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Academy

Database Programming with SQL

11-1
Ensuring Quality Query Results

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Objectives

This lesson covers the following objectives:

- Create a query to produce specified data
- Modify a query to produce specified data

Purpose

- You've learned the syntax rules for generating a SQL query but are you sure you are producing the desired data?
- Looking at the desired output and then figuring out the query to generate that output helps you to gain confidence that your query results are what you expect.

Write the Query

- Problem:
  - Create a list of all tables whose first two characters in the name of the table is JO.
  - The tables must be owned by the current Oracle User.
- Tables Used:
  - User_tables

Query Result:

TABLE_NAME
JOBS
JOB_GRADES
JOB_HISTORY

Write the Query

- Problem:
  - Create a list that includes the first initial of every employee's first name, a space, and the last name of the employee.
- Tables Used:
  - Employees

Query Result:

Employee Names
E Abel
C Davies
L De Haan
B Ernst
P Fay
W Gietz
K Grant
M Hartstein
S Higgins
A Hunold
S King
N Kochhar
D Lorentz
R Matos
K Mourgos
T Rajs
J Taylor
P Vargas
J Whalen
E Zlotkey

Write the Query

- Problem:
  - Create a list of every employee's first name concatenated to a space and the employee's last name, and the email of all employees where the email address contains the string 'IN'.
- Tables Used:
  - Employees

Query Result:

Employee Name	Email
Shelley Higgins	SHIGGINS
Steven King	SKING

Write the Query

- Problem:
  - Create a list of 'smallest' last name and the 'highest' last name from the employees table.
- Tables Used:
  - Employees

Query Result:

First Last Name	Last Last Name
Abel	Zlotkey

Write the Query

- Problem:
  - Create a list of weekly salaries from the employees table where the weekly salary is between 700 and 3000.
  - The salaries should be formatted to include a $-sign and have two decimal points like: $9999.99.
- Tables Used:
  - Employees

Query Result:

Weekly Salary
$1015.38
$2769.23
$1915.38
$2423.08
$2538.46
$1984.62
$1615.38
$1338.46
$807.69
$715.38
$2076.92
$1384.62
$969.23
$3000
$1384.62

Write the Query

- Problem:
  - Create a list of every employee and his related job title sorted by job_title.
- Tables Used:
  - Employees, Jobs

Query Result:

Employee Name	Job
S Higgins	Accounting Manager
J Whalen	Administration Assistant
L De Haan	Administration Vice President
N Kochhar	Administration Vice President
M Hartstein	Marketing Manager
P Fay	Marketing Representative
S King	President
A Hunold	Programmer
B Ernst	Programmer
D Lorentz	Programmer
W Gietz	Public Accountant
E Zlotkey	Sales Manager
J Taylor	Sales Representative
K Grant	Sales Representative
E Abel	Sales Representative
T Rajs	Stock Clerk
C Davies	Stock Clerk
P Vargas	Stock Clerk
R Matos	Stock Clerk
K Mourgos	Stock Manager

Write the Query

- Problem:
  - Create a list of every employee's job, the salary ranges within the job, and the employee's salary.
  - List the lowest and highest salary range within each job with a dash to separate the salaries like this: 100 – 200.
- Tables Used:
  - Employees, Jobs

Query Result:

Employee Name	Job	Salary Range	Employee's Salary
S Higgins	Accounting Manager	8200 - 16000	12000
J Whalen	Administration Assistant	3000 - 6000	4400
L De Haan	Administration Vice President	15000 - 30000	17000
N Kochhar	Administration Vice President	15000 - 30000	17000
M Hartstein	Marketing Manager	9000 - 15000	13000
P Fay	Marketing Representative	4000 - 9000	6000
S King	President	20000 - 40000	24000
A Hunold	Programmer	4000 - 10000	9000
B Ernst	Programmer	4000 - 10000	6000
D Lorentz	Programmer	4000 - 10000	4200
W Gietz	Public Accountant	4200 - 9000	8300
E Zlotkey	Sales Manager	10000 - 20000	10500
E Abel	Sales Representative	6000 - 12000	11000
K Grant	Sales Representative	6000 - 12000	7000
J Taylor	Sales Representative	6000 - 12000	8600
T Rajs	Stock Clerk	2000 - 5000	3500
C Davies	Stock Clerk	2000 - 5000	3100
P Vargas	Stock Clerk	2000 - 5000	2500
R Matos	Stock Clerk	2000 - 5000	2600
K Mourgos	Stock Manager	5500 - 8500	5800

Write the Query

- Problem:
  - Using an ANSII join method, create a list of every employee's first initial and last name, and department name.
  - Make sure the tables are joined on all of the foreign keys declared between the two tables.
- Tables Used:
  - Employees, Departments

Query Result:

Employee Name	Department Name
N Kochhar	Executive
L De Haan	Executive
W Gietz	Accounting
E Abel	Sales
J Taylor	Sales
T Rajs	Shipping
C Davies	Shipping
R Matos	Shipping
P Vargas	Shipping
B Ernst	IT
D Lorentz	IT
P Fay	Marketing

Write the Query

- Problem:
  - Change the previous listing to join only on the department_id column.
- Tables Used:
  - Employees, Departments

Query Result:

Employee Name	Department Name
J Whalen	Administration
M Hartstein	Marketing
P Fay	Marketing
C Davies	Shipping
P Vargas	Shipping
T Rajs	Shipping
K Mourgos	Shipping
R Matos	Shipping
A Hunold	IT
B Ernst	IT
D Lorentz	IT
J Taylor	Sales
E Zlotkey	Sales
E Abel	Sales
L De Haan	Executive
S King	Executive
N Kochhar	Executive
S Higgins	Accounting
W Gietz	Accounting

Write the Query

- Problem:
  - Create a list of every employee's last name, and the word nobody or somebody depending on whether or not the employee has a manager.
  - Use the Oracle DECODE function to create the list.
- Tables Used:
  - Employees

Query Result:

Works for	Last Name
Nobody	King
Somebody	Kochhar
Somebody	De Haan
Somebody	Whalen
Somebody	Higgins
Somebody	Gietz
Somebody	Zlotkey
Somebody	Abel
Somebody	Taylor
Somebody	Grant
Somebody	Mourgos
Somebody	Rajs
Somebody	Davies
Somebody	Matos
Somebody	Vargas
Somebody	Hunold
Somebody	Ernst
Somebody	Lorentz
Somebody	Hartstein
Somebody	Fay

Write the Query

- Problem:
  - Create a list of every employee's first initial and last name, salary, and a yes or no to show whether or not an employee makes a commission.
  - Fix this query to produce the result.
- QUERY:

```
SELECT SUBSTR(first_name,1 1)||' '|last_name,
  "Employee Name", salary "Salary",
  DEC(commission_pct NULL, 'No', 'Yes')'Commission'
FROM   employees;
```

Query Result:

Employee Name	Salary	Commission
S King	24000	No
N Kochhar	17000	No
L De Haan	17000	No
J Whalen	4400	No
S Higgins	12000	No
W Gietz	8300	No
E Zlotkey	10500	Yes
E Abel	11000	Yes
J Taylor	8600	Yes
K Grant	7000	Yes
K Mourgos	5800	No
T Rajs	3500	No
C Davies	3100	No
R Matos	2600	No
P Vargas	2500	No
A Hunold	9000	No
B Ernst	6000	No
D Lorentz	4200	No
M Hartstein	13000	No
P Fay	6000	No

Write the Query

- Problem:
  - Create a list of every employee's last name, department name, city, and state_province.
  - Include departments without employees.
  - An outer join is required.
- Tables Used:
  - Employees, Departments, Locations

Query Result:

LAST_NAME	DEPARTMENT_NAME	CITY	STATE_PROVINCE
Abel	Sales	Oxford	Oxford
Davies	Shipping	South San Francisco	California
De Haan	Executive	Seattle	Washington
Ernst	IT	Southlake	Texas
Fay	Marketing	Toronto	Ontario
Gietz	Accounting	Seattle	Washington
Hartstein	Marketing	Toronto	Ontario
Higgins	Accounting	Seattle	Washington
Hunold	IT	Southlake	Texas
King	Executive	Seattle	Washington
Kochhar	Executive	Seattle	Washington
Lorentz	IT	Southlake	Texas
Matos	Shipping	South San Francisco	California
Mourgos	Shipping	South San Francisco	California
Rajs	Shipping	South San Francisco	California
Taylor	Sales	Oxford	Oxford
Vargas	Shipping	South San Francisco	California
Whalen	Administration	Seattle	Washington
Zlotkey	Sales	Oxford	Oxford
-	Contracting	Seattle	Washington

Write the Query

- Problem:
  - Create a list of every employee's first and last names, and the first occurrence of: commission_pct, manager_id, or -1.
  - If an employee gets commission, display the commission_pct column; if no commission, then display his manager_id; if he has neither commission nor manager, then the number -1.
- Tables Used:
  - Employees

Query Result:

First Name	Last Name	Which function???
Steven	King	-1
Neena	Kochhar	100
Lex	De Haan	100
Jennifer	Whalen	101
Shelley	Higgins	101
William	Gietz	205
Eleni	Zlotkey	.2
Ellen	Abel	.3
Jonathon	Taylor	.2
Kimberely	Grant	.15
Kevin	Mourgos	100
Trenna	Rajs	124
Curtis	Davies	124
Randall	Matos	124
Peter	Vargas	124
Alexander	Hunold	102
Bruce	Ernst	103
Diana	Lorentz	103
Michael	Hartstein	100
Pat	Fay	201

Write the Query

- Problem:
  - Create a list of every employee's last name, salary, and job_grade for all employees working in departments with a department_id greater than 50.
- Tables Used:
  - Employees, job_grades

Query Result:

LAST_NAME	SALARY	GRADE_LEVEL
Lorentz	4200	B
Ernst	6000	C
Gietz	8300	C
Taylor	8600	C
Hunold	9000	C
Zlotkey	10500	D
Abel	11000	D
Higgins	12000	D
Kochhar	17000	E
De Haan	17000	E
King	24000	E

Write the Query

- Problem:
  - Produce a list of every employee's last name and department name.
  - Include both employees without departments, and departments without employees.
- Tables Used:
  - Employees, Departments

Query Result:

LAST_NAME	DEPARTMENT_NAME
Whalen	Administration
Fay	Marketing
Hartstein	Marketing
Mourgos	Shipping
Vargas	Shipping
Matos	Shipping
Davies	Shipping
Rajs	Shipping
Hunold	IT
Ernst	IT
Lorentz	IT
Zlotkey	Sales
Abel	Sales
Taylor	Sales
De Haan	Executive
Kochhar	Executive
King	Executive
Gietz	Accounting
Higgins	Accounting
Grant	-
-	Contracting

Write the Query

- Problem:
  - Create a treewalking list of every employee's last name, his manager's last name, and his position in the company.
  - The top level manager has position 1, this manager's subordinates position 2, their subordinates position 3, and so on.
  - Start the listing with employee number 100.
- Tables Used:
  - Employees

Query Result:

POSITION	LAST_NAME	MANAGER_NAME
1	King	-
2	Kochhar	King
3	Whalen	Kochhar
3	Higgins	Kochhar
4	Gietz	Higgins
2	De Haan	King
3	Hunold	De Haan
4	Ernst	Hunold
4	Lorentz	Hunold
2	Mourgos	King
3	Rajs	Mourgos
3	Davies	Mourgos
3	Matos	Mourgos
3	Vargas	Mourgos
2	Zlotkey	King
3	Abel	Zlotkey
3	Taylor	Zlotkey
3	Grant	Zlotkey
2	Hartstein	King
3	Fay	Hartstein

Write the Query

- Problem:
  - Produce a list of the earliest hire date, the latest hire date, and the number of employees from the employees table.
- Tables Used:
  - Employees

Query Result:

Lowest	Highest	No of Employees
17-Jun-1987	29-Jan-2000	20

Write the Query

- Problem:
  - Create a list of department names and the departmental costs (salaries added up).
  - Include only departments whose salary costs are between 15000 and 31000, and sort the listing by the cost.
- Tables Used:
  - Employees, Departments

Query Result:

DEPARTMENT_NAME	SALARIES
Shipping	17500
Marketing	19000
IT	19200
Accounting	20300
Sales	30100

Write the Query

- Problem:
  - Create a list of department names, the manager id, manager name (employee last name) of that department, and the average salary in each department.
- Tables Used:
  - Employees, Departments

Query Result:

DEPARTMENT_NAME	MANAGER_ID	MANAGER_NAME	AVG_DEPT_SALARY
Shipping	124	Mourgos	3500
Administration	200	Whalen	4400
IT	103	Hunold	6400
Marketing	201	Hartstein	9500
Sales	149	Zlotkey	10033
Accounting	205	Higgins	10150
Executive	100	King	19333

Write the Query

- Problem:
  - Show the highest average salary for the departments in the employees table.
  - Round the result to the nearest whole number.
- Tables Used:
  - Employees

Query Result:

Highest Avg Sal for Depts
19333

Write the Query

- Problem:
  - Create a list of department names and their monthly costs (salaries added up).
- Tables Used:
  - Employees, Departments

Query Result:

Department Name	Monthly Cost
Administration	4400
Accounting	20300
IT	19200
Executive	58000
Shipping	17500
Sales	30100
Marketing	19000

Write the Query

- Problem:
  - Create a list of department names, and job_ids.
  - Calculate the monthly salary cost for each job_id within a department, for each department, and for all departments added together.
- Tables Used:
  - Employees, Departments

Query Result:

Department Name	Job Title	Monthly Cost
Accounting	AC_ACCOUNT	8300
Accounting	AC_MGR	12000
Accounting	-	20300
Administration	AD_ASST	4400
Administration	-	4400
Executive	AD_PRES	24000
Executive	AD_VP	34000
Executive	-	58000
IT	IT_PROG	19200
IT	-	19200
Marketing	MK_MAN	13000
Marketing	MK_REP	6000
Marketing	-	19000
Sales	SA_MAN	10500
Sales	SA_REP	19600
Sales	-	30100
Shipping	ST_CLERK	11700
Shipping	ST_MAN	5800
Shipping	-	17500
-	-	168500

Write the Query

- Problem:
  - Create a list of department names, and job_ids.
  - Calculate the monthly salary cost for each job_id within a department, for each department, for each group of job_ids irrespective of the department, and for all departments added together. (Hint: Cube)
- Tables Used:
  - Employees, Departments

Query Result:

Department Name	Job Title	Monthly Cost
Accounting	AC_ACCOUNT	8300
Accounting	AC_MGR	12000
Accounting	-	20300
Administration	AD_ASST	4400
Administration	-	4400
Executive	AD_PRES	24000
Executive	AD_VP	34000
Executive	-	58000
IT	IT_PROG	19200
IT	-	19200
Marketing	MK_MAN	13000
Marketing	MK_REP	6000
Marketing	-	19000
Sales	SA_MAN	10500
Sales	SA_REP	19600
Sales	-	30100
Shipping	ST_CLERK	11700
Shipping	ST_MAN	5800
Shipping	-	17500
-	AC_ACCOUNT	8300
-	AC_MGR	12000
-	AD_ASST	4400
-	AD_PRES	24000
-	AD_VP	34000
-	IT_PROG	19200
-	MK_MAN	13000
-	MK_REP	6000
-	SA_MAN	10500
-	SA_REP	19600
-	ST_CLERK	11700
-	ST_MAN	5800
-	-	168500

Write the Query

- Problem:
  - Expand the previous list to also show if the department_id or job_id was used to create the subtotals shown in the output. (Hint: Cube, Grouping)
- Tables Used:
  - Employees, Departments

Query Result:

Department Name	Job Title	Monthly Cost	Department ID Used	Job ID Used
Accounting	AC_ACCOUNT	8300	Yes	Yes
Accounting	AC_MGR	12000	Yes	Yes
Accounting	-	20300	Yes	No
Administration	AD_ASST	4400	Yes	Yes
Administration	-	4400	Yes	No
Executive	AD_PRES	24000	Yes	Yes
Executive	AD_VP	34000	Yes	Yes
Executive	-	58000	Yes	No
IT	IT_PROG	19200	Yes	Yes
IT	-	19200	Yes	No
Marketing	MK_MAN	13000	Yes	Yes
Marketing	MK_REP	6000	Yes	Yes
Marketing	-	19000	Yes	No
Sales	SA_MAN	10500	Yes	Yes
Sales	SA_REP	19600	Yes	Yes
Sales	-	30100	Yes	No
Shipping	ST_CLERK	11700	Yes	Yes
Shipping	ST_MAN	5800	Yes	Yes
Shipping	-	17500	Yes	No
-	AC_ACCOUNT	8300	No	Yes
-	AC_MGR	12000	No	Yes
-	AD_ASST	4400	No	Yes
-	AD_PRES	24000	No	Yes
-	AD_VP	34000	No	Yes
-	IT_PROG	19200	No	Yes
-	MK_MAN	13000	No	Yes
-	MK_REP	6000	No	Yes
-	SA_MAN	10500	No	Yes
-	SA_REP	19600	No	Yes
-	ST_CLERK	11700	No	Yes
-	ST_MAN	5800	No	Yes
-	-	168500	No	No

Write the Query

- Problem:
  - Create a list that includes the monthly salary costs for each job title within a department.
  - In the same list, display the monthly salary cost per city. (Hint: Grouping Sets)
- Tables Used:
  - Employees, Departments, Locations

Query Result:

DEPARTMENT_NAME	JOB_ID	CITY	SUM(SALARY)
Accounting	AC_MGR	-	12000
Accounting	AC_ACCOUNT	-	8300
Administration	AD_ASST	-	4400
Executive	AD_VP	-	34000
Executive	AD_PRES	-	24000
IT	IT_PROG	-	19200
Marketing	MK_REP	-	6000
Marketing	MK_MAN	-	13000
Sales	SA_REP	-	19600
Sales	SA_MAN	-	10500
Shipping	ST_MAN	-	5800
Shipping	ST_CLERK	-	11700
-	-	Oxford	30100
-	-	Seattle	82700
-	-	South San Francisco	17500
-	-	Southlake	19200
-	-	Toronto	19000

Write the Query

- Problem:
  - Create a list of employee names as shown and department ids.
  - In the same report, list the department ids and department names. And finally, list the cities.
  - The rows should not be joined, just listed in the same report. (Hint: Union)
- Tables Used:
  - Employees, Departments, Locations

Query Result:

Employee Name	Department Id	Department Name	City
A Hunold	60	-	-
B Ernst	60	-	-
C Davies	50	-	-
D Lorentz	60	-	-
E Abel	80	-	-
E Zlotkey	80	-	-
J Taylor	80	-	-
J Whalen	10	-	-
K Grant	-	-	-
K Mourgos	50	-	-
L De Haan	90	-	-
M Hartstein	20	-	-
N Kochhar	90	-	-
P Fay	20	-	-
P Vargas	50	-	-
R Matos	50	-	-
S Higgins	110	-	-
S King	90	-	-
T Rajs	50	-	-
W Gietz	110	-	-
-	10	Administration	-
-	20	Marketing	-
-	50	Shipping	-
-	60	IT	-
-	80	Sales	-
-	90	Executive	-
-	110	Accounting	-
-	190	Contracting	-
-	-	-	Oxford
-	-	-	Seattle
-	-	-	South San Francisco
-	-	-	Southlake
-	-	-	Toronto

Write the Query

- Problem:
  - Create a list of each employee's first initial and last name, salary, and department name for each employee earning more than the average for his department.
- Tables Used:
  - Departments, Employees

Query Result:

Employee	Salary	Department Name
M Hartstein	13000	Marketing
K Mourgos	5800	Shipping
A Hunold	9000	IT
E Zlotkey	10500	Sales
E Abel	11000	Sales
S King	24000	Executive
S Higgins	12000	Accounting

Summary

In this lesson, you should have learned how to:

- Create a query to produce specified data
- Modify a query to produce specified data


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