Oracle Database 10*g*: SQL Fundamentals II

Student Guide • Volume 2

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Additional Practices

Additional Practices

The following exercises can be used for extra practice after you have discussed data manipulation language (DML) and data definition language (DDL) statements in the lessons titled "Managing Schema Objects" and "Manipulating Large Data Sets."

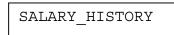
Note: Run the lab_ap_cre_special_sal.sql, lab_ap_cre_sal_history.sql, and lab_ap_cre_mgr_history.sql scripts in the labs folder to create the SPECIAL SAL, SAL HISTORY, and MGR HISTORY tables.

1. The Human Resources department wants to get a list of underpaid employees, the salary history of employees, and the salary history of managers based on an industry salary survey. So they have asked you to do the following:

Write a statement to do the following:

- Retrieve the employee ID, hire date, salary, and manager ID of those employees whose employee ID is more than or equal to 200 from the EMPLOYEES table.
- If the salary is less than \$5,000, insert the employee ID and salary into the SPECIAL SAL table.
- Insert the employee ID, hire date, and salary into the SAL HISTORY table.
- Insert the employee ID, manager ID, and salary into the MGR HISTORY table.
- 2. Query the SPECIAL_SAL, SAL_HISTORY and MGR_HISTORY tables to view the inserted records.





	A	EMPLOYEE_ID	£	HIRE_DATE	A	SALARY
1		201	17-	-FEB-1996		13000
2		202	17-	-AUG-1997		6000
3		203	07-	-JUN-1994		6500
4		204	07-	-JUN-1994		10000
5		205	07-	-JUN-1994		12000
6		206	07-	-JUN-1994		8300

MGR_HISTORY

	A	EMPLOYEE_ID	£	MANAGER_ID	A	SALARY
1		201		100		13000
2		202		201		6000
3		203		101		6500
4		204		101		10000
5		205		101		12000
6		206		205		8300

3. The DBA wants you to create a table, which has a primary key constraint, but wants the index to have a different name than the constraint. Create the LOCATIONS_NAMED_INDEX table based on the following table instance chart. Name the index for the PRIMARY KEY column as LOCATIONS PK IDX.

Column Name	Deptno	Dname
Primary Key	Yes	
Data Type	Number	VARCHAR2
Length	4	30

4. Query the USER_INDEXES table to display INDEX_NAME for the LOCATIONS_NAMED_INDEX table.



The following exercises can be used for extra practice after you have discussed enhancements to the GROUP BY clause.

5. The Human Resources department requires some reports on certain departments. These are its requirements:

Write a query to display the following for those departments whose department ID is greater than 80:

- The total salary for every job within a department
- The total salary
- The total salary for those cities in which the departments are located
- The total salary for every job, irrespective of the department
- The total salary for every department irrespective of the city
- The total salary for the departments, irrespective of the job titles and cities

	n	a		
	2 CITY	DEPARTMENT_NAME	9 -	SUM(E.SALARY)
	(null)	(null)	(null)	129900
	(null)	(null)	AD_VP	34000
3	(null)	(null)	AC_MGR	12000
4	(null)	(null)	FI_MGR	12000
5	(null)	(null)	AD_PRES	24000
6	(null)	(null)	AC_ACCOUNT	8300
7	(null)	(null)	FI_ACCOUNT	39600
8	(null)	Finance	(null)	51600
9	(null)	Finance	FI_MGR	12000
10	(null)	Finance	FI_ACCOUNT	39600
11	(null)	Executive	(null)	58000
12	(null)	Executive	AD_VP	34000
13	(null)	Executive	AD_PRES	24000
14	(null)	Accounting	(null)	20300
15	(null)	Accounting	AC_MGR	12000
16	(null)	Accounting	AC_ACCOUNT	8300
17	Seattle	(null)	(null)	129900
18	Seattle	(null)	AD_VP	34000
19	Seattle	(null)	AC_MGR	12000
20	Seattle	(null)	FI_MGR	12000
21	Seattle	(null)	AD_PRES	24000
22	Seattle	(null)	AC_ACCOUNT	8300
23	Seattle	(null)	FI_ACCOUNT	39600
24	Seattle	Finance	(null)	51600
25	Seattle	Finance	FI_MGR	12000
26	Seattle	Finance	FI_ACCOUNT	39600
27	Seattle	Executive	(null)	58000
28	Seattle	Executive	AD_VP	34000
29	Seattle	Executive	AD_PRES	24000
30	Seattle	Accounting	(null)	20300
31	Seattle	Accounting	AC_MGR	12000
32	Seattle	Accounting	AC_ACCOUNT	8300

- 6. The Accounting department requires an analysis on the maximum and minimum salaries by department, job, and manager. They have asked you to do the following:
 - Write a query to display the following groupings:
 - Department ID, Job ID
 - Job ID, Manager ID

The query should calculate the maximum and minimum salaries for each of these groups.

A	DEPARTMENT_ID	JOB_ID	MANAGER_ID	MAX(SALARY)	MIN(SALARY)
1	(null)	AC_MGR	101	12000	12000
2	(null)	SH_CLERK	122	3800	2500
3	(null)	SH_CLERK	124	3100	2600
4	(null)	MK_MAN	100	13000	13000
5	(null)	ST_MAN	100	8200	5800
6	(null)	ST_CLERK	121	3300	2100
7	(null)	SA_REP	148	11500	6100
8	(null)	SH_CLERK	120	3200	2500
9	(null)	AD_ASST	101	4400	4400
10	(null)	AD_PRES	(null)	24000	24000
•••					
40	50	SH_CLERK	(null)	4200	2500
41	20	MK_MAN	(null)	13000	13000
42	90	AD_PRES	(null)	24000	24000
43	60	IT_PROG	(null)	9000	4200
44	100	FI_MGR	(null)	12000	12000
45	30	PU_CLERK	(null)	3100	2500
46	100	FI_ACCOUNT	(null)	9000	6900
47	70	PR_REP	(null)	10000	10000
48	(null)	SA_REP	(null)	7000	7000
49	10	AD_ASST	(null)	4400	4400
50	20	MK_REP	(null)	6000	6000
51	40	HR_REP	(null)	6500	6500
52	30	PU_MAN	(null)	11000	11000

The following exercises can be used for extra practice after you have discussed the datetime functions.

You work for a global company and the new vice president of operations wants to know the different time zones of all the company branches. He has requested the following information:

- 7. Alter the session to set the NLS_DATE_FORMAT to DD-MON-YYYY HH24:MI:SS.
- 8. a. Write queries to display the time zone offsets (TZ_OFFSET) for the following time zones:

Australia/Sydney

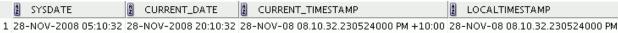


Chile/Easter Island



- b. Alter the session to set the TIME_ZONE parameter value to the time zone offset of Australia/Sydney.
- c. Display SYSDATE, CURRENT_DATE, CURRENT_TIMESTAMP, and LOCALTIMESTAMP for this session.

Note: The output may be different based on the date when the command is executed.



d. Alter the session to set the TIME_ZONE parameter value to the time zone offset of Chile/Easter Island.

Note: The results of the preceding question are based on a different date, and in some cases, they will not match the actual results that the students get. Also, the time zone offset of the various countries may differ based on the daylight saving time.

e. Display SYSDATE, CURRENT_DATE, CURRENT_TIMESTAMP, and LOCALTIMESTAMP for this session.

Note: The output may be different based on the date when the command is executed.



f. Alter the session to set the NLS DATE FORMAT to DD-MON-YYYY.

Note

- Observe in the preceding question that CURRENT_DATE, CURRENT_TIMESTAMP, and LOCALTIMESTAMP are all sensitive to the session time zone. Observe that SYSDATE is not sensitive to the session time zone.
- The results of the preceding question are based on a different date, and in some cases, they will not match the actual results that the students get. Also the time zone offset of the various countries may differ based on the daylight saving time.
- 9. The Human Resources department wants a list of employees who are up for review in January, so they have requested you to do the following:

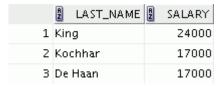
Write a query to display the last name, month of the date of hire, and hire date of those employees who have been hired in the month of January, irrespective of the year of hire.

	LAST_NAME	EXTRACT(MONTHFROMHIRE_DATE)	HIRE_DATE
1	Grant	1	13-JAN-2000
2	De Haan	1	13-JAN-1993
3	Hunold	1	03-JAN-1990
4	Landry	1	14-JAN-1999
5	Davies	1	29-JAN-1997
6	Partners	1	05-JAN-1997
7	Zlotkey	1	29-JAN-2000
8	Tucker	1	30-JAN-1997
9	King	1	30-JAN-1996
10	Marvins	1	24-JAN-2000
11	Fox	1	24-JAN-1998
12	Johnson	1	04-JAN-2000
13	Taylor	1	24-JAN-1998
14	Sarchand	1	27-JAN-1996

The following exercises can be used for extra practice after you have discussed advanced subqueries.

10. The CEO needs a report on the top three earners in the company for profit sharing. He has asked you to provide him with a list.

Write a query to display the top three earners in the EMPLOYEES table. Display their last names and salaries.



11. The benefits for the state of California have been changed based on a local ordinance. So the benefits representative has asked you to compile a list of people who are affected. Write a query to display the employee ID and last name of the employees who work in the state of California.

Hint: Use scalar subqueries.



41 193 Everett
42 194 McCain
43 195 Jones
44 196 Walsh
45 197 Feeney

12. The DBA wants to remove old information from the database. One of the things that the DBA thinks is unnecessary is the old employment records. She has asked you to do the following:

Write a query to delete the oldest JOB_HISTORY row of an employee by looking up the JOB_HISTORY table for MIN(START_DATE) for the employee. Delete the records of *only* those employees who have changed at least two jobs.

Hint: Use a correlated DELETE command.

13. The vice president of Human Resources needs the complete employment records for his annual employee recognition banquet speech. He makes a quick phone call to stop you from following the DBA's orders.

Roll back the transaction.

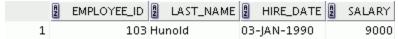
14. The sluggish economy is forcing the management to take cost reduction actions. The CEO wants to review the highest paid jobs in the company. He has requested a list from you based on the following specifications:

Write a query to display the job IDs of those jobs whose maximum salary is above half the maximum salary in the entire company. Use the WITH clause to write this query. Name the query MAX SAL CALC.

	2 JOB_TITLE	A	JOB_TOTAL
1	President		24000
2	Administration Vice President		17000
3	Sales Manager		14000
4	Marketing Manager		13000

The following exercises can be used for extra practice after you have discussed hierarchical retrieval.

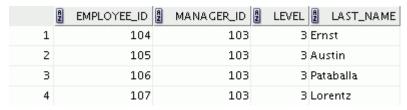
- 15. Lex De Haan is quitting the company. His replacement wants reports of his direct reports. Write a SQL statement to display the employee number, last name, start date, and salary, showing:
 - a. De Haan's direct reports:



b. The organization tree under De Haan (employee number 102):

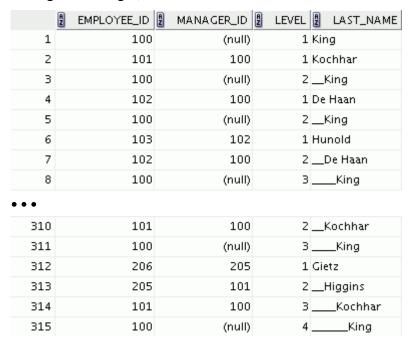
	EMPLOYEE_ID	LAST_NAME	HIRE_DATE	SALARY
1	103	Hunold	03-JAN-1990	9000
2	104	Ernst	21-MAY-1991	6000
3	105	Austin	25-JUN-1997	4800
4	106	Pataballa	05-FEB-1998	4800
5	107	Lorentz	07-FEB-1999	4200

16. Write a hierarchical query to display the employee number, manager number, and employee last name for all employees who are two levels below employee De Haan (employee number 102). Also, display the level of the employee.



17. The CEO wants a hierarchical report on all employees. He has given you the following requirements:

Produce a hierarchical report to display the employee number, manager number, the LEVEL pseudocolumn, and employee last name. For every row in the EMPLOYEES table, you should print a tree structure that shows the employee, the employee's manager, the manager's manager, and so on. Use indentations for the NAME column.



Note: The output shown is only a sample. All the rows from the actual output are not included here.

Additional Practice Solutions

Additional Practices Solutions

The following exercises can be used for extra practice after you have discussed the data manipulation language (DML) and data definition language (DDL) statements in the lessons titled "Managing Schema Objects" and "Manipulating Large Data Sets."

Note: Run the lab_ap_cre_special_sal.sql, lab_ap_cre_sal_history.sql, and lab_ap_cre_mgr_history.sql scripts in the labs folder to create the SPECIAL SAL, SAL HISTORY, and MGR HISTORY tables.

1. The Human Resources department wants a list of underpaid employees, the salary history of employees, and the salary history of managers based on an industry salary survey. So they have asked you to do the following:

Write a statement to do the following:

- Retrieve the employee ID, hire date, salary, and manager ID of those employees whose employee ID is more than or equal to 200 from the EMPLOYEES table.
- If the salary is less than \$5,000, insert the employee ID and salary into the SPECIAL SAL table.
- Insert the employee ID, hire date, and salary into the SAL HISTORY table.
- Insert the employee ID, manager ID, and salary into the MGR HISTORY table.

2. Query the SPECIAL_SAL, SAL_HISTORY, and MGR_HISTORY tables to view the inserted records.

```
SELECT * FROM special_sal;
SELECT * FROM sal_history;
SELECT * FROM mgr_history;
```

3. The DBA wants you to create a table, which has a primary key constraint, but the DBA wants the index to have a different name than the constraint. Create the LOCATIONS NAMED INDEX table based on the following table instance chart.

Column Name	Deptno	Dname
Primary Key	Yes	
Data Type	Number	VARCHAR2
Length	4	30

Name the index for the PRIMARY KEY column as LOCATIONS PK IDX.

```
CREATE TABLE LOCATIONS_NAMED_INDEX
(location_id NUMBER(4) PRIMARY KEY USING INDEX
(CREATE INDEX locations_pk_idx ON
LOCATIONS_NAMED_INDEX(location_id)),
location_name VARCHAR2(20));
```

4. Query the USER_INDEXES table to display INDEX_NAME for the LOCATIONS NAMED INDEX table.

```
SELECT INDEX_NAME, TABLE_NAME

FROM USER_INDEXES

WHERE TABLE_NAME = `LOCATIONS_NAMED_INDEX';
```

The following exercises can be used for extra practice after you have discussed enhancements to the GROUP BY clause.

5. The Human Resources department requires some reports on certain departments. These are its requirements:

Write a query to display the following for those departments whose department ID is greater than 80:

- The total salary for every job within a department
- The total salary
- The total salary for those cities in which the departments are located
- The total salary for every job, irrespective of the department
- The total salary for every department irrespective of the city
- The total salary for the departments, irrespective of the job titles and cities

```
city FORMAT A25 Heading CITY
COLUMN
          department name FORMAT A15 Heading DNAME
COLUMN
COLUMN
           job id FORMAT A10 Heading JOB
           SUM(salary) FORMAT $99,99,999.00 Heading
COLUMN
           SUM (SALARY)
          1.city, d.department name, e.job id,
SELECT
          SUM(e.salary)
           locations 1, employees e, departments d
FROM
          d.location id = 1.location id
WHERE
          e.department id = d.department id
AND
           e.department id > 80
AND
GROUP BY CUBE ( 1.city, d.department name, e.job id);
```

6. The Accounting department requires an analysis on the maximum and minimum salaries by department, job, and manager. They have asked you to do the following:

Write a query to display the following groupings:

- Department ID, Job ID
- Job ID, Manager ID

The query should calculate the maximum and minimum salaries for each of these groups.

```
SELECT
  department_id,job_id,manager_id,max(salary),
    min(salary)

FROM employees
GROUP BY GROUPING SETS
  ((department_id,job_id), (job_id,manager_id));
```

The following exercises can be used for extra practice after you have discussed the datetime functions.

You work for a global company and the new vice president of operations wants to know the different time zones of all the company branches. He has requested the following information:

7. Alter the session to set the NLS DATE FORMAT to DD-MON-YYYY HH24:MI:SS.

```
ALTER SESSION
SET NLS_DATE_FORMAT = `DD-MON-YYYY HH24:MI:SS';
```

- 8. a. Write queries to display the time zone offsets (TZ_OFFSET) for the following time zones:
 - Australia/Sydney

```
SELECT TZ OFFSET (`Australia/Sydney') from dual;
```

- Chile/Easter Island

```
SELECT TZ OFFSET ('Chile/EasterIsland') from dual;
```

b. Alter the session to set the TIME_ZONE parameter value to the time zone offset of Australia/Sydney.

```
ALTER SESSION SET TIME ZONE = '+10:00';
```

c. Display SYSDATE, CURRENT_DATE, CURRENT_TIMESTAMP, and LOCALTIMESTAMP for this session.

Note: The output may be different based on the date when the command is executed.

SELECT SYSDATE, CURRENT_DATE, CURRENT_TIMESTAMP, LOCALTIMESTAMP FROM DUAL;

d. Alter the session to set the TIME_ZONE parameter value to the time zone offset of Chile/Easter Island.

Note: The results of the preceding question are based on a different date, and in some cases, they will not match the actual results that the students get. Also, the time zone offset of the various countries may differ based on the daylight saving time.

```
ALTER SESSION SET TIME_ZONE = \'-06:00';
```

e. Display SYSDATE, CURRENT_DATE, CURRENT_TIMESTAMP, and LOCALTIMESTAMP for this session.

Note: The output may be different based on the date when the command is executed.

SELECT SYSDATE, CURRENT_DATE, CURRENT_TIMESTAMP, LOCALTIMESTAMP FROM DUAL;

f. Alter the session to set NLS DATE FORMAT to DD-MON-YYYY.

ALTER SESSION SET NLS DATE FORMAT = 'DD-MON-YYYY';

Note

- Observe in the preceding question that CURRENT_DATE, CURRENT_TIMESTAMP, and LOCALTIMESTAMP are all sensitive to the session time zone. Observe that SYSDATE is not sensitive to the session time zone.
- The results of the preceding question are based on a different date, and in some cases, they will not match the actual results that the students get. Also, the time zone offset of the various countries may differ based on the daylight saving time.
- 9. The Human Resources department wants a list of employees who are up for review in January, so they have requested you to do the following:

Write a query to display the last names, month of the date of hire, and hire date of those employees who have been hired in the month of January, irrespective of the year of hire.

```
SELECT last_name, EXTRACT (MONTH FROM HIRE_DATE),
HIRE_DATE FROM employees
WHERE EXTRACT (MONTH FROM HIRE_DATE) = 1;
```

The following exercises can be used for extra practice after you have discussed advanced subqueries.

10. The CEO needs a report on the top three earners in the company for profit sharing. He has asked you to provide him with a list.

Write a query to display the top three earners in the EMPLOYEES table. Display their last names and salaries.

```
SELECT last_name, salary
FROM employees e
WHERE 3 > (SELECT COUNT (*)
FROM employees
WHERE e.salary < salary);</pre>
```

11. The benefits for the state of California have been changed based on a local ordinance. So the benefits representative has asked you to compile a list of people who are affected. Write a query to display the employee ID and last name of the employees who work in the state of California.

Hint: Use scalar subqueries.

```
SELECT employee_id, last_name

FROM employees e

WHERE ((SELECT location_id

FROM departments d

WHERE e.department_id = d.department_id)

IN (SELECT location_id

FROM locations l

WHERE state_province = `California'));
```

12. The DBA wants to remove old information from the database. One of the things that the DBA thinks is unnecessary is the old employment records. He or she has asked you to do the following:

Write a query to delete the oldest JOB_HISTORY row of an employee by looking up the JOB_HISTORY table for MIN(START_DATE) for the employee. Delete the records of *only* those employees who have changed at least two jobs.

Hint: Use a correlated DELETE command.

```
DELETE FROM job_history JH

WHERE employee_id = (SELECT employee_id

FROM employees E

WHERE JH.employee_id = E.employee_id

AND START_DATE = (SELECT MIN(start_date)

FROM job_history JH

WHERE JH.employee_id = E.employee_id)

AND 3 > (SELECT COUNT(*)

FROM job_history JH

WHERE JH.employee_id = E.employee_id

GROUP BY EMPLOYEE_ID

HAVING COUNT(*) >= 2));
```

13. The vice president of Human Resources needs the complete employment records for his annual employee recognition banquet speech. He makes a quick phone call to stop you from following the DBA's orders.

Roll back the transaction.

```
ROLLBACK;
```

14. The sluggish economy is forcing the management to take cost reduction actions. The CEO wants to review the highest paid jobs in the company. He has requested a list from you based on the following specifications:

Write a query to display the job IDs of those jobs whose maximum salary is above half the maximum salary in the entire company. Use the WITH clause to write this query. Name the query MAX SAL CALC.

```
WITH

MAX_SAL_CALC AS (SELECT job_title, MAX(salary) AS job_total

FROM employees, jobs

WHERE employees.job_id = jobs.job_id

GROUP BY job_title)

SELECT job_title, job_total

FROM MAX_SAL_CALC

WHERE job_total > (SELECT MAX(job_total) * 1/2

FROM MAX_SAL_CALC)

ORDER BY job_total DESC;
```

The following exercises can be used for extra practice after you have discussed hierarchical retrieval.

- 15. Lex De Haan is quitting the company. His replacement wants reports of his direct reports. Write a SQL statement to display the employee number, last name, start date, and salary, showing:
 - a. De Haan's direct reports:

```
SELECT employee_id, last_name, hire_date, salary
FROM employees
WHERE manager_id = (SELECT employee_id
FROM employees
WHERE last_name = 'De Haan');
```

b. The organization tree under De Haan (employee number 102):

```
SELECT employee_id, last_name, hire_date, salary
FROM employees
WHERE employee_id!= 102
CONNECT BY manager_id = PRIOR employee_id
START WITH employee_id = 102;
```

16. Write a hierarchical query to display the employee number, manager number, and employee last name for all employees who are two levels below employee De Haan (employee number 102). Also display the level of the employee.

```
SELECT employee_id, manager_id, level, last_name
FROM employees
WHERE LEVEL = 3
CONNECT BY manager_id = PRIOR employee_id
START WITH employee_id = 102;
```

17. The CEO wants a hierarchical report on all employees. He has given you the following requirements:

Produce a hierarchical report to display the employee number, manager number, the LEVEL pseudocolumn, and employee last name. For every row in the EMPLOYEES table, you should print a tree structure that shows the employee, the employee's manager, the manager's manager, and so on. Use indentations for the NAME column.

```
COLUMN name FORMAT A25

SELECT employee_id, manager_id, LEVEL,

LPAD(last_name, LENGTH(last_name) + (LEVEL*2) - 2, '_')

LAST_NAME

FROM employees

CONNECT BY employee_id = PRIOR manager_id;

COLUMN name CLEAR
```