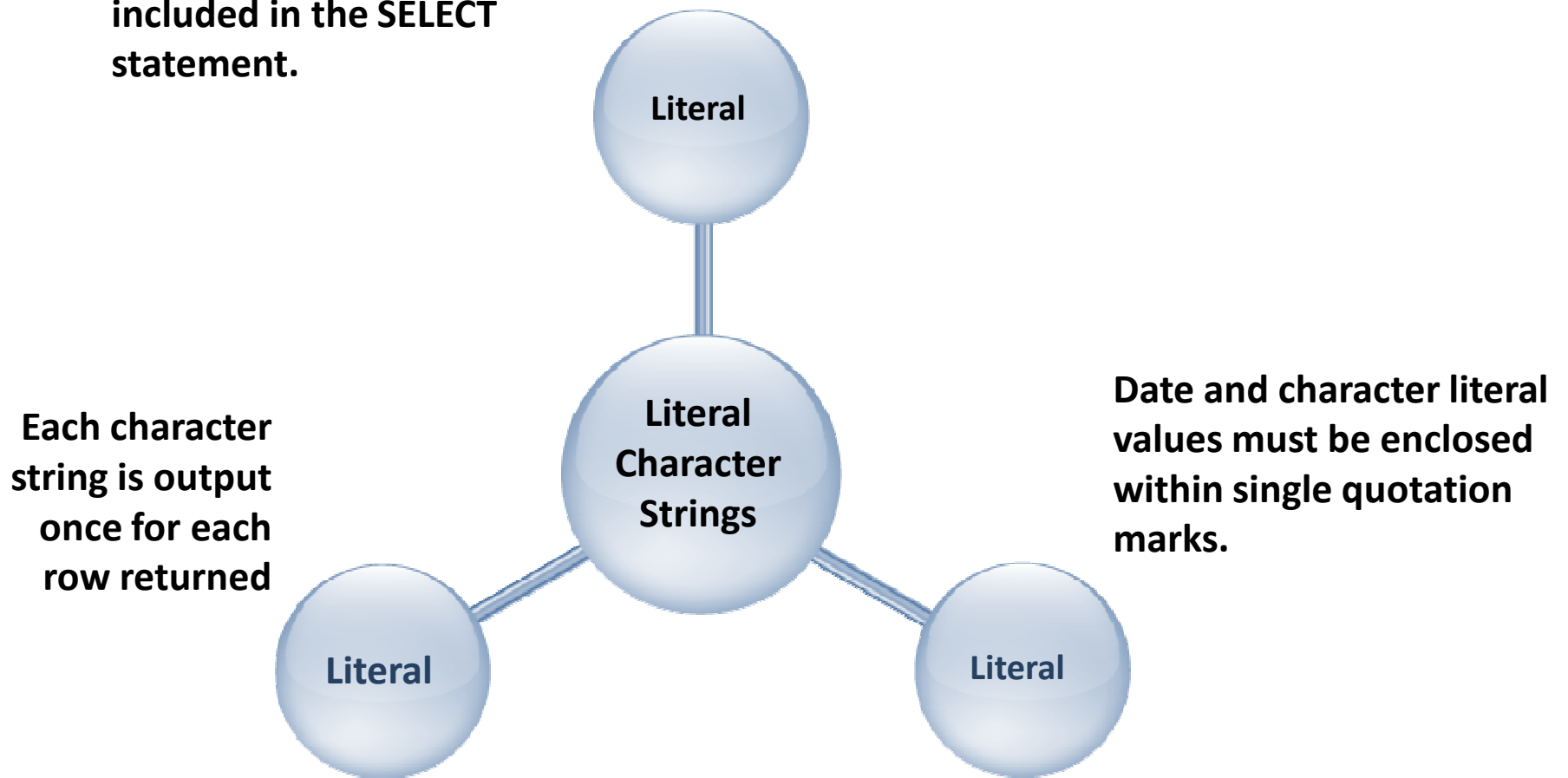
```
SELECT order_id "Order", ROUND(order_date) "Date of Order"  
FROM orders;
```

	Order	Date of Order
1	2458	17-AUG-99
2	2397	20-NOV-99
3	2454	03-OCT-99
4	2354	15-JUL-00

■ ■ ■

Literal Character Strings

A literal is a character, a number, or a date that is included in the SELECT statement.



Using Literal Character Strings

```
SELECT product_id || ' is in Warehouse ' || warehouse_id  
       AS "Product-Warehouse"  
FROM   inventories ;
```

	Product-Warehouse
1	1733 is in Warehouse 1
2	1734 is in Warehouse 1
3	1737 is in Warehouse 1
4	1738 is in Warehouse 1
5	1745 is in Warehouse 1
6	1748 is in Warehouse 1
7	2278 is in Warehouse 1

■ ■ ■

Alternative Quote (q) Operator

- Specify your own quotation mark delimiter.
- Select any delimiter.
- Increase readability and usability.

```
SELECT department_name || q ' [ Department's Manager Id: ] '  
      || manager_id  
      AS " Department and Manager "  
FROM departments ;
```

	Department and Manager
1	Administration Department's Manager Id: 200
2	Marketing Department's Manager Id: 201
3	Shipping Department's Manager Id: 124
4	IT Department's Manager Id: 103
5	Sales Department's Manager Id: 149
6	Executive Department's Manager Id: 100
7	Accounting Department's Manager Id: 205
8	Contracting Department's Manager Id:

Duplicate Rows

- The default display of queries is all rows, including duplicate rows.

1

```
SELECT department_id  
FROM employees ;
```

	DEPARTMENT_ID
1	10
2	20
3	20
4	110
5	110

...

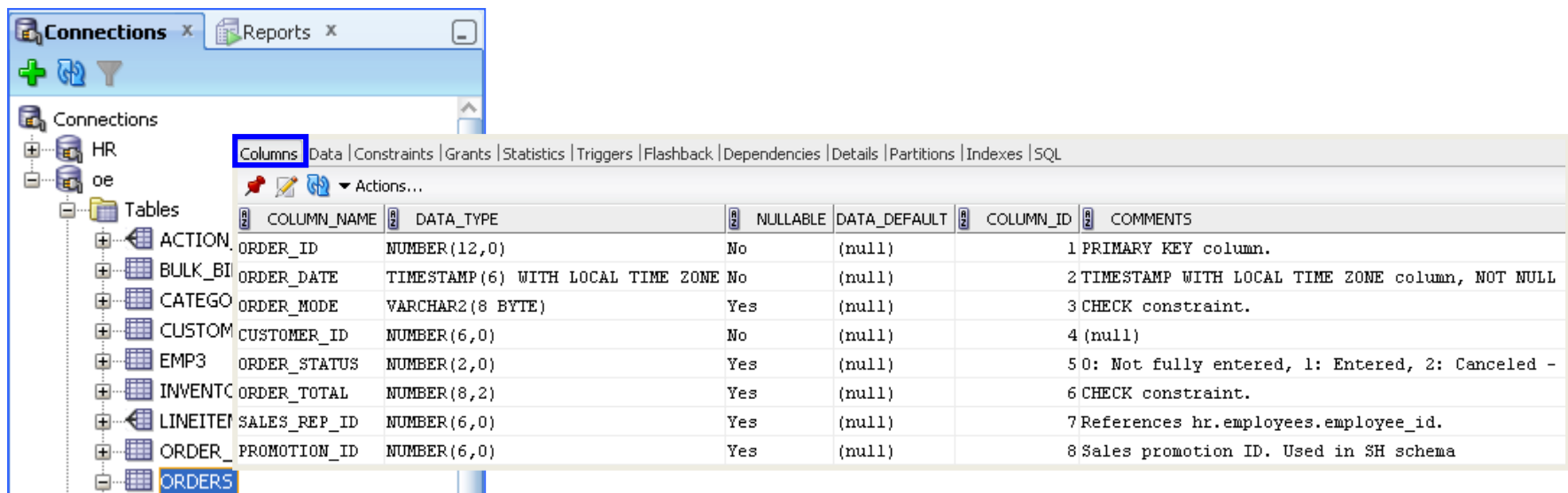
2

```
SELECT DISTINCT department_id  
FROM employees ;
```

	DEPARTMENT_ID
1	(null)
2	20
3	90
4	110
5	50
6	80
7	10
8	60

Displaying the Table Structure using SQL Developer

- Select the required table in the “Connections” tree in the SQL Developer and use the “Columns” tab to view the table structure.



The screenshot shows the SQL Developer interface. On the left, the 'Connections' tree is expanded, showing the 'Tables' folder under the 'oe' connection. The 'ORDERS' table is selected. The main pane displays the 'Columns' tab for the 'ORDERS' table. The table structure is as follows:

COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
ORDER_ID	NUMBER(12,0)	No	(null)	1	PRIMARY KEY column.
ORDER_DATE	TIMESTAMP(6) WITH LOCAL TIME ZONE	No	(null)	2	TIMESTAMP WITH LOCAL TIME ZONE column, NOT NULL
ORDER_MODE	VARCHAR2(8 BYTE)	Yes	(null)	3	CHECK constraint.
CUSTOMER_ID	NUMBER(6,0)	No	(null)	4	(null)
ORDER_STATUS	NUMBER(2,0)	Yes	(null)	5	0: Not fully entered, 1: Entered, 2: Canceled -
ORDER_TOTAL	NUMBER(8,2)	Yes	(null)	6	CHECK constraint.
SALES_REP_ID	NUMBER(6,0)	Yes	(null)	7	References hr.employees.employee_id.
ORDER_PROMOTION_ID	NUMBER(6,0)	Yes	(null)	8	Sales promotion ID. Used in SH schema

Here, the table structure of the Orders table is displayed.

Using the DESCRIBE Command

- Use the DESCRIBE command to display the structure of a table.

```
DESCRIBE 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)

- Identify the SELECT statements that execute successfully.

```
1.SELECT first_name, last_name, job_id, salary*12
   AS Yearly Sal
FROM   employees;
```

```
2.SELECT first_name, last_name, job_id, salary*12
   "yearly sal"
FROM   employees;
```

```
3.SELECT first_name, last_name, job_id, salary AS
   "yearly sal"
FROM   employees;
```

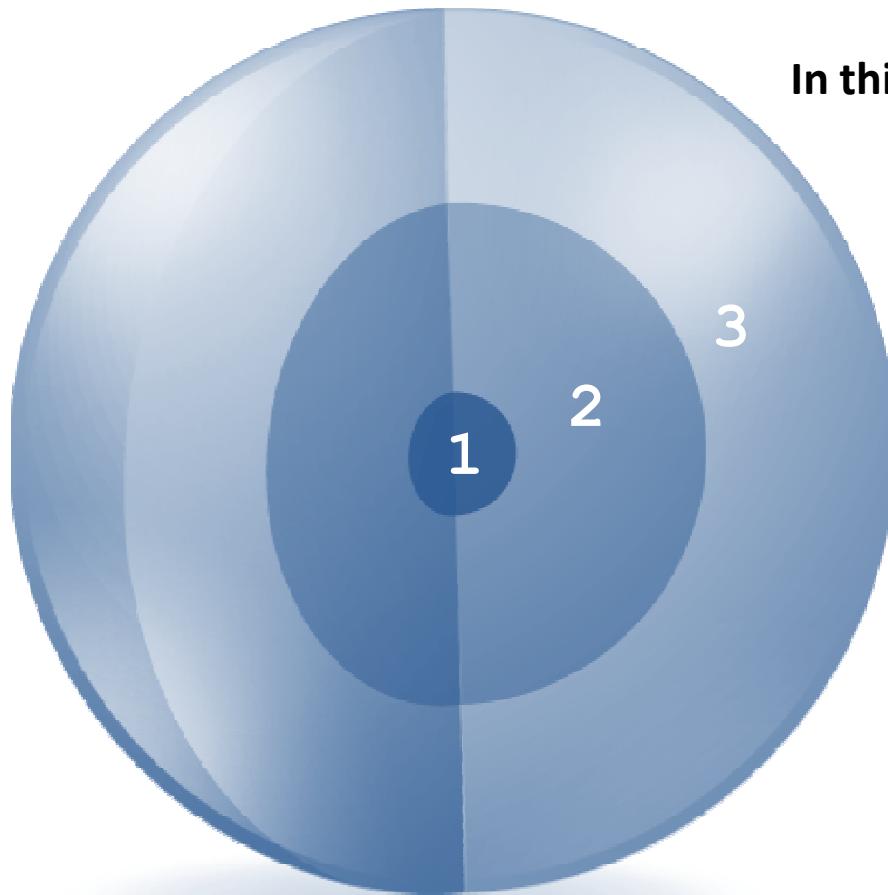
```
4.SELECT first_name+last_name AS name, job_Id,
   salary*12 yearly sal
FROM   employees;
```

- Identify the SELECT statements that execute successfully.

```
5.SELECT product_id, warehouse_id AS "Product",  
   "Warehouse"  
FROM   employees;
```

```
6.SELECT order_id|| is in ||order_mode|| mode AS  
   "Order Mode"  
FROM   inventories;
```

```
7.Write an SQL query to display all the  
   quantity_on_hand in the warehouse with  
   warehouse_id
```



In this lesson, you should have learned how to:

- 1 Returns all rows and columns from a table
- 2 Returns specified columns from a table
- 3 Uses column aliases to display more descriptive column headings

Syntax :

```
SELECT *|{[DISTINCT] column|expression [alias],...}  
FROM table;
```

Practice 1: Overview

This practice covers the following topics:

