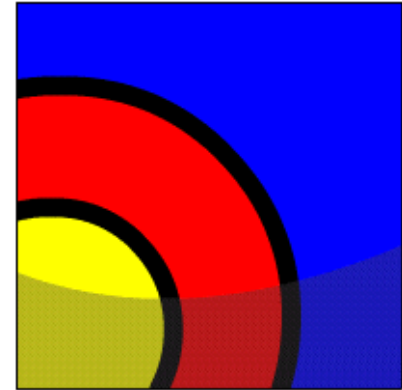


Working with Columns, Characters, and Rows

What Will I Learn?

In this lesson, you will learn to:

- Apply the concatenation operator to link columns to other columns, arithmetic expressions, or constant values to create a character expression
- Use Column Aliases, to rename columns in the query result
- Enter literal values of type character, number, or date into a SELECT statement
- Define and use DISTINCT to eliminate duplicate rows
- Display the structure of a table using DESCRIBE or DESC
- Edit, execute, and save SQL statements in Oracle Application Express





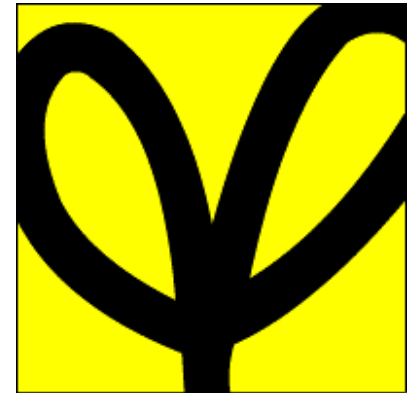
Why Learn It?

If you were writing an article about the Olympics, you might want to know how many different countries were being represented.

Having to go through lists and lists of participant names could be very tedious.

Fortunately, using SQL, your job could take less than a minute.

In addition, you could format your output to read like a sentence. You will find these SQL features very useful.

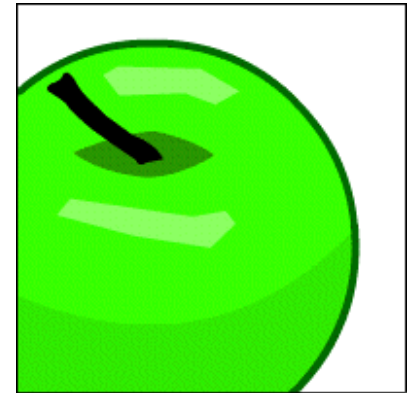


Tell Me / Show Me

DESCRIBE

Use the DESCRIBE (DESC) command to display the structure of a table.

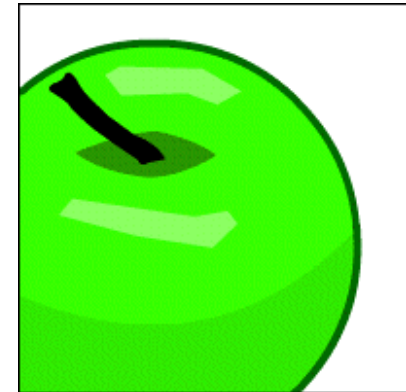
You have used DESC to view the structure of the database tables used in this course. DESC returns the table name, table schema, tablespace name, indexes, triggers, constraints and comments as well as the data types, primary and foreign keys, and which columns can be nullable.



Tell Me / Show Me

DESCRIBE

This is important information when inserting new rows into a table because you must know the type of data each column will accept and whether the column can be left empty.



DESC departments;

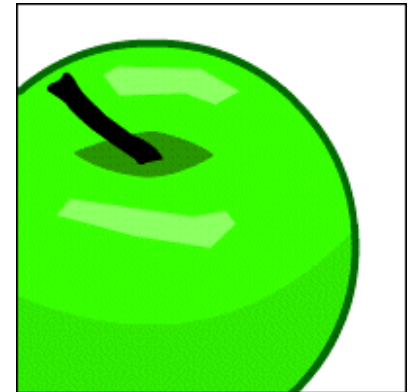
Primary Key	Name	Type	Length	Precision	Scale	Nullable	Default	Comments
1	DEPARTMENT_ID	Number		4	0			Primary key column of departments table.
	DEPARTMENT_NAME	Varchar2	30					A not null column that shows name of a department.
	MANAGER_ID	Number		6	0	√		Manager_id of a department. Foreign key to employee_id column of employees table. The manager_id column of the employee table references this column.
	LOCATION_ID	Number		4	0	√		Location id where a department is located. Foreign key to location_id column of locations table.

Tell Me / Show Me

CONCATENATION

Concatenation means to connect or link together in a series.

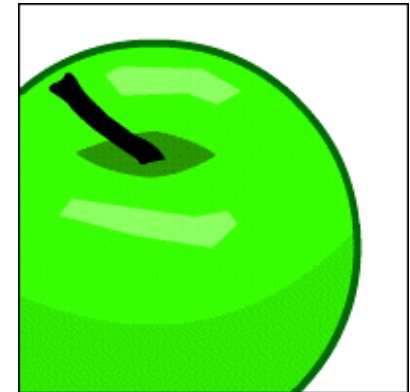
In SQL, this operator can link columns to other columns, arithmetic expressions, or constant values to create a character expression. The concatenation operator is used to create readable text output.



Tell Me / Show Me

CONCATENATION & COLUMN ALIASES

Column aliases are useful when using the concatenation operator so that the column heading does not appear as the default SELECT line.

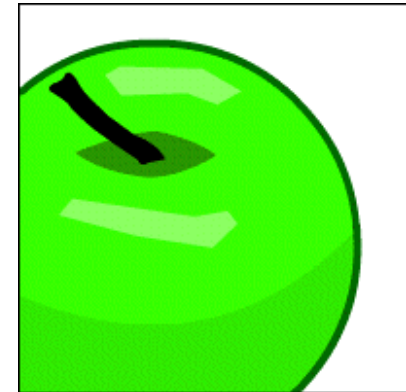


When values are concatenated, the resulting value is a character string. The symbol for concatenation is 2 vertical bars sometimes referred to as “pipes”. Columns on either side of the || operator are combined to make a single output column.

Tell Me / Show Me

CONCATENATION & COLUMN ALIASES

In the DJ on Demand example shown, the `|| ' ' ||` was used to make a space between the first and last names. The empty set of single quotation marks created the space. Compare the differences in the text output in the query that used concatenation and the one that did not.



```
SELECT first_name || ' ' ||  
       last_name AS "DJ on Demand Clients"
```

```
FROM d_clients;
```

```
SELECT first_name,  
       last_name AS "DJ on Demand Clients"  
FROM d_clients;
```

DJs on Demand Clients
Hiram Peters
Serena Jones
Lauren Vigil

FIRST_NAME	DJs on Demand Clients
Hiram	Peters
Serena	Jones
Lauren	Vigil

Tell Me / Show Me

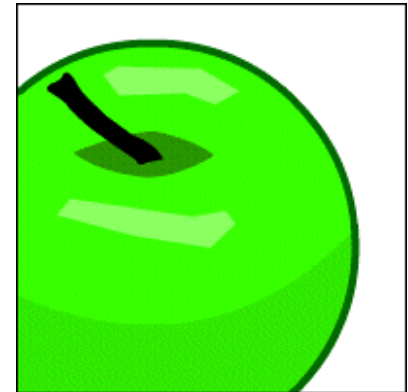
CONCATENATION & COLUMN ALIASES

Using concatenation and literal values, you can create output that looks almost like a sentence or statement, by adding literal values.

These can be a character, a number, or a date that is included in the SELECT list and that is not a column name or a column alias.

Characters and dates must be enclosed in a set of single quotes ‘’.

Every row returned from a query with literal values will have the same character string in it.





Tell Me / Show Me

CONCATENATION & COLUMN ALIASES

Can you identify which two words came from table data and which were added by the person doing the query? In the concatenation example, Lorentz has a monthly salary of 4200 dollars, the 'has a monthly salary of' and 'dollars' are examples of literals. If you were to create a SQL statement to produce output in this format, it would be written as:

PAY
King has a monthly salary of 24000 dollars
Kochhar has a monthly salary of 17000 dollars
De Haan has a monthly salary of 17000 dollars
Hunold has a monthly salary of 9000 dollars
Ernst has a monthly salary of 6000 dollars
Lorentz has a monthly salary of 4200 dollars
.....continued

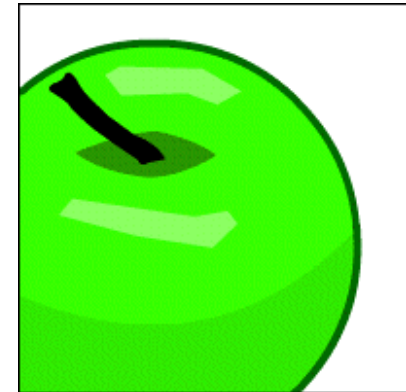
```
SELECT last_name || ' has a monthly salary of ' || salary || ' dollars' AS Pay  
FROM employees
```


Tell Me / Show Me

CONCATENATION & COLUMN ALIASES

For example, the preceding query could also include numbers as literal values:

```
SELECT last_name || ' has a ' || 1 ||  
       ' year salary of ' || salary*12 || ' dollars' AS Pay  
FROM employees;
```



The table at right shows some of the rows returned:

PAY
King has a 1 year salary of 288000 dollars
Kochhar has a 1 year salary of 204000 dollars
De Haan has a 1 year salary of 204000 dollars
Hunold has a 1 year salary of 108000 dollars
Ernst has a 1 year salary of 72000 dollars
.....continued



Tell Me / Show Me

DISTINCT

Unless you indicate otherwise, the output of a SQL query will display the results without eliminating duplicate rows. There are many times when you want to know how many unique instances of something exist. Remember our original question? We wanted to find out what different countries were being represented in the Olympics. In SQL, the **DISTINCT** keyword is used to eliminate duplicate rows.

```
SELECT color  
FROM shirts
```

SHIRTS
red
yellow
red
green
red
blue
black
green
green



Tell Me / Show Me

DISTINCT

In the example shown, DISTINCT would be used if we wanted to know which different shirt colors were being worn.

We aren't interested in the number of different shirts, only in a list of the different colors.

DISTINCT automatically displays the output in alphabetical order.

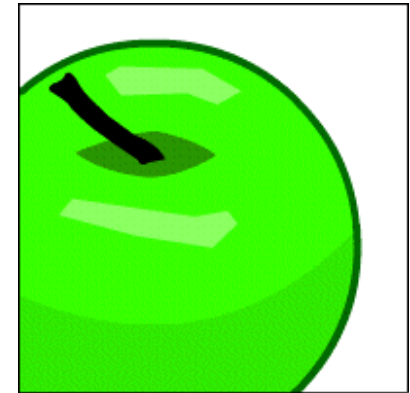
```
SELECT DISTINCT color  
FROM shirts;
```

SHIRTS
black
blue
green
red
yellow

Tell Me / Show Me

DISTINCT

The DISTINCT qualifier affects all listed columns and returns every distinct combination of the columns in the SELECT clause. The keyword DISTINCT must appear directly after the SELECT keyword.



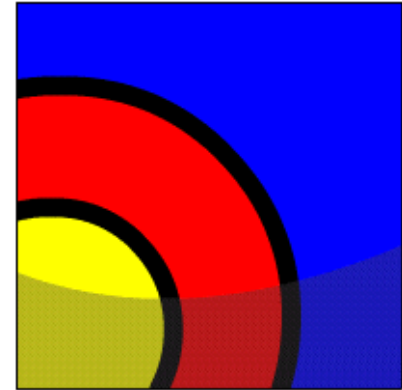
What do you think would be returned if we had the bands Ace of Pace and the Pink Pumpkins and three different shirt colors?

```
SELECT DISTINCT band_logo, color  
FROM shirts;
```


Summary

In this lesson, you have learned about:

- How to apply the concatenation operator to link columns to other columns
- When to use literal values of type character, number or date in a SELECT statement
- How to eliminate duplicate rows by using DISTINCT
- Display the structure of a table using DESCRIBE or DESC
- How to edit, execute, and save SQL statements in Oracle Application Express



Summary

Practice Guide

The link for the lesson practice guide can be found in the course outline.

