

Chua bai tap

Practice 1 Solutions

1. Initiate an *iSQL**Plus session using the user ID and password provided by the instructor.
2. *iSQL**Plus commands access the database.

False

3. The following `SELECT` statement executes successfully:

True

```
SELECT last_name, job_id, salary AS Sal
FROM   employees;
```

4. The following `SELECT` statement executes successfully:

True

```
SELECT *
FROM   job_grades;
```

5. There are four coding errors in this statement. Can you identify them?

```
SELECT      employee_id, last_name
sal x 12    ANNUAL SALARY
FROM        employees;
```

- The **EMPLOYEES** table does not contain a column called **sal**. The column is called **SALARY**.
- The multiplication operator is *****, not **x**, as shown in line 2.
- The **ANNUAL SALARY** alias cannot include spaces. The alias should read **ANNUAL_SALARY** or be enclosed in double quotation marks.
- A comma is missing after the column, **LAST_NAME**.

6. Show the structure of the `DEPARTMENTS` table. Select all data from the `DEPARTMENTS` table.

```
DESCRIBE departments
```

```
SELECT *
FROM   departments;
```

7. Show the structure of the `EMPLOYEES` table. Create a query to display the last name, job code, hire date, and employee number for each employee, with employee number appearing first. Provide an alias `STARTDATE` for the `HIRE_DATE` column. Save your SQL statement to a file named `lab1_7.sql`.

```
DESCRIBE employees
```

```
SELECT employee_id, last_name, job_id, hire_date StartDate
FROM   employees;
```

Practice 1 Solutions (continued)

8. Run your query in the file lab1_7.sql.

```
SELECT employee_id, last_name, job_id, hire_date
FROM employees;
```

9. Create a query to display unique job codes from the EMPLOYEES table.

```
SELECT DISTINCT job_id
FROM employees;
```

If you have time, complete the following exercises:

10. Copy the statement from lab1_7.sql into the iSQL*Plus Edit window. Name the column headings Emp #, Employee, Job, and Hire Date, respectively. Run your query again.

```
SELECT employee_id "Emp #", last_name "Employee",
       job_id "Job", hire_date "Hire Date"
FROM employees;
```

11. Display the last name concatenated with the job ID, separated by a comma and space, and name the column Employee and Title.

```
SELECT last_name||', '||job_id "Employee and Title"
FROM employees;
```

If you want an extra challenge, complete the following exercise:

12. Create a query to display all the data from the EMPLOYEES table. Separate each column by a comma. Name the column THE_OUTPUT.

```
SELECT employee_id || ',' || first_name || ',' || last_name
       || ',' || email || ',' || phone_number || ',' || job_id
       || ',' || manager_id || ',' || hire_date || ',' ||
       salary || ',' || commission_pct || ',' || department_id
       THE_OUTPUT
FROM employees;
```

Practice 2 Solutions

1. Create a query to display the last name and salary of employees earning more than \$12,000. Place your SQL statement in a text file named lab2_1.sql. Run your query.

```
SELECT last_name, salary
FROM employees
WHERE salary > 12000;
```

2. Create a query to display the employee last name and department number for employee number 176.

```
SELECT last_name, department_id
FROM employees
WHERE employee_id = 176;
```

3. Modify lab2_1.sql to display the last name and salary for all employees whose salary is not in the range of \$5,000 and \$12,000. Place your SQL statement in a text file named lab2_3.sql.

```
SELECT last_name, salary
FROM employees
WHERE salary NOT BETWEEN 5000 AND 12000;
```

4. Display the employee last name, job ID, and start date of employees hired between February 20, 1998, and May 1, 1998. Order the query in ascending order by start date.

```
SELECT last_name, job_id, hire_date
FROM employees
WHERE hire_date BETWEEN '20-Feb-1998' AND '01-May-1998'
ORDER BY hire_date;
```

Practice 2 Solutions (continued)

5. Display the last name and department number of all employees in departments 20 and 50 in alphabetical order by name.

```
SELECT    last_name, department_id
FROM      employees
WHERE     department_id IN (20, 50)
ORDER BY  last_name;
```

6. Modify lab2_3.sql to list the last name and salary of employees who earn between \$5,000 and \$12,000, and are in department 20 or 50. Label the columns Employee and Monthly Salary, respectively. Resave lab2_3.sql as lab2_6.sql. Run the statement in lab2_6.sql.

```
SELECT    last_name "Employee", salary "Monthly Salary"
FROM      employees
WHERE     salary BETWEEN 5000 AND 12000
AND       department_id IN (20, 50);
```

7. Display the last name and hire date of every employee who was hired in 1994.

```
SELECT    last_name, hire_date
FROM      employees
WHERE     hire_date LIKE '%94';
```

8. Display the last name and job title of all employees who do not have a manager.

```
SELECT    last_name, job_id
FROM      employees
WHERE     manager_id IS NULL;
```

9. Display the last name, salary, and commission for all employees who earn commissions. Sort data in descending order of salary and commissions.

```
SELECT    last_name, salary, commission_pct
FROM      employees
WHERE     commission_pct IS NOT NULL
ORDER BY  salary DESC, commission_pct DESC;
```

Practice 2 Solutions (continued)

If you have time, complete the following exercises.

10. Display the last names of all employees where the third letter of the name is an *a*.

```
SELECT    last_name
FROM      employees
WHERE     last_name LIKE '___a%';
```

11. Display the last name of all employees who have an *a* and an *e* in their last name.

```
SELECT    last_name
FROM      employees
WHERE     last_name LIKE '%a%'
        AND last_name LIKE '%e%';
```

If you want an extra challenge, complete the following exercises:

12. Display the last name, job, and salary for all employees whose job is sales representative or stock clerk and whose salary is not equal to \$2,500, \$3,500, or \$7,000.

```
SELECT    last_name, job_id, salary
FROM      employees
WHERE     job_id IN ('SA_REP', 'ST_CLERK')
        AND salary NOT IN (2500, 3500, 7000);
```

13. Modify lab2_6.sql to display the last name, salary, and commission for all employees whose commission amount is 20%. Resave lab2_6.sql as lab2_13.sql. Rerun the statement in lab2_13.sql.

```
SELECT    last_name "Employee", salary "Monthly Salary",
          commission_pct
FROM      employees
WHERE     commission_pct = .20;
```

Practice 3 Solutions

1. Write a query to display the current date. Label the column Date.

```
SELECT    sysdate "Date"
FROM      dual;
```

2. For each employee, display the employee number, last_name, salary, and salary increased by 15% and expressed as a whole number. Label the column New Salary. Place your SQL statement in a text file named lab3_2.sql.

```
SELECT    employee_id, last_name, salary,
          ROUND(salary * 1.15, 0) "New Salary"
FROM      employees;
```

3. Run your query in the file lab3_2.sql.

```
SELECT    employee_id, last_name, salary,
          ROUND(salary * 1.15, 0) "New Salary"
FROM      employees;
```

4. Modify your query lab3_2.sql to add a column that subtracts the old salary from the new salary. Label the column Increase. Save the contents of the file as lab3_4.sql. Run the revised query.

```
SELECT    employee_id, last_name, salary,
          ROUND(salary * 1.15, 0) "New Salary",
          ROUND(salary * 1.15, 0) - salary "Increase"
FROM      employees;
```

5. Write a query that displays the employee's last names with the first letter capitalized and all other letters lowercase and the length of the name for all employees whose name starts with J, A, or M. Give each column an appropriate label. Sort the results by the employees' last names.

```
SELECT    INITCAP(last_name) "Name",
          LENGTH(last_name) "Length"
FROM      employees
WHERE     last_name LIKE 'J%'
OR        last_name LIKE 'M%'
OR        last_name LIKE 'A%'
ORDER BY last_name;
```

Practice 3 Solutions (continued)

6. For each employee, display the employee's last name, and calculate the number of months between today and the date the employee was hired. Label the column MONTHS_WORKED. Order your results by the number of months employed. Round the number of months up to the closest whole number.

Note: Your results will differ.

```
SELECT    last_name, ROUND(MONTHS_BETWEEN
                           (SYSDATE, hire_date)) MONTHS_WORKED
FROM      employees
ORDER BY  MONTHS_BETWEEN(SYSDATE, hire_date);
```

7. Write a query that produces the following for each employee:
<employee last name> earns <salary> monthly but wants <3 times salary>. Label the column Dream Salaries.

```
SELECT    last_name || ' earns '
          || TO_CHAR(salary, 'fm$99,999.00')
          || ' monthly but wants '
          || TO_CHAR(salary * 3, 'fm$99,999.00')
          || '. ' "Dream Salaries"
FROM      employees;
```

If you have time, complete the following exercises:

8. Create a query to display the last name and salary for all employees. Format the salary to be 15 characters long, left-padded with \$. Label the column SALARY.

```
SELECT    last_name,
          LPAD(salary, 15, '$') SALARY
FROM      employees;
```

9. Display each employee's last name, hire date, and salary review date, which is the first Monday after six months of service. Label the column REVIEW. Format the dates to appear in the format similar to "Monday, the Thirty-First of July, 2000."

```
SELECT    last_name, hire_date,
          TO_CHAR(NEXT_DAY(ADD_MONTHS(hire_date, 6), 'MONDAY'),
                  'fmDay, "the" Ddspth "of" Month, YYYY') REVIEW
FROM      employees;
```

10. Display the last name, hire date, and day of the week on which the employee started. Label the column DAY. Order the results by the day of the week starting with Monday.

```
SELECT    last_name, hire_date,
          TO_CHAR(hire_date, 'DAY') DAY
FROM      employees
ORDER BY  TO_CHAR(hire_date - 1, 'd');
```


Practice 3 Solutions (continued)

If you want an extra challenge, complete the following exercises:

11. Create a query that displays the employees' last names and commission amounts. If an employee does not earn commission, put "No Commission." Label the column `COMM`.

```
SELECT    last_name,  
          NVL(TO_CHAR(commission_pct), 'No Commission') COMM  
FROM      employees;
```

12. Create a query that displays the employees' last names and indicates the amounts of their annual salaries with asterisks. Each asterisk signifies a thousand dollars. Sort the data in descending order of salary. Label the column `EMPLOYEES_AND_THEIR_SALARIES`.

```
SELECT    rpad(last_name, 8)||' '|| rpad(' ', salary/1000+1, '*')  
          EMPLOYEES_AND_THEIR_SALARIES  
FROM      employees  
ORDER BY  salary DESC;
```

13. Using the `DECODE` function, write a query that displays the grade of all employees based on the value of the column `JOB_ID`, as per the following data:

<i>JOB</i>	<i>GRADE</i>
AD_PRES	A
ST_MAN	B
IT_PROG	C
SA_REP	D
ST_CLERK	E
None of the above	0

```
SELECT job_id, decode (job_id,  
                      'ST_CLERK', 'E',  
                      'SA_REP', 'D',  
                      'IT_PROG', 'C',  
                      'ST_MAN', 'B',  
                      'AD_PRES', 'A',  
                      '0') GRADE  
FROM employees;
```

Practice 3 Solutions (continued)

14. Rewrite the statement in the preceding question using the CASE syntax.

```
SELECT job_id, CASE job_id
      WHEN 'ST_CLERK' THEN 'E'
      WHEN 'SA_REP'   THEN 'D'
      WHEN 'IT_PROG'  THEN 'C'
      WHEN 'ST_MAN'   THEN 'B'
      WHEN 'AD_PRES'  THEN 'A'
      ELSE '0'        END  GRADE
FROM employees;
```

Bai tap phan 4

1. Viết câu lệnh truy vấn hiển thị tên, mã số phòng, và tên phòng đối với tất cả nhân viên.

```
SELECT e.last_name, e.department_id, d.department_name
FROM employees e, departments d
WHERE e.department_id = d.department_id;
```

hoac 9i

```
sai: SELECT e.last_name, department_id, d.department_name
FROM employees e
NATURAL JOIN departments d;
```

Dung:

```
SELECT e.last_name, department_id, d.department_name
FROM employees e
JOIN departments d USING(department_id)
```

2. Tạo danh sách duy nhất đối với tất cả các công việc và vị trí của phòng 80.

```
SELECT DISTINCT job_id, location_id
FROM employees, departments
WHERE employees.department_id = departments.department_id
AND employees.department_id = 80;
```

hoac

```
SELECT DISTINCT job_id, d.location_id
FROM employees e
JOIN departments d USING(department_id)
WHERE department_id = 80;
```

3. Hiển thị tên nhân viên, tên phòng, mã vị trí, và thành phố của tất cả nhân viên những người kiếm được % hoa hồng hàng tháng.

```
SELECT e.last_name, d.department_name, d.location_id, l.city
FROM employees e, departments d, locations l
WHERE e.department_id = d.department_id
AND
d.location_id = l.location_id
AND e.commission_pct IS NOT NULL;
```

4. Hiển thị tên nhân viên, tên phòng, của tất cả nhân viên những người có chữ a (chữ thường) trong tên của họ. Save câu lệnh vào file lab4_4.sql.

```
SELECT last_name, department_name
FROM employees, departments
WHERE employees.department_id = departments.department_id
AND last_name LIKE '%a%';
```

Bai tap phan 4

5. Hiển thị tên nhân viên, mã công việc, mã số phòng, tên phòng của tất cả nhân viên đang làm việc tại thành phố Toronto.

```
SELECT e.last_name, e.job_id, e.department_id,  
       d.department_name  
FROM employees e JOIN departments d  
ON (e.department_id = d.department_id)  
JOIN locations l  
ON (d.location_id = l.location_id)  
WHERE LOWER(l.city) = 'toronto';
```

6. Hiển thị tên nhân viên, mã số nhân viên, cùng với tên người quản lý, mã người quản lý của họ. Tiêu đề các cột lần lượt là Employee, Emp#, Manager, and Mgr#. Save ra file lab4_6.sql.

```
SELECT w.last_name "Employee", w.employee_id "EMP#",  
       m.last_name "Manager", m.employee_id  "Mgr#"  
FROM employees w join employees m  
ON (w.manager_id = m.employee_id);
```

Bai tap phan 4

7. Sửa đổi file lab4_6.sql để hiển thị tất cả nhân viên bao gồm cả King (người không có ai quản lý). Save ra file là lab4_7.sql

```
SELECT w.last_name "Employee", w.employee_id "EMP#",  
       m.last_name "Manager", m.employee_id "Mgr#"  
FROM employees w  
LEFT OUTER JOIN employees m  
ON (w.manager_id = m.employee_id);
```

8. Hiển thị số phòng, tên nhân viên, và tất cả các nhân viên cùng phòng với nhân viên đó. Tiêu đề các cột lần lượt là tên phòng, tên nhân viên, đồng nghiệp

```
SELECT e.department_id "Ma so phong", e.last_name "Ten Nhan  
Vien", c.last_name "Dong Nghiep"  
FROM employees e JOIN employees c  
ON (e.department_id = c.department_id)  
WHERE e.employee_id <> c.employee_id  
ORDER BY e.department_id, e.last_name, c.last_name;
```

9. Hiển thị cấu trúc bảng JOB_GRADES. Tạo câu lệnh hiển thị tên, công việc, tên phòng, lương, và mức lương của tất cả nhân viên.

```
DESC JOB_GRADES  
SELECT e.last_name, e.job_id, d.department_name,  
       e.salary, j.grade_level  
FROM employees e, departments d, job_grades j  
WHERE e.department_id = d.department_id  
AND e.salary BETWEEN j.lowest_sal AND j.highest_sal;  
-- OR  
SELECT e.last_name, e.job_id, d.department_name,  
       e.salary, j.grade_level  
FROM employees e JOIN departments d  
ON (e.department_id = d.department_id)  
JOIN job_grades j  
ON (e.salary BETWEEN j.lowest_sal AND j.highest_sal);
```

Bai tap phan 4

10. Hiển thị tên và ngày vào công ty của tất cả nhân viên vào công ty sau Davies.

```
SELECT e.last_name, e.hire_date
FROM   employees e, employees davies
WHERE  davies.last_name = 'Davies'
AND    davies.hire_date < e.hire_date
-- OR
SELECT e.last_name, e.hire_date
FROM   employees e JOIN employees davies
ON     (davies.last_name = 'Davies')
WHERE  davies.hire_date < e.hire_date;
```

11. Hiển thị tên và ngày vào công ty của tất cả nhân viên những người vào công ty trước người quản lý của họ, đồng thời hiển thị tên và ngày vào công ty của người quản lý của họ. Tiêu đề các cột là Employee, Emp Hired, Manager, và Mgr Hired.

```
SELECT w.last_name, w.hire_date, m.last_name, m.hire_date
FROM   employees w, employees m
WHERE  w.manager_id = m.employee_id
AND    w.hire_date < m.hire_date;
-- OR
SELECT w.last_name, w.hire_date, m.last_name, m.hire_date
FROM   employees w JOIN employees m
ON     (w.manager_id = m.employee_id)
WHERE  w.hire_date < m.hire_date;
```

Bai tap phan 5

Xác định rõ hiệu lực của 3 đoạn lệnh sau (Đúng hay Sai);.

1. Các hàng nhóm làm việc trên nhiều hàng để tạo ra 1 hàng kết quả.

True

2. Các hàm nhóm bao gồm cả giá trị null trong tính toán.

False.

Hàm nhóm bỏ qua giá trị null. Nếu bạn muốn bao gồm cả giá trị null bạn phải sử dụng hàm NVL

3. Mệnh đề WHERE hạn chế các hàng trước khi gộp vào trong một nhóm tính toán.

True

4. Hiển thị số lớn nhất, nhỏ nhất, tổng, giá trị trung bình lương của tất cả nhân viên. Tiêu đề các cột lần lượt là

Maximum, Minimum, Sum, and Average, respectively. Làm tròn các số . Save ra file lab5_4.sql.

```
SELECT    ROUND (MAX (salary) ,0) "Maximum",
          ROUND (MIN (salary) ,0) "Minimum",
          ROUND (SUM (salary) ,0) "Sum",
          ROUND (AVG (salary) ,0) "Average"
FROM      employees ;
```

5. Sửa đổi câu lệnh trong lab5_4.sql để hiển thị lớn nhất, nhỏ nhất, tổng, giá trị trung bình lương theo nhóm công việc. save ra file lab5_5.sql.

```
SELECT    job_id, ROUND (MAX (salary) ,0) "Maximum",
          ROUND (MIN (salary) ,0) "Minimum",
          ROUND (SUM (salary) ,0) "Sum",
          ROUND (AVG (salary) ,0) "Average"
FROM      employees
GROUP BY  job_id;
```


Bai tap phan 5

6. Viết câu lệnh hiển thị số người đối với mỗi công việc.

```
SELECT    job_id, COUNT(*)
FROM      employees
GROUP BY  job_id;
```

7. Xác định rõ số người quản lý, không cần hiển thị danh sách họ. Đặt tiêu đề là Number of Managers.

```
SELECT    COUNT(DISTINCT manager_id) "Number of Managers"
FROM      employees;
```

8. Viết câu lệnh hiển thị sự chênh lệch giữa lương cao nhất và lương nhỏ. Tiêu đề là DIFFERENCE.

```
SELECT    MAX(salary) - MIN(salary) DIFFERENCE
FROM      employees;
```

9. Hiển thị mã số người quản lý và tiền lương nhỏ nhất mà các nhân viên do người đó quản lý, bỏ qua các trường hợp không xác định được người quản lý, bỏ qua các nhóm mà lương thấp nhất ít hơn hoặc bằng 6000 sắp xếp theo tiền lương giảm dần.

```
SELECT    manager_id, MIN(salary)
FROM      employees
WHERE     manager_id IS NOT NULL
GROUP BY  manager_id
HAVING    MIN(salary) > 6000
ORDER BY  MIN(salary) DESC;
```

10. Viết câu lệnh hiển thị tên mỗi phòng, mã vị trí và số lượng nhân viên và lương trung bình của mỗi phòng. Tiêu đề lần lượt là Name, Location, Number of People, và Salary, Làm tròn giá trị trung bình của lương 2 số sau dấu thập phân.

```
SELECT    d.department_name "Name", d.location_id "Location",
          COUNT(*) "Number of People",
          ROUND(AVG(salary),2) "Salary"
FROM      employees e, departments d
WHERE     e.department_id = d.department_id
GROUP BY  d.department_name, d.location_id;
```

Bai tap phan 5

11. Hiển thị tổng số nhân viên , tổng số nhân viên vào công ty trong các năm 1995, 1996, 1997, và 1998. Tạo tiêu đề phù hợp.

```
SELECT  COUNT(*) total,
        SUM(DECODE(TO_CHAR(hire_date, 'YYYY'), 1995, 1, 0)) "1995",
        SUM(DECODE(TO_CHAR(hire_date, 'YYYY'), 1996, 1, 0)) "1996",
        SUM(DECODE(TO_CHAR(hire_date, 'YYYY'), 1997, 1, 0)) "1997",
        SUM(DECODE(TO_CHAR(hire_date, 'YYYY'), 1998, 1, 0)) "1998"
FROM    employees;
```

12. Tạo ma trận hiển thị công việc, lương đối với công việc đó dựa trên mã số phòng , tổng lương đối với công việc đó, đối với các phòng 20, 50, 80, và 90, nhận được các tiêu đề phù hợp.

```
SELECT  job_id "Job",
        SUM(DECODE(department_id , 20, salary)) "Dept 20",
        SUM(DECODE(department_id , 50, salary)) "Dept 50",
        SUM(DECODE(department_id , 80, salary)) "Dept 80",
        SUM(DECODE(department_id , 90, salary)) "Dept 90",
        SUM(salary) "Total"
FROM    employees
GROUP BY job_id;
```

Practice 6 Solutions

1. Write a query to display the last name and hire date of any employee in the same department as Zlotkey. Exclude Zlotkey.

```
SELECT last_name, hire_date
FROM   employees
WHERE  department_id = (SELECT department_id
                        FROM   employees
                        WHERE  last_name = 'Zlotkey')
AND    last_name <> 'Zlotkey';
```

2. Create a query to display the employee numbers and last names of all employees who earn more than the average salary. Sort the results in ascending order of salary.

```
SELECT employee_id, last_name
FROM   employees
WHERE  salary > (SELECT AVG(salary)
                 FROM   employees)
ORDER BY salary;
```

3. Write a query that displays the employee numbers and last names of all employees who work in a department with any employee whose last name contains a *u*. Place your SQL statement in a text file named lab6_3.sql. Run your query.

```
SELECT employee_id, last_name
FROM   employees
WHERE  department_id IN (SELECT department_id
                        FROM   employees
                        WHERE  last_name like '%u%');
```

4. Display the last name, department number, and job ID of all employees whose department location ID is 1700.

```
SELECT last_name, department_id, job_id
FROM   employees
WHERE  department_id IN (SELECT department_id
                        FROM   departments
                        WHERE  location_id = 1700);
```

Practice 6 Solutions (continued)

5. Display the last name and salary of every employee who reports to King.

```
SELECT last_name, salary
FROM   employees
WHERE  manager_id = (SELECT employee_id
                     FROM   employees
                     WHERE  last_name = 'King');
```

6. Display the department number, last name, and job ID for every employee in the Executive department.

```
SELECT department_id, last_name, job_id
FROM   employees
WHERE  department_id IN (SELECT department_id
                        FROM   departments
                        WHERE  department_name = 'Executive');
```

If you have time, complete the following exercises:

7. Modify the query in lab6_3.sql to display the employee numbers, last names, and salaries of all employees who earn more than the average salary and who work in a department with any employee with a *u* in their name. Resave lab6_3.sql to lab6_7.sql. Run the statement in lab6_7.sql.

```
SELECT employee_id, last_name, salary
FROM   employees
WHERE  department_id IN (SELECT department_id
                        FROM   employees
                        WHERE  last_name like '%u%')
AND    salary > (SELECT AVG(salary)
                 FROM   employees);
```

Practice 7 Solutions

Determine whether the following statements are true or false:

1. The following statement is correct:

```
DEFINE & p_val = 100
```

False

The correct use of DEFINE is DEFINE p_val=100. The & is used within the SQL code.

2. The DEFINE command is a SQL command.

False

The DEFINE command is an iSQL*Plus command.

3. Write a script to display the employee last name, job, and hire date for all employees who started between a given range. Concatenate the name and job together, separated by a space and comma, and label the column Employees. In a separate SQL script file, use the DEFINE command to provide the two ranges. Use the format MM/DD/YYYY. Save the script files as lab7_3a.sql and lab7_3b.sql.

```
-- lab file lab7_3a.sql
```

```
SET ECHO OFF
```

```
SET VERIFY OFF
```

```
DEFINE low_date = 01/01/1998
```

```
DEFINE high_date = 01/01/1999
```

```
-- lab file lab7_3a.sql
```

```
SELECT last_name ||', '|| job_id EMPLOYEES, hire_date
```

```
FROM employees
```

```
WHERE hire_date BETWEEN TO_DATE('&low_date', 'MM/DD/YYYY')  
AND TO_DATE('&high_date', 'MM/DD/YYYY')
```

```
/
```

```
UNDEFINE low_date
```

```
UNDEFINE high_date
```

```
SET VERIFY ON
```

```
SET ECHO ON
```

Practice 7 Solutions (continued)

4. Write a script to display the employee last name, job, and department name for a given location. The search condition should allow for case-insensitive searches of the department location. Save the script file as lab7_4.sql.

```
SET ECHO OFF
SET VERIFY OFF
COLUMN last_name HEADING "EMPLOYEE NAME"
COLUMN department_name HEADING "DEPARTMENT NAME"
SELECT  e.last_name, e.job_id, d.department_name
FROM    employees e, departments d, locations l
WHERE   e.department_id = d.department_id
AND     l.location_id = d.location_id
AND     l.city = INITCAP('&p_location')
/
COLUMN last_name CLEAR
COLUMN department_name CLEAR
SET VERIFY ON
SET ECHO ON
```

Practice 7 Solutions (continued)

5. Modify the code in lab7_4.sql to create a report containing the department name, employee last name, hire date, salary, and each employee's annual salary for all employees in a given location. Label the columns DEPARTMENT NAME, EMPLOYEE NAME, START DATE, SALARY, and ANNUAL SALARY, placing the labels on multiple lines. Resave the script as lab7_5.sql and execute the commands in the script.

```
SET ECHO OFF
SET FEEDBACK OFF
SET VERIFY OFF
BREAK ON department_name
COLUMN department_name HEADING "DEPARTMENT|NAME"
COLUMN last_name HEADING "EMPLOYEE|NAME"
COLUMN hire_date HEADING "START|DATE"
COLUMN salary HEADING "SALARY" FORMAT $99,990.00
COLUMN asal HEADING "ANNUAL|SALARY" FORMAT $99,990.00
SELECT d.department_name, e.last_name, e.hire_date,
       e.salary, e.salary*12 asal
FROM   departments d, employees e, locations l
WHERE  e.department_id = d.department_id
AND    d.location_id   = l.location_id
AND    l.city          = '&p_location'
ORDER BY d.department_name
/
COLUMN department_name CLEAR
COLUMN last_name CLEAR
COLUMN hire_date CLEAR
COLUMN salary CLEAR
COLUMN asal CLEAR
CLEAR BREAK
SET VERIFY ON
SET FEEDBACK ON
SET ECHO ON
```

Practice 8 Solutions

Insert data into the MY_EMPLOYEE table.

1. Run the statement in the lab8_1.sql script to build the MY_EMPLOYEE table that will be used for the lab.

```
CREATE TABLE my_employee
(id NUMBER(4) CONSTRAINT my_employee_id_nn NOT NULL,
last_name VARCHAR2(25),
first_name VARCHAR2(25),
userid VARCHAR2(8),
salary NUMBER(9,2));
```

2. Describe the structure of the MY_EMPLOYEE table to identify the column names.
DESCRIBE my_employee
3. Add the first row of data to the MY_EMPLOYEE table from the following sample data. Do not list the columns in the INSERT clause.

ID	LAST_NAME	FIRST_NAME	USERID	SALARY
1	Patel	Ralph	rpatel	895
2	Dancs	Betty	bdancs	860
3	Biri	Ben	bbiri	1100
4	Newman	Chad	cnewman	750
5	Ropeburn	Audrey	aropebur	1550

```
INSERT INTO my_employee
VALUES (1, 'Patel', 'Ralph', 'rpatel', 895);
```

4. Populate the MY_EMPLOYEE table with the second row of sample data from the preceding list. This time, list the columns explicitly in the INSERT clause.

```
INSERT INTO my_employee (id, last_name, first_name,
userid, salary)
VALUES (2, 'Dancs', 'Betty', 'bdancs', 860);
```

5. Confirm your addition to the table.

```
SELECT *
```



```
FROM    my_employee;
```

Practice 8 Solutions (continued)

6. Write an insert statement in a text file named `loademp.sql` to load rows into the `MY_EMPLOYEE` table. Concatenate the first letter of the first name and the first seven characters of the last name to produce the `userid`.

```
SET ECHO OFF
SET VERIFY OFF
INSERT INTO my_employee
VALUES (&p_id, '&p_last_name', '&p_first_name',
       lower(substr('&p_first_name', 1, 1) ||
               substr('&p_last_name', 1, 7)), &p_salary);
SET VERIFY ON
SET ECHO ON
```

7. Populate the table with the next two rows of sample data by running the insert statement in the script that you created.

```
SET ECHO OFF
SET VERIFY OFF
INSERT INTO my_employee
VALUES (&p_id, '&p_last_name', '&p_first_name',
       lower(substr('&p_first_name', 1, 1) ||
               substr('&p_last_name', 1, 7)), &p_salary);
SET VERIFY ON
SET ECHO ON
```

8. Confirm your additions to the table.

```
SELECT  *
FROM my_employee;
```

9. Make the data additions permanent.

```
COMMIT;
```

Practice 8 Solutions (continued)

Update and delete data in the MY_EMPLOYEE table.

10. Change the last name of employee 3 to Drexler.

```
UPDATE my_employee
SET    last_name = 'Drexler'
WHERE  id = 3;
```

11. Change the salary to 1000 for all employees with a salary less than 900.

```
UPDATE my_employee
SET    salary = 1000
WHERE  salary < 900;
```

12. Verify your changes to the table.

```
SELECT last_name, salary
FROM    my_employee;
```

13. Delete Betty Dancs from the MY_EMPLOYEE table.

```
DELETE
FROM    my_employee
WHERE  last_name = 'Dancs';
```

14. Confirm your changes to the table.

```
SELECT *
FROM    my_employee;
```

15. Commit all pending changes.

```
COMMIT;
```

Control data transaction to the MY_EMPLOYEE table.

16. Populate the table with the last row of sample data by modifying the statements in the script that you created in step 6. Run the statements in the script.

```
SET ECHO OFF
SET VERIFY OFF
INSERT INTO my_employee
VALUES (&p_id, '&p_last_name', '&p_first_name',
        lower(substr('&p_first_name', 1, 1) ||
        substr('&p_last_name', 1, 7)), &p_salary);
SET VERIFY ON
SET ECHO ON
```

Practice 8 Solutions (continued)

17. Confirm your addition to the table.

```
SELECT      *  
FROM my_employee;
```

18. Mark an intermediate point in the processing of the transaction.

```
SAVEPOINT step_18;
```

19. Empty the entire table.

```
DELETE  
FROM my_employee;
```

20. Confirm that the table is empty.

```
SELECT *  
FROM my_employee;
```

21. Discard the most recent DELETE operation without discarding the earlier INSERT operation.

```
ROLLBACK TO step_18;
```

22. Confirm that the new row is still intact.

```
SELECT *  
FROM my_employee;
```

23. Make the data addition permanent.

```
COMMIT;
```

Practice 9 Solutions

1. Create the DEPT table based on the following table instance chart. Place the syntax in a script called lab9_1.sql, then execute the statement in the script to create the table. Confirm that the table is created.

Column Name	ID	NAME
Key Type		
Nulls/Unique		
FK Table		
FK Column		
Data type	Number	VARCHAR2
Length	7	25

```
CREATE TABLE dept
(id NUMBER(7),
 name VARCHAR2(25));
```

```
DESCRIBE dept
```

2. Populate the DEPT table with data from the DEPARTMENTS table. Include only columns that you need.

```
INSERT INTO dept
SELECT department_id, department_name
FROM departments;
```

3. Create the EMP table based on the following table instance chart. Place the syntax in a script called lab9_3.sql, and then execute the statement in the script to create the table. Confirm that the table is created.

Column Name	ID	LAST_NAME	FIRST_NAME	DEPT_ID
Key Type				
Nulls/Unique				
FK Table				
FK Column				
Data type	Number	VARCHAR2	VARCHAR2	Number
Length	7	25	25	7

Practice 9 Solutions (continued)

```
CREATE TABLE emp
(id          NUMBER(7) ,
 last_name   VARCHAR2(25) ,
 first_name  VARCHAR2(25) ,
 dept_id     NUMBER(7)) ;
```

```
DESCRIBE emp
```

4. Modify the EMP table to allow for longer employee last names. Confirm your modification.

```
ALTER TABLE emp
MODIFY (last_name   VARCHAR2(50)) ;
```

```
DESCRIBE emp
```

5. Confirm that both the DEPT and EMP tables are stored in the data dictionary. (Hint: USER_TABLES)

```
SELECT table_name
FROM user_tables
WHERE table_name IN ('DEPT', 'EMP') ;
```

6. Create the EMPLOYEES2 table based on the structure of the EMPLOYEES table. Include only the EMPLOYEE_ID, FIRST_NAME, LAST_NAME, SALARY, and DEPARTMENT_ID columns. Name the columns in your new table ID, FIRST_NAME, LAST_NAME, SALARY, and DEPT_ID, respectively.

```
CREATE TABLE employees2 AS
SELECT employee_id id, first_name, last_name, salary,
       department_id dept_id
FROM employees ;
```

7. Drop the EMP table.

```
DROP TABLE emp ;
```

8. Rename the EMPLOYEES2 table to EMP.

```
RENAME employees2 TO emp ;
```

Practice 9 Solutions (continued)

9. Add a comment to the DEPT and EMP table definitions describing the tables. Confirm your additions in the data dictionary.

```
COMMENT ON TABLE emp IS 'Employee Information';
COMMENT ON TABLE dept IS 'Department Information';
SELECT *
FROM   user_tab_comments
WHERE  table_name = 'DEPT'
OR     table_name = 'EMP';
```

10. Drop the FIRST_NAME column from the EMP table. Confirm your modification by checking the description of the table.

```
ALTER TABLE emp
DROP COLUMN FIRST_NAME;
```

```
DESCRIBE emp
```

11. In the EMP table, mark the DEPT_ID column in the EMP table as UNUSED. Confirm your modification by checking the description of the table.

```
ALTER TABLE      emp
SET      UNUSED (dept_id);
```

```
DESCRIBE emp
```

12. Drop all the UNUSED columns from the EMP table. Confirm your modification by checking the description of the table.

```
ALTER TABLE emp
DROP UNUSED COLUMNS;
```

```
DESCRIBE emp
```

Practice 10 Solutions

1. Add a table-level PRIMARY KEY constraint to the EMP table on the ID column. The constraint should be named at creation. Name the constraint my_emp_id_pk

```
ALTER TABLE emp
ADD CONSTRAINT my_emp_id_pk PRIMARY KEY (id);
```

2. Create a PRIMARY KEY constraint to the DEPT table using the ID column. The constraint should be named at creation. Name the constraint my_dept_id_pk.

```
ALTER TABLE dept
ADD CONSTRAINT my_dept_id_pk PRIMARY KEY (id);
```

3. Add a column DEPT_ID to the EMP table. Add a foreign key reference on the EMP table that ensures that the employee is not assigned to a nonexistent department. Name the constraint my_emp_dept_id_fk.

```
ALTER TABLE emp
ADD (dept_id NUMBER(7));

ALTER TABLE emp
ADD CONSTRAINT my_emp_dept_id_fk
FOREIGN KEY (dept_id) REFERENCES dept(id);
```

4. Confirm that the constraints were added by querying the USER_CONSTRAINTS view. Note the types and names of the constraints. Save your statement text in a file called lab10_4.sql.

```
SELECT constraint_name, constraint_type
FROM user_constraints
WHERE table_name IN ('EMP', 'DEPT');
```

5. Display the object names and types from the USER_OBJECTS data dictionary view for the EMP and DEPT tables. Notice that the new tables and a new index were created.

```
SELECT object_name, object_type
FROM user_objects
WHERE object_name LIKE 'EMP%'
OR object_name LIKE 'DEPT%';
```

If you have time, complete the following exercise:

6. Modify the EMP table. Add a COMMISSION column of NUMBER data type, precision 2, scale 2. Add a constraint to the commission column that ensures that a commission value is greater than zero.

```
ALTER TABLE EMP
ADD commission NUMBER(2,2)
CONSTRAINT my_emp_comm_ck CHECK (commission >= 0);
```


Practice 11 Solutions

1. Create a view called EMPLOYEES_VU based on the employee numbers, employee names, and department numbers from the EMPLOYEES table. Change the heading for the employee name to EMPLOYEE.

```
CREATE OR REPLACE VIEW employees_vu AS
SELECT employee_id, last_name employee, department_id
FROM employees;
```

2. Display the contents of the EMPLOYEES_VU view.

```
SELECT *
FROM employees_vu;
```

3. Select the view name and text from the USER_VIEWS data dictionary view.

Note: Another view already exists. The EMP_DETAILS_VIEW was created as part of your schema.

Note: To see more contents of a LONG column, use the iSQL*Plus command SET LONG *n*, where *n* is the value of the number of characters of the LONG column that you want to see.

```
SET LONG 600
SELECT view_name, text
FROM user_views;
```

4. Using your EMPLOYEES_VU view, enter a query to display all employee names and department numbers.

```
SELECT employee, department_id
FROM employees_vu;
```

5. Create a view named DEPT50 that contains the employee numbers, employee last names, and department numbers for all employees in department 50. Label the view columns EMPNO, EMPLOYEE, and DEPTNO. Do not allow an employee to be reassigned to another department through the view.

```
CREATE VIEW dept50 AS
SELECT employee_id empno, last_name employee,
       department_id deptno
FROM employees
WHERE department_id = 50
WITH CHECK OPTION CONSTRAINT emp_dept_50;
```

Practice 11 Solutions (continued)

6. Display the structure and contents of the DEPT50 view.

```
DESCRIBE dept50
SELECT  *
FROM    dept50;
```

7. Attempt to reassign Matos to department 80.

```
UPDATE  dept50
SET      deptno = 80
WHERE    employee = 'Matos';
```

If you have time, complete the following exercise:

8. Create a view called SALARY_VU based on the employee last names, department names, salaries, and salary grades for all employees. Use the EMPLOYEES, DEPARTMENTS, and JOB_GRADES tables. Label the columns Employee, Department, Salary, and Grade, respectively.

```
CREATE OR REPLACE VIEW salary_vu
AS
SELECT e.last_name "Employee",
       d.department_name "Department",
       e.salary "Salary",
       j.grade_level "Grades"
FROM   employees e,
       departments d,
       job_grades j
WHERE  e.department_id = d.department_id
AND    e.salary BETWEEN j.lowest_sal and j.highest_sal;
```

Practice 12 Solutions

1. Create a sequence to be used with the primary key column of the DEPT table. The sequence should start at 200 and have a maximum value of 1000. Have your sequence increment by ten numbers. Name the sequence DEPT_ID_SEQ.

```
CREATE SEQUENCE dept_id_seq
START WITH 200
INCREMENT BY 10
MAXVALUE 1000;
```

2. Write a query in a script to display the following information about your sequences: sequence name, maximum value, increment size, and last number. Name the script lab12_2.sql. Run the statement in your script.

```
SELECT    sequence_name, max_value, increment_by, last_number
FROM      user_sequences;
```

3. Write a script to insert two rows into the DEPT table. Name your script lab12_3.sql. Be sure to use the sequence that you created for the ID column. Add two departments named Education and Administration. Confirm your additions. Run the commands in your script.

```
INSERT INTO dept
VALUES (dept_id_seq.nextval, 'Education');

INSERT INTO dept
VALUES (dept_id_seq.nextval, 'Administration');
```

4. Create a nonunique index on the foreign key column (DEPT_ID) in the EMP table.

```
CREATE INDEX emp_dept_id_idx ON emp (dept_id);
```

5. Display the indexes and uniqueness that exist in the data dictionary for the EMP table. Save the statement into a script named lab12_5.sql.

```
SELECT    index_name, table_name, uniqueness
FROM      user_indexes
WHERE     table_name = 'EMP';
```

Practice 13 Solutions

1. What privilege should a user be given to log on to the Oracle Server? Is this a system or an object privilege?

The CREATE SESSION system privilege

2. What privilege should a user be given to create tables?

The CREATE TABLE privilege

3. If you create a table, who can pass along privileges to other users on your table?

You can, or anyone you have given those privileges to by using the WITH GRANT OPTION.

4. You are the DBA. You are creating many users who require the same system privileges. What should you use to make your job easier?

Create a role containing the system privileges and grant the role to the users

5. What command do you use to change your password?

The ALTER USER statement

6. Grant another user access to your DEPARTMENTS table. Have the user grant you query access to his or her DEPARTMENTS table.

Team 2 executes the GRANT statement.

```
GRANT select  
ON    departments  
TO    <user1>;
```

Team 1 executes the GRANT statement.

```
GRANT select  
ON    departments  
TO    <user2>;
```

WHERE *user1* is the name of team 1 and *user2* is the name of team 2.

7. Query all the rows in your DEPARTMENTS table.

```
SELECT  *  
FROM    departments;
```

Practice 13 Solutions (continued)

8. Add a new row to your DEPARTMENTS table. Team 1 should add Education as department number 500. Team 2 should add Human Resources department number 510. Query the other team's table.

Team 1 executes this INSERT statement.

```
INSERT INTO departments(department_id, department_name)
VALUES (500, 'Education');
COMMIT;
```

Team 2 executes this INSERT statement.

```
INSERT INTO departments(department_id, department_name)
VALUES (510, 'Administration');
COMMIT;
```

9. Create a synonym for the other team's DEPARTMENTS table.

Team 1 creates a synonym named team2.

```
CREATE SYNONYM team2
FOR <user2>.DEPARTMENTS;
```

Team 2 creates a synonym named team1.

```
CREATE SYNONYM team1
FOR <user1>. DEPARTMENTS;
```

10. Query all the rows in the other team's DEPARTMENTS table by using your synonym.

Team 1 executes this SELECT statement.

```
SELECT *
FROM team2;
```

Team 2 executes this SELECT statement.

```
SELECT *
FROM team1;
```

Practice 13 Solutions (continued)

11. Query the USER_TABLES data dictionary to see information about the tables that you own.

```
SELECT  table_name
FROM    user_tables;
```

12. Query the ALL_TABLES data dictionary view to see information about all the tables that you can access. Exclude tables that you own.

```
SELECT  table_name, owner
FROM    all_tables
WHERE   owner <> <your account>;
```

13. Revoke the SELECT privilege from the other team.

Team 1 revokes the privilege.

```
REVOKE select
ON      departments
FROM    user2;
```

Team 2 revokes the privilege.

```
REVOKE select
ON      departments
FROM    user1;
```

14. Remove the row you inserted into the DEPARTMENTS table in step 8 and save the changes.

Team 1 executes this INSERT statement.

```
DELETE FROM departments
WHERE department_id = 500;
COMMIT;
```

Team 2 executes this INSERT statement.

```
DELETE FROM departments
WHERE department_id = 510;
COMMIT;
```

Practice 14 Solutions

1. Create the tables based on the following table instance charts. Choose the appropriate data types and be sure to add integrity constraints.

a. Table name: MEMBER

Column_ Name	MEMBER_ ID	LAST_ NAME	FIRST_NAM E	ADDRESS	CITY	PHONE	JOIN _DATE
Key Type	PK						
Null/ Unique	NN,U	NN					NN
Default Value							System Date
Data Type	NUMBER	VARCHAR2	VARCHAR2	VARCHAR2	VARCHAR2	VARCHAR2	DATE
Length	10	25	25	100	30	15	

```
CREATE TABLE member
```

```
(member_id      NUMBER(10)
   CONSTRAINT member_member_id_pk PRIMARY KEY,
 last_name      VARCHAR2(25)
   CONSTRAINT member_last_name_nn NOT NULL,
 first_name     VARCHAR2(25),
 address        VARCHAR2(100),
 city           VARCHAR2(30),
 phone          VARCHAR2(15),
 join_date      DATE DEFAULT SYSDATE
   CONSTRAINT member_join_date_nn NOT NULL);
```

Practice 14 Solutions (continued)

b. Table name: TITLE

Column_ Name	TITLE_ID	TITLE	DESCRIPTION	RATING	CATEGORY	RELEASE_ DATE
Key Type	PK					
Null/ Unique	NN,U	NN	NN			
Check				G, PG, R, NC17, NR	DRAMA, COMEDY, ACTION, CHILD, SCIFI, DOCUMENTARY	
Data Type	NUMBER	VARCHAR2	VARCHAR2	VARCHAR2	VARCHAR2	DATE
Length	10	60	400	4	20	

```
CREATE TABLE title
(title_id NUMBER(10)
  CONSTRAINT title_title_id_pk PRIMARY KEY,
title          VARCHAR2(60)
  CONSTRAINT title_title_nn NOT NULL,
description    VARCHAR2(400)
  CONSTRAINT title_description_nn NOT NULL,
rating         VARCHAR2(4)
  CONSTRAINT title_rating_ck CHECK
    (rating IN ('G', 'PG', 'R', 'NC17', 'NR')),
category VARCHAR2(20),
  CONSTRAINT title_category_ck CHECK
    (category IN ('DRAMA', 'COMEDY', 'ACTION',
                  'CHILD', 'SCIFI', 'DOCUMENTARY'))),
release_date  DATE);
```


Practice 14 Solutions (continued)

c. Table name: TITLE_COPY

Column Name	COPY_ID	TITLE_ID	STATUS
Key Type	PK	PK,FK	
Null/Unique	NN,U	NN,U	NN
Check			AVAILABLE, DESTROYED, RENTED, RESERVED
FK Ref Table		TITLE	
FK Ref Col		TITLE_ID	
Data Type	NUMBER	NUMBER	VARCHAR2
Length	10	10	15

```
CREATE TABLE title_copy
(copy_id      NUMBER(10),
 title_id     NUMBER(10)
 CONSTRAINT title_copy_title_id_fk REFERENCES title(title_id),
 status       VARCHAR2(15)
 CONSTRAINT title_copy_status_nn NOT NULL
 CONSTRAINT title_copy_status_ck CHECK (status IN
 ('AVAILABLE', 'DESTROYED', 'RENTED', 'RESERVED')),
 CONSTRAINT title_copy_copy_id_title_id_pk
 PRIMARY KEY (copy_id, title_id));
```


Practice 14 Solutions (continued)

d. Table name: RENTAL

Column Name	BOOK_ DATE	MEMBER_ ID	COPY_ ID	ACT_RET_ DATE	EXP_RET_ DATE	TITLE_ ID
Key Type	PK	PK,FK1	PK,FK2			PK,FK2
Default Value	System Date				System Date + 2 days	
FK Ref Table		MEMBER	TITLE_ COPY			TITLE_ COPY
FK Ref Col		MEMBER_ I D	COPY_ ID			TITLE_ ID
Data Type	DATE	NUMBER	NUMBER	DATE	DATE	NUMBER
Length		10	10			10

```
CREATE TABLE rental
(book_date      DATE DEFAULT SYSDATE,
 member_id      NUMBER(10)
                CONSTRAINT rental_member_id_fk
                REFERENCES member(member_id) ,
 copy_id        NUMBER(10) ,
 act_ret_date   DATE,
 exp_ret_date   DATE DEFAULT SYSDATE + 2,
 title_id       NUMBER(10) ,
                CONSTRAINT rental_book_date_copy_title_pk
                PRIMARY KEY (book_date, member_id,
 copy_id,title_id) ,
                CONSTRAINT rental_copy_id_title_id_fk
                FOREIGN KEY (copy_id, title_id)
                REFERENCES title_copy(copy_id, title_id));
```

Practice 14 Solutions (continued)

e. Table name: RESERVATION

Column Name	RES_ DATE	MEMBER_ ID	TITLE_ ID
Key Type	PK	PK,FK1	PK,FK2
Null/Unique	NN,U	NN,U	NN
FK Ref Table		MEMBER	TITLE
FK Ref Column		MEMBER_ID	TITLE_ID
Data Type	DATE	NUMBER	NUMBER
Length		10	10

```
CREATE TABLE reservation
(res_date      DATE,
 member_id     NUMBER(10)
              CONSTRAINT reservation_member_id
              REFERENCES member(member_id),
 title_id      NUMBER(10)
              CONSTRAINT reservation_title_id
              REFERENCES title(title_id),
 CONSTRAINT reservation_resdate_mem_tit_pk PRIMARY KEY
 (res_date, member_id, title_id));
```

Practice 14 Solutions (continued)

2. Verify that the tables and constraints were created properly by checking the data dictionary.

```
SELECT    table_name
FROM      user_tables
WHERE     table_name IN ('MEMBER', 'TITLE', 'TITLE_COPY',
                        'RENTAL', 'RESERVATION');
```

```
SELECT    constraint_name, constraint_type, table_name
FROM      user_constraints
WHERE     table_name IN ('MEMBER', 'TITLE', 'TITLE_COPY',
                        'RENTAL', 'RESERVATION');
```

3. Create sequences to uniquely identify each row in the MEMBER table and the TITLE table.
 - a. Member number for the MEMBER table: start with 101; do not allow caching of the values. Name the sequence MEMBER_ID_SEQ.

```
CREATE SEQUENCE member_id_seq
START WITH 101
NOCACHE;
```

- b. Title number for the TITLE table: start with 92; no caching. Name the sequence TITLE_ID_SEQ.

```
CREATE SEQUENCE title_id_seq
START WITH 92
NOCACHE;
```

- c. Verify the existence of the sequences in the data dictionary.

```
SELECT    sequence_name, increment_by, last_number
FROM      user_sequences
WHERE     sequence_name IN ('MEMBER_ID_SEQ', 'TITLE_ID_SEQ');
```

Practice 14 Solutions (continued)

4. Add data to the tables. Create a script for each set of data to add.
 - a. Add movie titles to the `TITLE` table. Write a script to enter the movie information. Save the statements in a script named `lab14_4a.sql`. Use the sequences to uniquely identify each title. Enter the release dates in the `DD-MON-YYYY` format. Remember that single quotation marks in a character field must be specially handled. Verify your additions.

```
SET ECHO OFF
INSERT INTO title(title_id, title, description, rating,
                  category, release_date)
VALUES (title_id_seq.NEXTVAL, 'Willie and Christmas Too',
        'All of Willie''s friends make a Christmas list for
        Santa, but Willie has yet to add his own wish list.',
        'G', 'CHILD', TO_DATE('05-OCT-1995','DD-MON-YYYY'))
/
INSERT INTO title(title_id, title, description, rating,
                  category, release_date)
VALUES (title_id_seq.NEXTVAL, 'Alien Again', 'Yet another
        installment of science fiction history. Can the
        heroine save the planet from the alien life form?',
        'R', 'SCIFI', TO_DATE('19-MAY-1995','DD-MON-YYYY'))
/
INSERT INTO title(title_id, title, description, rating,
                  category, release_date)
VALUES (title_id_seq.NEXTVAL, 'The Glob', 'A meteor crashes
        near a small American town and unleashes carnivorous
        goo in this classic.', 'NR', 'SCIFI',
        TO_DATE('12-AUG-1995','DD-MON-YYYY'))
/
INSERT INTO title(title_id, title, description, rating,
                  category, release_date)
VALUES (title_id_seq.NEXTVAL, 'My Day Off', 'With a little
        luck and a lot ingenuity, a teenager skips school for
        a day in New York.', 'PG', 'COMEDY',
        TO_DATE('12-JUL-1995','DD-MON-YYYY'))
/
...
COMMIT
/
SET ECHO ON

SELECT title
FROM title;
```

Practice 14 Solutions (continued)

Title	Description	Rating	Category	Release_date
Willie and Christmas Too	All of Willie's friends make a Christmas list for Santa, but Willie has yet to add his own wish list.	G	CHILD	05-OCT-1995
Alien Again	Yet another installation of science fiction history. Can the heroine save the planet from the alien life form?	R	SCIFI	19-MAY-1995
The Glob	A meteor crashes near a small American town and unleashes carnivorous goo in this classic.	NR	SCIFI	12-AUG-1995
My Day Off	With a little luck and a lot of ingenuity, a teenager skips school for a day in New York.	PG	COMEDY	12-JUL-1995
Miracles on Ice	A six-year-old has doubts about Santa Claus, but she discovers that miracles really do exist.	PG	DRAMA	12-SEP-1995
Soda Gang	After discovering a cache of drugs, a young couple find themselves pitted against a vicious gang.	NR	ACTION	01-JUN-1995

Practice 14 Solutions (continued)

- b. Add data to the MEMBER table. Place the insert statements in a script named lab14_4b.sql. Execute commands in the script. Be sure to use the sequence to add the member numbers.

First_Name	Last_Name	Address	City	Phone	Join_Date
Carmen	Velasquez	283 King Street	Seattle	206-899-6666	08-MAR-1990
LaDoris	Ngao	5 Modrany	Bratislava	586-355-8882	08-MAR-1990
Midori	Nagayama	68 Via Centrale	Sao Paolo	254-852-5764	17-JUN-1991
Mark	Quick-to-See	6921 King Way	Lagos	63-559-7777	07-APR-1990
Audry	Ropeburn	86 Chu Street	Hong Kong	41-559-87	18-JAN-1991
Molly	Urguhart	3035 Laurier	Quebec	418-542-9988	18-JAN-1991

```
SET ECHO OFF
SET VERIFY OFF
INSERT INTO member(member_id, first_name, last_name, address,
                    city, phone, join_date)
VALUES (member_id_seq.NEXTVAL, '&first_name', '&last_name',
        '&address', '&city', '&phone', TO_DATE('&join_date',
        'DD-MM-YYYY')) ;
COMMIT;
SET VERIFY ON
SET ECHO ON
```


Practice 14 Solutions (continued)

c. Add the following movie copies in the `TITLE_COPY` table:

Note: Have the `TITLE_ID` numbers available for this exercise.

Title	Copy_Id	Status
Willie and Christmas Too	1	AVAILABLE
Alien Again	1	AVAILABLE
	2	RENTED
The Glob	1	AVAILABLE
My Day Off	1	AVAILABLE
	2	AVAILABLE
	3	RENTED
Miracles on Ice	1	AVAILABLE
Soda Gang	1	AVAILABLE

```
INSERT INTO title_copy(copy_id, title_id, status)
VALUES (1, 92, 'AVAILABLE');

INSERT INTO title_copy(copy_id, title_id, status)
VALUES (1, 93, 'AVAILABLE');

INSERT INTO title_copy(copy_id, title_id, status)
VALUES (2, 93, 'RENTED');

INSERT INTO title_copy(copy_id, title_id, status)
VALUES (1, 94, 'AVAILABLE');

INSERT INTO title_copy(copy_id, title_id, status)
VALUES (1, 95, 'AVAILABLE');

INSERT INTO title_copy(copy_id, title_id, status)
VALUES (2, 95, 'AVAILABLE');

INSERT INTO title_copy(copy_id, title_id, status)
VALUES (3, 95, 'RENTED');

INSERT INTO title_copy(copy_id, title_id, status)
VALUES (1, 96, 'AVAILABLE');

INSERT INTO title_copy(copy_id, title_id, status)
VALUES (1, 97, 'AVAILABLE');
```

Practice 14 Solutions (continued)

d. Add the following rentals to the RENTAL table:

Note: Title number may be different depending on sequence number.

Title_ Id	Copy_ Id	Member_ Id	Book_date	Exp_Ret_Date	Act_Ret_Date
92	1	101	3 days ago	1 day ago	2 days ago
93	2	101	1 day ago	1 day from now	
95	3	102	2 days ago	Today	
97	1	106	4 days ago	2 days ago	2 days ago

```
INSERT INTO rental(title_id, copy_id, member_id,
                   book_date, exp_ret_date, act_ret_date)
VALUES (92, 1, 101, sysdate-3, sysdate-1, sysdate-2);
INSERT INTO rental(title_id, copy_id, member_id,
                   book_date, exp_ret_date, act_ret_date)
VALUES (93, 2, 101, sysdate-1, sysdate-1, NULL);
INSERT INTO rental(title_id, copy_id, member_id,
                   book_date, exp_ret_date, act_ret_date)
VALUES (95, 3, 102, sysdate-2, sysdate, NULL);
INSERT INTO rental(title_id, copy_id, member_id,
                   book_date, exp_ret_date, act_ret_date)
VALUES (97, 1, 106, sysdate-4, sysdate-2, sysdate-2);
COMMIT;
```

Practice 14 Solutions (continued)

5. Create a view named `TITLE_AVAIL` to show the movie titles and the availability of each copy and its expected return date if rented. Query all rows from the view. Order the results by title.

```
CREATE VIEW title_avail AS
SELECT    t.title, c.copy_id, c.status, r.exp_ret_date
FROM      title t, title_copy c, rental r
WHERE     t.title_id = c.title_id
AND       c.copy_id = r.copy_id(+)
AND       c.title_id = r.title_id(+);

SELECT    *
FROM      title_avail
ORDER BY  title, copy_id;
```

6. Make changes to data in the tables.
- a. Add a new title. The movie is “Interstellar Wars,” which is rated PG and classified as a science fiction movie. The release date is 07-JUL-77. The description is “Futuristic interstellar action movie. Can the rebels save the humans from the evil empire?” Be sure to add a title copy record for two copies.

```
INSERT INTO title(title_id, title, description, rating,
                  category, release_date)
VALUES (title_id_seq.NEXTVAL, 'Interstellar Wars',
        'Futuristic interstellar action movie. Can the
        rebels save the humans from the evil Empire?',
        'PG', 'SCIFI', '07-JUL-77');

INSERT INTO title_copy (copy_id, title_id, status)
VALUES (1, 98, 'AVAILABLE');

INSERT INTO title_copy (copy_id, title_id, status)
VALUES (2, 98, 'AVAILABLE');
```

- b. Enter two reservations. One reservation is for Carmen Velasquez, who wants to rent “Interstellar Wars.” The other is for Mark Quick-to-See, who wants to rent “Soda Gang.”

```
INSERT INTO reservation (res_date, member_id, title_id)
VALUES (SYSDATE, 101, 98);
INSERT INTO reservation (res_date, member_id, title_id)
VALUES (SYSDATE, 104, 97);
```

Practice 14 Solutions (continued)

- c. Customer Carmen Velasquez rents the movie “Interstellar Wars,” copy 1. Remove her reservation for the movie. Record the information about the rental. Allow the default value for the expected return date to be used. Verify that the rental was recorded by using the view you created.

```
INSERT INTO rental(title_id, copy_id, member_id)
VALUES (98,1,101);
UPDATE title_copy
SET     status= 'RENTED'
WHERE   title_id = 98
AND     copy_id = 1;
DELETE
FROM    reservation
WHERE   member_id = 101;
SELECT  *
FROM    title_avail
ORDER BY title, copy_id;
```

7. Make a modification to one of the tables.

- a. Add a PRICE column to the TITLE table to record the purchase price of the video. The column should have a total length of eight digits and two decimal places. Verify your modifications.

```
ALTER TABLE title
ADD (price NUMBER(8,2));
DESCRIBE title
```

Practice 14 Solutions (continued)

- b. Create a script named `lab14_7b.sql` that contains update statements that update each video with a price according to the following list. Run the commands in the script.

Note: Have the `TITLE_ID` numbers available for this exercise.

Title	Price
Willie and Christmas Too	25
Alien Again	35
The Glob	35
My Day Off	35
Miracles on Ice	30
Soda Gang	35
Interstellar Wars	29

```
SET ECHO OFF
SET VERIFY OFF
DEFINE price=
DEFINE title_id=
UPDATE title
SET    price = &price
WHERE title_id = &title_id;
SET VERIFY OFF
SET ECHO OFF
```

- c. Ensure that in the future all titles contain a price value. Verify the constraint.

```
ALTER TABLE title
MODIFY (price CONSTRAINT title_price_nn NOT NULL);
SELECT constraint_name, constraint_type,
       search_condition
FROM   user_constraints
WHERE  table_name = 'TITLE';
```

Practice 14 Solutions (continued)

8. Create a report titled Customer History Report. This report contains each customer's history of renting videos. Be sure to include the customer name, movie rented, dates of the rental, and duration of rentals. Total the number of rentals for all customers for the reporting period. Save the commands that generate the report in a script file named lab14_8.sql.

```
SET ECHO OFF
SET VERIFY OFF
TTITLE 'Customer History Report'
BREAK ON member SKIP 1 ON REPORT
SELECT      m.first_name||' '||m.last_name MEMBER, t.title,
            r.book_date, r.act_ret_date - r.book_date
DURATION
FROM        member m, title t, rental r
WHERE       r.member_id = m.member_id
AND         r.title_id = t.title_id
ORDER BY member;

CLEAR BREAK
TTITLE OFF
SET VERIFY ON
SET ECHO ON
```

Practice 15 Solutions

1. List the department IDs for departments that do not contain the job ID ST_CLERK, using SET operators.

```
SELECT department_id
FROM   departments
MINUS
SELECT department_id
FROM   employees
WHERE  job_id = 'ST_CLERK';
```

2. Display the country ID and the name of the countries that have no departments located in them, using SET operators.

```
SELECT country_id,country_name
FROM   countries
MINUS
SELECT l.country_id,c.country_name
FROM   locations l,   countries c
WHERE  l.country_id = c.country_id;
```

3. Produce a list of jobs for departments 10, 50, and 20, in that order. Display job ID and department ID, using SET operators.

```
COLUMN dummy NOPRINT
SELECT  job_id, department_id, 'x' dummy
FROM    employees
WHERE   department_id = 10
UNION
SELECT  job_id, department_id, 'y'
FROM    employees
WHERE   department_id = 50
UNION
SELECT  job_id, department_id, 'z'
FROM    employees
WHERE   department_id = 20
ORDER BY 3;
COLUMN dummy PRINT
```

Practice 15 Solutions (continued)

4. List the employee IDs and job IDs of those employees who currently have the job title that they held before beginning their tenure with the company.

```
SELECT    employee_id,job_id
FROM      employees
INTERSECT
SELECT    employee_id,job_id
FROM      job_history;
```

5. Write a compound query that lists the following:

- Last names and department ID of all the employees from the EMPLOYEES table, regardless of whether or not they belong to any department
- Department ID and department name of all the departments from the DEPARTMENTS table, regardless of whether or not they have employees working in them

```
SELECT last_name,department_id,TO_CHAR(null)
FROM    employees
UNION
SELECT TO_CHAR(null),department_id,department_name
FROM    departments;
```


Practice 16 Solutions

1. 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';
```

2. a. Write queries to display the time zone offsets (`TZ_OFFSET`) for the following time zones.

US/Pacific-New

```
SELECT TZ_OFFSET ('US/Pacific-New') from dual;
```

Singapore

```
SELECT TZ_OFFSET ('Singapore') from dual;
```

Egypt

```
SELECT TZ_OFFSET ('Egypt') from dual;
```

- b. Alter the session to set the `TIME_ZONE` parameter value to the time zone offset of `US/Pacific-New`.

```
ALTER SESSION SET TIME_ZONE = '-7:00';
```

- c. Display the `CURRENT_DATE`, `CURRENT_TIMESTAMP`, and `LOCALTIMESTAMP` for this session.

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

```
SELECT CURRENT_DATE, CURRENT_TIMESTAMP, LOCALTIMESTAMP  
FROM DUAL;
```

- d. Alter the session to set the `TIME_ZONE` parameter value to the time zone offset of `Singapore`.

```
ALTER SESSION SET TIME_ZONE = '+8:00';
```

- e. Display the `CURRENT_DATE`, `CURRENT_TIMESTAMP`, `LOCALTIMESTAMP` for this session.

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

```
SELECT CURRENT_DATE, CURRENT_TIMESTAMP, LOCALTIMESTAMP  
FROM DUAL;
```

3. Write a query to display the `DBTIMEZONE` and `SESSIONTIMEZONE`.

```
SELECT DBTIMEZONE, SESSIONTIMEZONE  
FROM DUAL;
```

Practice 16 Solutions (continued)

4. Write a query to extract the YEAR from HIRE_DATE column of the EMPLOYEES table for those employees who work in department 80.

```
SELECT last_name, EXTRACT (YEAR FROM HIRE_DATE)
FROM employees
WHERE department_id = 80;
```

5. Alter the session to set the NLS_DATE_FORMAT to DD-MON-YYYY.

```
ALTER SESSION SET NLS_DATE_FORMAT = 'DD-MON-YYYY';
```

Practice 17 Solutions

1. Write a query to display the following for those employees whose manager ID is less than 120:
 - Manager ID
 - Job ID and total salary for every job ID for employees who report to the same manager
 - Total salary of those managers
 - Total salary of those managers, irrespective of the job IDs

```
SELECT manager_id, job_id, sum(salary)
FROM   employees
WHERE  manager_id < 120
GROUP BY ROLLUP(manager_id, job_id);
```

2. Observe the output from question 1. Write a query using the GROUPING function to determine whether the NULL values in the columns corresponding to the GROUP BY expressions are caused by the ROLLUP operation.

```
SELECT manager_id MGR , job_id JOB,
sum(salary) , GROUPING(manager_id) , GROUPING(job_id)
FROM   employees
WHERE  manager_id < 120
GROUP BY ROLLUP(manager_id, job_id);
```

3. Write a query to display the following for those employees whose manager ID is less than 120 :

- Manager ID
- Job and total salaries for every job for employees who report to the same manager
- Total salary of those managers
- Cross-tabulation values to display the total salary for every job, irrespective of the manager
- Total salary irrespective of all job titles

```
SELECT manager_id, job_id, sum(salary)
FROM   employees
WHERE  manager_id < 120
GROUP BY CUBE(manager_id, job_id);
```

Practice 17 Solutions (continued)

4. Observe the output from question 3. Write a query using the GROUPING function to determine whether the NULL values in the columns corresponding to the GROUP BY expressions are caused by the CUBE operation.

```
SELECT manager_id MGR ,job_id JOB,
sum(salary) ,GROUPING(manager_id) ,GROUPING(job_id)
FROM employees
WHERE manager_id < 120
GROUP BY CUBE(manager_id,job_id);
```

5. Using GROUPING SETS, write a query to display the following groupings :
- department_id, manager_id, job_id
 - department_id, job_id
 - Manager_id, job_id

The query should calculate the sum of the salaries for each of these groups.

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

Practice 18 Solutions

1. Write a query to display the last name, department number, and salary of any employee whose department number and salary both match the department number and salary of any employee who earns a commission.

```
SELECT last_name, department_id, salary
FROM   employees
WHERE  (salary, department_id) IN
      (SELECT salary, department_id
       FROM   employees
       WHERE  commission_pct IS NOT NULL);
```

2. Display the last name, department name, and salary of any employee whose salary and commission match the salary and commission of any employee located in location ID1700.

```
SELECT e.last_name, d.department_name, e.salary
FROM   employees e, departments d
WHERE  e.department_id = d.department_id
AND    (salary, NVL(commission_pct,0)) IN
      (SELECT salary, NVL(commission_pct,0)
       FROM   employees e, departments d
       WHERE  e.department_id = d.department_id
       AND    d.location_id = 1700);
```

3. Create a query to display the last name, hire date, and salary for all employees who have the same salary and commission as Kochhar.

Note: Do not display Kochhar in the result set.

```
SELECT last_name, hire_date, salary
FROM   employees
WHERE  (salary, NVL(commission_pct,0)) IN
      (SELECT salary, NVL(commission_pct,0)
       FROM   employees
       WHERE  last_name = 'Kochhar')
AND last_name != 'Kochhar';
```

4. Create a query to display the employees who earn a salary that is higher than the salary of all of the sales managers (JOB_ID = 'SA_MAN'). Sort the results on salary from highest to lowest.

```
SELECT last_name, job_id, salary
FROM   employees
WHERE  salary > ALL
      (SELECT salary
       FROM   employees
       WHERE  job_id = 'SA_MAN');
```

```
WHERE job_id = 'SA_MAN')  
ORDER BY salary DESC;
```

Practice 18 Solutions (continued)

5. Display the details of the employee ID, last name, and department ID of those employees who live in cities whose name begins with *T*.

```
SELECT employee_id, last_name, department_id
FROM   employees
WHERE  department_id IN (SELECT department_id
                        FROM departments
                        WHERE location_id IN
                              (SELECT location_id
                               FROM locations
                               WHERE city LIKE 'T%'));
```

6. Write a query to find all employees who earn more than the average salary in their departments. Display last name, salary, department ID, and the average salary for the department. Sort by average salary. Use aliases for the columns retrieved by the query as shown in the sample output.

```
SELECT e.last_name ename, e.salary salary,
       e.department_id deptno, AVG(a.salary) dept_avg
FROM   employees e, employees a
WHERE  e.department_id = a.department_id
AND    e.salary > (SELECT AVG(salary)
                  FROM   employees
                  WHERE  department_id = e.department_id )
GROUP BY e.last_name, e.salary, e.department_id
ORDER BY AVG(a.salary);
```

7. Find all employees who are not supervisors.
a. First do this by using the NOT EXISTS operator.

```
SELECT outer.last_name
FROM   employees outer
WHERE  NOT EXISTS (SELECT 'X'
                  FROM employees inner
                  WHERE inner.manager_id =
                        outer.employee_id);
```

Practice 18 Solutions (continued)

- b. Can this be done by using the NOT IN operator? How, or why not?

```
SELECT outer.last_name
FROM   employees outer
WHERE  outer.employee_id
NOT IN (SELECT inner.manager_id
        FROM   employees inner);
```

This alternative solution is not a good one. The subquery picks up a NULL value, so the entire query returns no rows. The reason is that all conditions that compare a NULL value result in NULL. Whenever NULL values are likely to be part of the value set, *do not* use NOT IN as a substitute for NOT EXISTS.

8. Write a query to display the last names of the employees who earn less than the average salary in their departments.

```
SELECT last_name
FROM   employees outer
WHERE  outer.salary < (SELECT AVG(inner.salary)
                      FROM employees inner
                      WHERE inner.department_id
                        = outer.department_id);
```

9. Write a query to display the last names of employees who have one or more coworkers in their departments with later hire dates but higher salaries.

```
SELECT last_name
FROM   employees outer
WHERE  EXISTS (SELECT 'X'
              FROM employees inner
              WHERE inner.department_id =
                    outer.department_id
              AND inner.hire_date > outer.hire_date
              AND inner.salary > outer.salary);
```

10. Write a query to display the employee ID, last names, and department names of all employees.

Note: Use a scalar subquery to retrieve the department name in the SELECT statement.

```
SELECT employee_id, last_name,
       (SELECT department_name
        FROM departments d
        WHERE e.department_id =
              d.department_id ) department
FROM   employees e
ORDER BY department;
```


Practice 18 Solutions (continued)

11. Write a query to display the department names of those departments whose total salary cost is above one-eighth ($1/8$) of the total salary cost of the whole company. Use the `WITH` clause to write this query. Name the query `SUMMARY`.

```
WITH
summary AS (
    SELECT d.department_name, SUM(e.salary) AS dept_total
    FROM employees e, departments d
    WHERE e.department_id = d.department_id
    GROUP BY d.department_name)
SELECT department_name, dept_total
FROM summary
WHERE dept_total > (
    SELECT SUM(dept_total) * 1/8
    FROM summary )
ORDER BY dept_total DESC;
```

Practice 19 Solutions

1. Look at the following outputs. Are these outputs the result of a hierarchical query? Explain why or why not.

Exhibit 1: This is not a hierarchical query; the report simply has a descending sort on SALARY.

Exhibit 2: This is not a hierarchical query; there are two tables involved.

Exhibit 3: Yes, this is most definitely a hierarchical query as it displays the tree structure representing the management reporting line from the EMPLOYEES table.

2. Produce a report showing an organization chart for Mourgos's department. Print last names, salaries, and department IDs.

```
SELECT last_name, salary, department_id
FROM employees
START WITH last_name = 'Mourgos'
CONNECT BY PRIOR employee_id = manager_id;
```

3. Create a report that shows the hierarchy of the managers for the employee Lorentz. Display his immediate manager first.

```
SELECT last_name
FROM employees
WHERE last_name != 'Lorentz'
START WITH last_name = 'Lorentz'
CONNECT BY PRIOR manager_id = employee_id;
```

4. Create an indented report showing the management hierarchy starting from the employee whose LAST_NAME is Kochhar. Print the employee's last name, manager ID, and department ID. Give alias names to the columns as shown in the sample output.

```
COLUMN name FORMAT A20
SELECT LPAD(last_name, LENGTH(last_name)+(LEVEL*2)-2, '_')
       name, manager_id mgr, department_id deptno
FROM employees
START WITH last_name = 'Kochhar'
CONNECT BY PRIOR employee_id = manager_id
/
COLUMN name CLEAR
```

Practice 19 Solutions (continued)

If you have time, complete the following exercises:

5. Produce a company organization chart that shows the management hierarchy. Start with the person at the top level, exclude all people with a job ID of IT_PROG, and exclude De Haan and those employees who report to De Haan.

```
SELECT last_name, employee_id, manager_id
FROM   employees
WHERE  job_id != 'IT_PROG'
START WITH manager_id IS NULL
CONNECT BY PRIOR employee_id = manager_id
AND last_name != 'De Haan';
```

Practice 20 Solutions

1. Run the `cre_sal_history.sql` script in the lab folder to create the `SAL_HISTORY` table.

```
@ \lab\cre_sal_history.sql
```

2. Display the structure of the `SAL_HISTORY` table.

```
DESC sal_history
```

3. Run the `cre_mgr_history.sql` script in the lab folder to create the `MGR_HISTORY` table.

```
@ \lab\cre_mgr_history.sql
```

4. Display the structure of the `MGR_HISTORY` table.

```
DESC mgr_history
```

5. Run the `cre_special_sal.sql` script in the lab folder to create the `SPECIAL_SAL` table.

```
@ \lab\cre_special_sal.sql
```

6. Display the structure of the `SPECIAL_SAL` table.

```
DESC special_sal
```

7. a. Write a query to do the following:

- Retrieve the details of the employee ID, hire date, salary, and manager ID of those employees whose employee ID is less than 125 from the `EMPLOYEES` table.
- If the salary is more than \$20,000, insert the details of employee ID and salary into the `SPECIAL_SAL` table.
- Insert the details of the employee ID, hire date, and salary into the `SAL_HISTORY` table.
- Insert the details of the employee ID, manager ID, and `SYSDATE` into the `MGR_HISTORY` table.

```
INSERT ALL
WHEN SAL > 20000 THEN
INTO special_sal VALUES (EMPID, SAL)
ELSE
INTO sal_history VALUES (EMPID, HIREDATE, SAL)
INTO mgr_history VALUES (EMPID, MGR, SAL)
SELECT employee_id EMPID, hire_date HIREDATE,
salary SAL, manager_id MGR
```

```
FROM employees  
WHERE employee_id < 125;
```

Practice 20 Solutions (continued)

- b. Display the records from the SPECIAL_SAL table.

```
SELECT * FROM special_sal;
```

- c. Display the records from the SAL_HISTORY table.

```
SELECT * FROM sal_history;
```

- d. Display the records from the MGR_HISTORY table.

```
SELECT * FROM mgr_history;
```

8. a. Run the cre_sales_source_data.sql script in the lab folder to create the SALES_SOURCE_DATA table.

```
@ \lab\cre_sales_source_data.sql
```

- b. Run the ins_sales_source_data.sql script in the lab folder to insert records into the SALES_SOURCE_DATA table.

```
@ \lab\ins_sales_source_data.sql
```

- c. Display the structure of the SALES_SOURCE_DATA table.

```
DESC sales_source_data
```

- d. Display the records from the SALES_SOURCE_DATA table.

```
SELECT * FROM SALES_SOURCE_DATA;
```

- e. Run the cre_sales_info.sql script in the lab folder to create the SALES_INFO table.

```
@ \lab\cre_sales_info.sql
```

- f. Display the structure of the SALES_INFO table.

```
DESC sales_info
```

- g. Write a query to do the following:

- Retrieve the details of the employee ID, week ID, sales on Monday, sales on Tuesday, sales on Wednesday, sales on Thursday, and sales on Friday from the SALES_SOURCE_DATA table.
- Build a transformation such that each record retrieved from the SALES_SOURCE_DATA table is converted into multiple records for the

SALES_INFO table.

Hint: Use a pivoting INSERT statement.

Practice 20 Solutions (continued)

```
INSERT ALL
INTO sales_info VALUES (employee_id, week_id, sales_MON)
INTO sales_info VALUES (employee_id, week_id, sales_TUE)
INTO sales_info VALUES (employee_id, week_id, sales_WED)
INTO sales_info VALUES (employee_id, week_id, sales_THUR)
INTO sales_info VALUES (employee_id, week_id, sales_FRI)
SELECT EMPLOYEE_ID, week_id, sales_MON, sales_TUE,
sales_WED, sales_THUR, sales_FRI FROM sales_source_data;
```

h. Display the records from the SALES_INFO table.

```
SELECT * FROM sales_info;
```

9. a. Create the DEPT_NAMED_INDEX table based on the following table instance chart. Name the index for the PRIMARY KEY column as DEPT_PK_IDX.

COLUMN Name	Deptno	Dname
Primary Key	Yes	
Data type	Number	VARCHAR2
Length	4	30

```
CREATE TABLE DEPT_NAMED_INDEX
(deptno NUMBER(4)
PRIMARY KEY USING INDEX
(CREATE INDEX dept_pk_idx ON
DEPT_NAMED_INDEX(deptno)),
dname VARCHAR2(30));
```

- b. Query the USER_INDEXES table to display the INDEX_NAME for the DEPT_NAMED_INDEX table.

```
SELECT INDEX_NAME, TABLE_NAME
FROM USER_INDEXES
WHERE TABLE_NAME = 'DEPT_NAMED_INDEX';
```


Practice D Solutions

1. Write a script to describe and select the data from your tables. Use `CHR(10)` in the select list with the concatenation operator (`||`) to generate a line feed in your report. Save the output of the script into `my_file1.sql`. To save the file, select the `FILE` option for the output, and execute the code. Remember to save the file with a `.sql` extension. To execute the `my_file1.sql`, browse to locate the script, load the script, and execute the script.

```
SET PAGESIZE 0
```

```
SELECT 'DESC ' || table_name || CHR(10) ||  
       'SELECT * FROM ' || table_name || ';'   
FROM   user_tables  
/
```

```
SET PAGESIZE 24
```

```
SET LINESIZE 100
```

2. Use SQL to generate SQL statements that revoke user privileges. Use the data dictionary views `USER_TAB_PRIVS_MADE` and `USER_COL_PRIVS_MADE`.
 - a. Execute the script `\lab\privs.sql` to grant privileges to the user `SYSTEM`.
 - b. Query the data dictionary views to check the privileges. In the sample output shown, note that the data in the `GRANTOR` column can vary depending on who the `GRANTOR` is. Also the last column that has been truncated is the `GRANTABLE` column.

```
COLUMN      grantee  FORMAT  A10  
COLUMN      table_name  FORMAT  A10  
COLUMN      column_name  FORMAT  A10  
COLUMN      grantor  FORMAT  A10  
COLUMN      privilege  FORMAT  A10  
SELECT *  
FROM      user_tab_privs_made  
WHERE     grantee = 'SYSTEM';
```

```
SELECT *  
FROM      user_col_privs_made  
WHERE     grantee = 'SYSTEM';
```

Practice D Solutions (continued)

- c. Produce a script to revoke the privileges. Save the output of the script into `my_file2.sql`. To save the file, select the `FILE` option for the output, and execute the code. Remember to save the file with a `.sql` extension. To execute the `my_file2.sql`, browse to locate the script, load the script, and execute the script.

```
SET VERIFY OFF
SET PAGESIZE 0
```

```
SELECT      'REVOKE ' || privilege || ' ON ' ||
  table_name || ' FROM system;'
FROM    user_tab_privs_made
WHERE   grantee = 'SYSTEM'
/
SELECT      DISTINCT      'REVOKE ' || privilege || ' ON ' ||
  table_name || ' FROM system;'
FROM    user_col_privs_made
WHERE   grantee = 'SYSTEM'
/
```

```
SET VERIFY ON
SET PAGESIZE 24
```