

DEPARTMENT OF COMPUTER SCIENCE

The University of Chittagong

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Contents

Chapter 01: Retrieving Data Using the SQL <code>SELECT</code> Statement	3
Chapter 02: Restricting and Sorting Data	11
Chapter 03: Using Single-Row Functions to Customize Output	24
Chapter 04: Using Conversion Functions and Conditional Expressions	35

Chapter 01

Problem 1

Q: The following SELECT statement executes successfully:

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

A: True.

Problem 2

Q: The following SELECT statement executes successfully:

```
SELECT *  
FROM job_grades;
```

A: False.

Problem 3

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

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

A:

```
SELECT employee_id, last_name,  
salary*12 "ANNUAL SALARY"  
FROM hr.employees;
```

Problem 4

Q: Your first task is to determine the structure of the DEPARTMENTS table and its contents.

```

DESCRIBE departments
Name                                Null    Type
-----
DEPARTMENT_ID                      NOT NULL NUMBER(4)
DEPARTMENT_NAME                     NOT NULL VARCHAR2(30)
MANAGER_ID                          NUMBER(6)
LOCATION_ID                          NUMBER(4)

4 rows selected

```

	DEPARTMENT_ID	DEPARTMENT_NAME	MANAGER_ID	LOCATION_ID
1	10	Administration	200	1700
2	20	Marketing	201	1800
3	50	Shipping	124	1500
4	60	IT	103	1400
5	80	Sales	149	2500
6	90	Executive	100	1700
7	110	Accounting	205	1700
8	190	Contracting	(null)	1700

A:

```

DESCRIBE DEPARTMENTS
SELECT *
FROM hr.EMPLOYEES;

```

SQL> DESCRIBE hr.DEPARTMENTS

```

Name                                Null?    Type
-----
DEPARTMENT_ID                      NOT NULL NUMBER(4)
DEPARTMENT_NAME                     NOT NULL VARCHAR2(30)
MANAGER_ID                          NUMBER(6)
LOCATION_ID                          NUMBER(4)

```

	EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
1	100	Steven	King	SKING	1.515.555.0100	6/17/2013, 12:00:00 AM	AD_PRES	24000	(null)	(null)	90
2	101	Neena	Yang	NYANG	1.515.555.0101	9/21/2015, 12:00:00 AM	AD_VP	17000	(null)	100	90
3	102	Lex	Garcia	LGARCIA	1.515.555.0102	1/13/2011, 12:00:00 AM	AD_VP	17000	(null)	100	90
4	103	Alexander	James	AJAMES	1.590.555.0103	1/3/2016, 12:00:00 AM	IT_PROG	9000	(null)	102	60
5	104	Bruce	Miller	BMILLER	1.590.555.0104	5/21/2017, 12:00:00 AM	IT_PROG	6000	(null)	103	60
6	105	David	Williams	DWILLIAMS	1.590.555.0105	6/25/2015, 12:00:00 AM	IT_PROG	4800	(null)	103	60
7	106	Valli	Jackson	VJACKSON	1.590.555.0106	2/5/2016, 12:00:00 AM	IT_PROG	4800	(null)	103	60
8	107	Diana	Nguyen	DNGUYEN	1.590.555.0107	2/7/2017, 12:00:00 AM	IT_PROG	4200	(null)	103	60
9	108	Nancy	Gruenberg	NGRUENBE	1.515.555.0108	8/17/2012, 12:00:00 AM	FI_MGR	12008	(null)	101	100
10	109	Daniel	Faviet	DFAVIET	1.515.555.0109	8/16/2012, 12:00:00 AM	FI_ACCOUNT	9000	(null)	108	100
11	110	John	Chen	JCHEN	1.515.555.0110	9/28/2015, 12:00:00 AM	FI_ACCOUNT	8200	(null)	108	100
12	111	Ismail	Sciarra	ISCIARRA	1.515.555.0111	9/30/2015, 12:00:00 AM	FI_ACCOUNT	7700	(null)	108	100
13	112	Jose Manuel	Urman	JMURMAN	1.515.555.0112	3/7/2016, 12:00:00 AM	FI_ACCOUNT	7800	(null)	108	100

Problem 5

Q: Your task is to determine the structure of the EMPLOYEES table

```
DESCRIBE employees
Name                               Null    Type
-----
EMPLOYEE_ID                       NOT NULL NUMBER(6)
FIRST_NAME                        VARCHAR2(20)
LAST_NAME                         NOT NULL VARCHAR2(25)
EMAIL                             NOT NULL VARCHAR2(25)
PHONE_NUMBER                      VARCHAR2(20)
HIRE_DATE                         NOT NULL DATE
JOB_ID                            NOT NULL VARCHAR2(10)
SALARY                            NUMBER(8,2)
COMMISSION_PCT                   NUMBER(2,2)
MANAGER_ID                       NUMBER(6)
DEPARTMENT_ID                    NUMBER(4)

11 rows selected
```

A:

```
DESCRIBE hr.employees;
```

```
SQL> DESCRIBE hr.employees

Name                               Null?    Type
-----
EMPLOYEE_ID                       NOT NULL NUMBER(6)
FIRST_NAME                        VARCHAR2(20)
LAST_NAME                         NOT NULL VARCHAR2(25)
EMAIL                             NOT NULL VARCHAR2(25)
PHONE_NUMBER                      VARCHAR2(20)
HIRE_DATE                         NOT NULL DATE
JOB_ID                            NOT NULL VARCHAR2(10)
SALARY                            NUMBER(8,2)
COMMISSION_PCT                   NUMBER(2,2)
MANAGER_ID                       NUMBER(6)
DEPARTMENT_ID                    NUMBER(4)
```

Problem 6

Q: The HR department wants a query to display the last name, job ID, hire date, and employee ID for each employee, with the employee ID appearing first. Provide an alias STARTDATE for the HIRE_DATE column. Save your SQL statement to a file named lab_01_05.sql so that you can dispatch this file to the HR department. Test your query in the lab_01_05.sql file to ensure that it runs correctly.

	EMPLOYEE_ID	LAST_NAME	JOB_ID	STARTDATE
1	100	King	AD_PRES	17-JUN-87
2	101	Kochhar	AD_VP	21-SEP-89
3	102	De Haan	AD_VP	13-JAN-93
4	103	Hunold	IT_PROG	03-JAN-90
5	104	Ernst	IT_PROG	21-MAY-91
6	107	Lorentz	IT_PROG	07-FEB-99
7	124	Mourgos	ST_MAN	16-NOV-99
8	141	Rajs	ST_CLERK	17-OCT-95
9	142	Davies	ST_CLERK	29-JAN-97
10	143	Matos	ST_CLERK	15-MAR-98
...				
19	205	Higgins	AC_MGR	07-JUN-94
20	206	Gietz	AC_ACCOUNT	07-JUN-94

A:

lab_01_05.sql

```
SELECT employee_id, last_name, job_id, hire_date STARTDATE
FROM hr.employees;
```

	EMPLOYEE_ID	LAST_NAME	JOB_ID	STARTDATE
1	100	King	AD_PRES	6/17/2013, 12:00:00 AM
2	101	Yang	AD_VP	9/21/2015, 12:00:00 AM
3	102	Garcia	AD_VP	1/13/2011, 12:00:00 AM
4	103	James	IT_PROG	1/3/2016, 12:00:00 AM
5	104	Miller	IT_PROG	5/21/2017, 12:00:00 AM
6	105	Williams	IT_PROG	6/25/2015, 12:00:00 AM
7	106	Jackson	IT_PROG	2/5/2016, 12:00:00 AM
8	107	Nguyen	IT_PROG	2/7/2017, 12:00:00 AM
9	108	Gruenberg	FI_MGR	8/17/2012, 12:00:00 AM

Problem 7

Q: The HR department wants a query to display all unique job IDs from the EMPLOYEES table.

	JOB_ID
1	AC_ACCOUNT
2	AC_MGR
3	AD_ASST
4	AD PRES
5	AD_VP
6	IT_PROG
7	MK_MAN
8	MK_REP
9	SA_MAN
10	SA_REP
11	ST_CLERK
12	ST_MAN

A:

```
SELECT DISTINCT job_id  
FROM hr.employees;
```

	JOB_ID
1	AC_ACCOUNT
2	AC_MGR
3	AD_ASST
4	AD PRES
5	AD_VP
6	FI_ACCOUNT
7	FI_MGR
8	HR_REP
9	IT_PROG
10	MK_MAN
11	MK_REP
12	PR_REP
13	PU_CLERK

Problem 8

Q: The HR department wants more descriptive column headings for its report on employees. Copy the statement from lab_01_05.sql to a new SQL Worksheet. Name the column headings Emp #, Employee, Job, and Hire Date, respectively. Then run your query again.

	Emp #	Employee	Job	Hire Date
1	100	King	AD_PRES	17-JUN-87
2	101	Kochhar	AD_VP	21-SEP-89
3	102	De Haan	AD_VP	13-JAN-93
4	103	Hunold	IT_PROG	03-JAN-90
5	104	Ernst	IT_PROG	21-MAY-91
6	107	Lorentz	IT_PROG	07-FEB-99
7	124	Mourgos	ST_MAN	16-NOV-99
8	141	Rajs	ST_CLERK	17-OCT-95
9	142	Davies	ST_CLERK	29-JAN-97
10	143	Matos	ST_CLERK	15-MAR-98
...				
19	205	Higgins	AC_MGR	07-JUN-94
20	206	Gietz	AC_ACCOUNT	07-JUN-94

A:

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

	EMP #	EMPLOYEE	JOB	HIRE DATE
1	100	King	AD_PRES	6/17/2013, 12:00:00 AM
2	101	Yang	AD_VP	9/21/2015, 12:00:00 AM
3	102	Garcia	AD_VP	1/13/2011, 12:00:00 AM
4	103	James	IT_PROG	1/3/2016, 12:00:00 AM
5	104	Miller	IT_PROG	5/21/2017, 12:00:00 AM
6	105	Williams	IT_PROG	6/25/2015, 12:00:00 AM
7	106	Jackson	IT_PROG	2/5/2016, 12:00:00 AM
8	107	Nguyen	IT_PROG	2/7/2017, 12:00:00 AM
9	108	Gruenberg	FI_MGR	8/17/2012, 12:00:00 AM
10	109	Faviet	FI_ACCOUNT	8/16/2012, 12:00:00 AM
11	110	Chen	FI_ACCOUNT	9/28/2015, 12:00:00 AM
12	111	Sciarra	FI_ACCOUNT	9/30/2015, 12:00:00 AM
13	112	Urman	FI_ACCOUNT	3/7/2016, 12:00:00 AM

Problem 9

Q: The HR department has requested a report of all employees and their job IDs. Display the last name concatenated with the job ID (separated by a comma and space) and name the column EMPLOYEE and TITLE.

	Employee and Title
1	Abel, SA_REP
2	Davies, ST_CLERK
3	De Haan, AD_VP
4	Ernst, IT_PROG
5	Fay, MK_REP
6	Gietz, AC_ACCOUNT
7	Grant, SA_REP
8	Hartstein, MK_MAN
9	Higgins, AC_MGR
10	Hunold, IT_PROG
...	
19	Whalen, AD_ASST
20	Zlotkey, SA_MAN

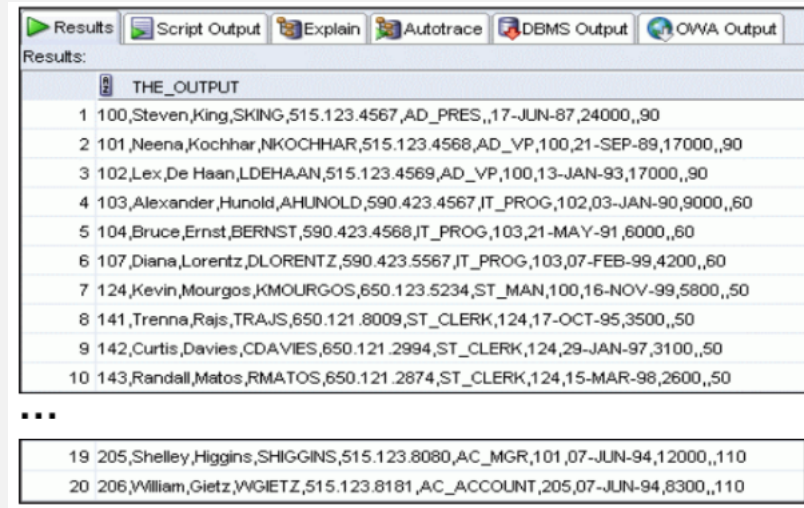
A:

```
SELECT last_name || ', ' || job_id "EMPLOYEE and EMPLOYEE"  
FROM hr.employees;
```

	EMPLOYEE AND TITLE
1	Abel, SA_REP
2	Ande, SA_REP
3	Atkinson, ST_CLERK
4	Baida, PU_CLERK
5	Banda, SA_REP
6	Bates, SA_REP
7	Bell, SH_CLERK
8	Bernstein, SA_REP
9	Bissot, ST_CLERK
10	Bloom, SA_REP
11	Brown, PR_REP
12	Bull, SH_CLERK
13	Cabrio, SH_CLERK

Problem 10

Q: To familiarize yourself with the data in the EMPLOYEES table, create a query to display all the data from that table. Separate each column output by a comma. Name the column title THE_OUTPUT.



	THE_OUTPUT
1	100,Steven,King,SKING,515.123.4567,AD_PRES,,17-JUN-87,24000,,90
2	101,Neena,Kochhar,NKOCHHAR,515.123.4568,AD_VP,100,21-SEP-89,17000,,90
3	102,Lex,De Haan,LDEHAAN,515.123.4569,AD_VP,100,13-JAN-93,17000,,90
4	103,Alexander,Hunold,AHUNOLD,590.423.4567,IT_PROG,102,03-JAN-90,9000,,60
5	104,Bruce,Ernst,BERNST,590.423.4568,IT_PROG,103,21-MAY-91,6000,,60
6	107,Diana,Lorentz,DLORENTZ,590.423.5567,IT_PROG,103,07-FEB-99,4200,,60
7	124,Kevin,Mourgos,KMOURGOS,650.123.5234,ST_MAN,100,16-NOV-99,5800,,50
8	141,Trenna,Rajs,TRAJS,650.121.8009,ST_CLERK,124,17-OCT-95,3500,,50
9	142,Curtis,Davies,CDAVIES,650.121.2994,ST_CLERK,124,29-JAN-97,3100,,50
10	143,Randall,Matos,RMATOS,650.121.2874,ST_CLERK,124,15-MAR-98,2600,,50
...	
19	205,Shelley,Higgins,SHIGGINS,515.123.8080,AC_MGR,101,07-JUN-94,12000,,110
20	206,William,Gietz,WGIETZ,515.123.8181,AC_ACCOUNT,205,07-JUN-94,8300,,110

A:

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

	THE_OUTPUT
1	100,Steven,King,SKING,1.515.555.0100,17-JUN-13,AD_PRES,24000,,,90
2	101,Neena,Yang,NYANG,1.515.555.0101,21-SEP-15,AD_VP,17000,,100,90
3	102,Lex,Garcia,LGARCIA,1.515.555.0102,13-JAN-11,AD_VP,17000,,100,90
4	103,Alexander,James,AJAMES,1.590.555.0103,03-JAN-16,IT_PROG,9000,,102,60
5	104,Bruce,Miller,BMILLER,1.590.555.0104,21-MAY-17,IT_PROG,6000,,103,60
6	105,David,Williams,DWILLIAMS,1.590.555.0105,25-JUN-15,IT_PROG,4800,,103,60
7	106,Valli,Jackson,VJACKSON,1.590.555.0106,05-FEB-16,IT_PROG,4800,,103,60
8	107,Diana,Nguyen,DNGUYEN,1.590.555.0107,07-FEB-17,IT_PROG,4200,,103,60
9	108,Nancy,Gruenberg,NGRUENBE,1.515.555.0108,17-AUG-12,FI_MGR,12008,,101,100
10	109,Daniel,Faviet,DFAVIET,1.515.555.0109,16-AUG-12,FI_ACCOUNT,9000,,108,100
11	110,John,Chen,JCHEN,1.515.555.0110,28-SEP-15,FI_ACCOUNT,8200,,108,100
12	111,Ismail,Sciarra,ISCIARRA,1.515.555.0111,30-SEP-15,FI_ACCOUNT,7700,,108,100
13	112,Jose Manuel,Urman,JMURMAN,1.515.555.0112,07-MAR-16,FI_ACCOUNT,7800,,108,100

Chapter 02

Problem 1

Q: Because of budget issues, the HR department needs a report that displays the last name and salary of employees who earn more than \$12,000. Save your SQL statement as a file named `lab_02_01.sql`. Run your query.

LAST_NAME	SALARY
King	24000
Kochhar	17000
De Haan	17000
Hartstein	13000

A:

`lab_02_01.sql`

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

	LAST_NAME	SALARY
1	King	24000
2	Yang	17000
3	Garcia	17000
4	Gruenberg	12008
5	Singh	14000
6	Partners	13500
7	Martinez	13000
8	Higgins	12008

Problem 2

Q: Create a report that displays the last name and department number for employee number 176. Run the query.

LAST_NAME	DEPARTMENT_ID
Taylor	80

A:

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

	LAST_NAME	DEPARTMENT_ID
1	Taylor	80

Problem 3

Q: The HR department needs to find high-salary and low-salary employees. Modify lab_02.01.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 lab_02.03.sql.

LAST_NAME	SALARY
King	24000
Kochhar	17000
De Haan	17000
Lorentz	4200
Rajs	3500
Davies	3100
Matos	2600
Vargas	2500
Whalen	4400
Hartstein	13000

10 rows selected.

A:

lab2_3.sql

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

	LAST_NAME	SALARY
1	King	24000
2	Yang	17000
3	Garcia	17000
4	Williams	4800
5	Jackson	4800
6	Nguyen	4200
7	Gruenberg	12008
8	Khoo	3100
9	Baida	2900
10	Tobias	2800

Problem 4

Q: Create a report to display the last name, job ID, and hire date for employees with the last names of Matos and Taylor. Order the query in ascending order by the hire date.

LAST_NAME	JOB_ID	HIRE_DATE
Matos	ST_CLERK	15-MAR-98
Taylor	SA_REP	24-MAR-98

A:

```
SELECT last_name, job_id, hire_date
FROM hr.employees
WHERE last_name IN ('Matos', 'Taylor')
ORDER BY hire_date;
```

	LAST_NAME	JOB_ID	HIRE_DATE
1	Taylor	SH_CLERK	1/24/2016, 12:00:00 AM
2	Matos	ST_CLERK	3/15/2016, 12:00:00 AM
3	Taylor	SA_REP	3/24/2016, 12:00:00 AM

Problem 5

Q: Display the last name and department ID of all employees in departments 20 and 50 in alphabetical order by name.

LAST_NAME	DEPARTMENT_ID
Davies	50
Fay	20
Hartstein	20
Matos	50
Mourgos	50
Rajs	50
Vargas	50

A:

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

	LAST_NAME	DEPARTMENT_ID
1	Atkinson	50
2	Bell	50
3	Bissot	50
4	Bull	50
5	Cabrio	50
6	Chung	50
7	Davies	50

Problem 6

Q: Modify lab_02_03.sql to display 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 lab_02_03.sql as lab_02_06.sql. Run the statement in lab_02_06.sql.

	Employee	Monthly Salary
1	Fay	6000
2	Mourgos	5800

A:

lab_02_06.sql

```
SELECT last_name Employee, salary "Monthly Salary"
FROM hr.employees
WHERE salary BETWEEN 5000 AND 12000
AND department_id = 20 OR department_id = 50;
```

	EMPLOYEE	MONTHLY SALARY
1	Weiss	8000
2	Fripp	8200
3	Kaufling	7900
4	Vollman	6500
5	Mourgos	5800
6	Davis	6000

Problem 7

Q: The HR department needs a report that displays the last name and hire date for all employees who were hired in 1994.

	LAST_NAME	HIRE_DATE
1	Higgins	07-JUN-94
2	Gietz	07-JUN-94

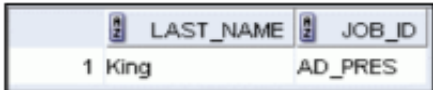
A: [Since entry os 1998 does not exist anymore we'll use 2016]

```
SELECT last_name Employee, hire_date
FROM hr.employees
WHERE hire_date BETWEEN '1-JAN-2016' AND '31-DEC-2016';
```

	EMPLOYEE	HIRE_DATE
1	James	1/3/2016, 12:00:00 AM
2	Jackson	2/5/2016, 12:00:00 AM
3	Urman	3/7/2016, 12:00:00 AM
4	Himuro	11/15/2016, 12:00:00 AM
5	Mikkilineni	9/28/2016, 12:00:00 AM
6	Rogers	8/26/2016, 12:00:00 AM
7	Seo	2/12/2016, 12:00:00 AM

Problem 8

Q: Create a report to display the last name and job title of all employees who do not have a manager.



LAST_NAME	JOB_ID
1 King	AD_PRES

A:

```
SELECT last_name, job_id, hire_date
FROM hr.employees
WHERE job_id = 'AD_PRES';
```

	LAST_NAME	JOB_ID	HIRE_DATE
1	King	AD_PRES	6/17/2013, 12:00:00 AM

Problem 9

Q: Create a report to display the last name, salary, and commission of all employees who earn commissions. Sort data in descending order of salary and commissions. Use the column's numeric position in the ORDER BY clause.

#	LAST_NAME	#	SALARY	#	COMMISSION_PCT
1	Abel		11000		0.3
2	Zlotkey		10500		0.2
3	Taylor		8600		0.2
4	Grant		7000		0.15

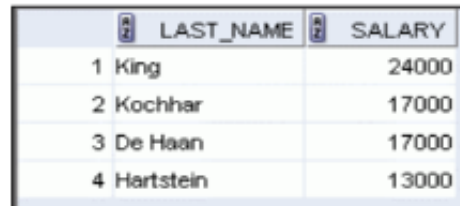
A:

```
SELECT last_name, salary, commission_pct
FROM hr.employees
WHERE commission_pct IS NOT NULL
ORDER BY 2 DESC, 3 DESC;
```

	LAST_NAME	SALARY	COMMISSION_PCT
1	Kumar	6100	0.1
2	Banda	6200	0.1
3	Johnson	6200	0.1
4	Ande	6400	0.1
5	Lee	6800	0.1
6	Sewall	7000	0.25
7	Grant	7000	0.15
8	Tuvault	7000	0.15

Problem 10

Q: Members of the HR department want to have more flexibility with the queries that you are writing. They would like a report that displays the last name and salary of employees who earn more than an amount that the user specifies after a prompt. Save this query to a file named `lab_02_10.sql`. If you enter 12000 when prompted, the report displays the following results:



	LAST_NAME	SALARY
1	King	24000
2	Kochhar	17000
3	De Haan	17000
4	Hartstein	13000

A:

`lab_02_10.sql`

```
SELECT last_name, salary
FROM hr.employees
WHERE salary > &Salary_Amount;
```



Substitution Variables

Salary_Amount
12000

Cancel OK

	LAST_NAME	SALARY
1	King	24000
2	Yang	17000
3	Garcia	17000
4	Gruenberg	12008
5	Singh	14000
6	Partners	13500
7	Martinez	13000
8	Higgins	12008

Problem 11

Q: The HR department wants to run reports based on a manager. Create a query that prompts the user for a manager ID and generates the employee ID, last name, salary, and department for that manager's employees. The HR department wants the ability to sort the report on a selected column. You can test the data with the following values:

manager_id = 103, sorted by last_name:

	EMPLOYEE_ID	LAST_NAME	SALARY	DEPARTMENT_ID
1	104	Ernst	6000	60
2	107	Lorentz	4200	60

manager_id = 201, sorted by salary:

	EMPLOYEE_ID	LAST_NAME	SALARY	DEPARTMENT_ID
1	202	Fay	6000	20

manager_id = 124, sorted by employee_id:

	EMPLOYEE_ID	LAST_NAME	SALARY	DEPARTMENT_ID
1	141	Rajs	3500	50
2	142	Davies	3100	50
3	143	Matos	2600	50
4	144	Vargas	2500	50

A:

```
SELECT employee_id, last_name, salary, department_id
FROM hr.employees
WHERE manager_id = &manager_id;
```

Substitution Variables

manager_id
103

Cancel OK

	EMPLOYEE_ID	LAST_NAME	SALARY	DEPARTMENT_ID
1	104	Miller	6000	60
2	105	Williams	4800	60
3	106	Jackson	4800	60
4	107	Nguyen	4200	60

Problem 12

Q: Display all employee last names in which the third letter of the name is “a”.

	LAST_NAME
1	Grant
2	Whalen

A:

```
SELECT DISTINCT last_name
FROM hr.employees
WHERE last_name LIKE '__a%';
```

	LAST_NAME
1	Grant
2	Whalen

Problem 13

Q: Display the last names of all employees who have both an “a” and an “e” in their last name.

	LAST_NAME
1	Davies
2	De Haan
3	Hartstein
4	Whalen

A:

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

	LAST_NAME
1	Bates
2	Colmenares
3	Davies
4	Faviet
5	Fleaur
6	James
7	Markle
8	Martinez
9	Nayer

Problem 14

Q: Display the last name, job, and salary for all employees whose jobs are either those of a sales representative or of a stock clerk, and whose salaries are not equal to \$2,500, \$3,500, or \$7,000.

	LAST_NAME	JOB_ID	SALARY
1	Abel	SA_REP	11000
2	Taylor	SA_REP	8600
3	Davies	ST_CLERK	3100
4	Matos	ST_CLERK	2600

A:

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

	LAST_NAME	JOB_ID	SALARY
1	Nayer	ST_CLERK	3200
2	Mikkilineni	ST_CLERK	2700
3	Landry	ST_CLERK	2400
4	Markle	ST_CLERK	2200
5	Bissot	ST_CLERK	3300
6	Atkinson	ST_CLERK	2800
7	Olson	ST_CLERK	2100
8	Mallin	ST_CLERK	3300

Problem 15

Q: Modify lab_02_06.sql to display the last name, salary, and commission for all employees whose commission is 20%. Resave lab_02_06.sql as lab_02_15.sql. Rerun the statement in lab_02_15.sql.

	Employee	Monthly Salary	COMMISSION_PCT
1	Zlotkey	10500	0.2
2	Taylor	8600	0.2

A:

lab_02_15.sql

```
SELECT last_name Employee, salary "Monthly Salary", commission_pct  
FROM hr.employees  
WHERE commission_pct = 0.2;
```

	EMPLOYEE	MONTHLY SALARY	COMMISSION_PCT
1	Zlotkey	10500	0.2
2	Olsen	8000	0.2
3	Cambrault	7500	0.2
4	Bloom	10000	0.2
5	Fox	9600	0.2
6	Taylor	8600	0.2
7	Livingston	8400	0.2

Chapter 03

Problem 1

Q: Write a query to display the system date. Label the column as Date.

Note: If your database is remotely located in a different time zone, the output will be the date for the operating system on which the database resides.

Date
1 31-MAY-07

A:

```
SELECT sysdate
FROM dual;
```

	SYSDATE
1	5/27/2025, 1:41:28

Problem 2

Q: The HR department needs a report to display the employee number, last name, salary, and salary increased by 15.5% (expressed as a whole number) for each employee. Label the column New Salary. Save your SQL statement in a file named lab_03-02.sql.

A:

lab_03-02.sql

```
SELECT employee_id, last_name, salary,
       salary+salary*0.155 "New Salary"
FROM hr.employees;
```

Problem 3

Q: Run your query in the lab_03-02.sql file.

	EMPLOYEE_ID	LAST_NAME	SALARY	New Salary
1	100	King	24000	27720
2	101	Kochhar	17000	19635
3	102	De Haan	17000	19635
4	103	Hunold	9000	10395
5	104	Ernst	6000	6930
6	107	Lorentz	4200	4851
7	124	Mourgos	5800	6699
8	141	Rajs	3500	4043
9	142	Davies	3100	3581
10	143	Matos	2600	3003
...				
19	205	Higgins	12000	13860
20	206	Gietz	8300	9587

A:

	EMPLOYEE_ID	LAST_NAME	SALARY	NEW SALARY
1	100	King	24000	27720
2	101	Yang	17000	19635
3	102	Garcia	17000	19635
4	103	James	9000	10395
5	104	Miller	6000	6930
6	105	Williams	4800	5544
7	106	Jackson	4800	5544
8	107	Nguyen	4200	4851
9	108	Gruenberg	12008	13869.24
10	109	Faviet	9000	10395

Problem 4

Q: Modify your query lab_03_02.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 lab_03_04.sql. Run the revised query.

	EMPLOYEE_ID	LAST_NAME	SALARY	New Salary	Increase
1	100	King	24000	27720	3720
2	101	Kochhar	17000	19635	2635
3	102	De Haan	17000	19635	2635
4	103	Hunold	9000	10395	1395
5	104	Ernst	6000	6930	930
...					
20	206	Gietz	8300	9587	1287

A:

lab_03_04.sql

```
SELECT employee_id, last_name, salary,  
       salary+salary*0.155 "New Salary", salary*0.155 Increase  
FROM hr.employees;
```



	EMPLOYEE_ID	LAST_NAME	SALARY	NEW SALARY	INCREASE
1	100	King	24000	27720	3720
2	101	Yang	17000	19635	2635
3	102	Garcia	17000	19635	2635
4	103	James	9000	10395	1395
5	104	Miller	6000	6930	930
6	105	Williams	4800	5544	744
7	106	Jackson	4800	5544	744
8	107	Nguyen	4200	4851	651
9	108	Gruenberg	12008	13869.24	1861.24
10	109	Faviet	9000	10395	1395

Problem 5


Q: Write a query that displays the last name (with the first letter in uppercase and all the other letters in lowercase) and the length of the last name for all employees whose name starts with the letters "J", "A", or "M". Give each column an appropriate label. Sort the results by the employees' last names.

	 Name	 Length
1	Abel	4
2	Matos	5
3	Mourgos	7

Rewrite the query so that the user is prompted to enter a letter that the last name starts with. For example, if the user enters “H” (capitalized) when prompted for a letter, then the output should show all employees whose last name starts with the letter “H”.

	 Name	 Length
1	Hartstein	9
2	Higgins	7
3	Hunold	6



Modify the query such that the case of the entered letter does not affect the output. The entered letter must be capitalized before being processed by the SELECT query.

Enter Substitution Variable


START_LETTER:

h

OK Cancel

	 Name	 Length
1	Hartstein	9
2	Higgins	7
3	Hunold	6

A:

```
SELECT INITCAP(last_name) AS "Formatted Last Name",
       LENGTH(last_name) AS "Length"
FROM hr.employees
```

```
WHERE SUBSTR(last_name, 1, 1) IN ('J', 'A', 'M')
ORDER BY INITCAP(last_name);
```

	NAME	LENGTH
1	Abel	4
2	Ande	4
3	Atkinson	8
4	Jackson	7
5	Jacobs	6
6	James	5
7	Johnson	7
8	Jones	5
9	Mallin	6
10	Markle	6

```
SELECT INITCAP(last_name) AS "Name",
       LENGTH(last_name) AS "Length"
FROM hr.employees
WHERE SUBSTR(last_name, 1, 1) = '&letter';
```

Substitution Variables

letter

A

Cancel

OK

	NAME	LENGTH
1	Abel	4
2	Ande	4
3	Atkinson	8

```

SELECT INITCAP(last_name) AS "Name",
       LENGTH(last_name) AS "Length"
FROM hr.employees
WHERE SUBSTR(last_name, 1, 1) = UPPER('&letter');

```

Substitution Variables

letter
a

Cancel OK

	NAME	LENGTH
1	Abel	4
2	Ande	4
3	Atkinson	8

Problem 6

Q: The HR department wants to find the duration of employment for each employee. For each employee, display the last name and calculate the number of months between today and the date on which the employee was hired. Label the column as MONTHS_WORKED. Order your results by the number of months employed. Round the number of months up to the closest whole number.

Note: Because this query depends on the date when it was executed, the values in the MONTHS_WORKED column will differ for you.

	LAST_NAME	MONTHS_WORKED
1	Zlotkey	88
2	Mourgos	90
3	Grant	96
4	Lorentz	100
5	Vargas	107
6	Taylor	110
7	Matos	111
8	Fay	117
9	Davies	124
10	Abel	133
11	Hartstein	135
12	Rajs	139
13	Higgins	156
14	Gietz	156
15	De Haan	173
16	Ernst	192
17	Hunold	209
18	Kochhar	212
19	Whalen	236
20	King	239

A:

```

SELECT last_name,
        ROUND(MONTHS_BETWEEN(SYSDATE, hire_date)) AS MONTHS_WORKED
FROM hr.employees
ORDER BY MONTHS_WORKED;

```

	LAST_NAME	MONTHS_WORKED
1	Kumar	85
2	Banda	85
3	Ande	86
4	Lee	87
5	Markle	87
6	Marvins	88
7	Grant	88

Problem 7

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

	LAST_NAME	SALARY
1	King	\$\$\$\$\$\$\$\$\$24000
2	Kochhar	\$\$\$\$\$\$\$\$\$17000
...		
20	Gietz	\$\$\$\$\$\$\$\$\$8300

A:

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

	LAST_NAME	SALARY
1	King	\$\$\$\$\$\$\$\$\$24000
2	Yang	\$\$\$\$\$\$\$\$\$17000
3	Garcia	\$\$\$\$\$\$\$\$\$17000
4	James	\$\$\$\$\$\$\$\$\$9000
5	Miller	\$\$\$\$\$\$\$\$\$6000
6	Williams	\$\$\$\$\$\$\$\$\$4800
7	Jackson	\$\$\$\$\$\$\$\$\$4800

Problem 8

Q: Create a query that displays the first eight characters of the employees' last names and indicates the amounts of their salaries with asterisks. Each asterisk signifies a thousand dollars. Sort the data in descending order of salary. Label the column as EMPLOYEES_AND_THEIR_SALARIES.

EMPLOYEES_AND_THEIR_SALARIES		
1	King	*****
2	Kochhar	*****
3	De Haan	*****
4	Hartstei	*****
5	Higgins	*****
...		
19	Matos	**
20	Vargas	**

A:

```
SELECT SUBSTR(last_name, 1, 8) || ' ' || RPAD('*', ROUND(salary / 1000),
    '*') AS EMPLOYEES_AND_THEIR_SALARIES
FROM hr.employees
ORDER BY salary DESC;
```


	EMPLOYEES_AND_THEIR_SALARIES
1	King *****
2	Yang *****
3	Garcia *****
4	Singh *****
5	Partners *****
6	Martinez *****
7	Gruenber *****
8	Higgins *****
104	Gee **
105	Markle **
106	Philtank **
107	Olson **

Problem 9

Q: Create a query to display the last name and the number of weeks employed for all employees in department 90. Label the number of weeks column as TENURE. Truncate the number of weeks value to 0 decimal places. Show the records in descending order of the employee's tenure.

Note: The TENURE value will differ as it depends on the date on which you run the query.

	LAST_NAME	TENURE
1	King	1041
2	Kochhar	923
3	De Haan	750

A:

```
SELECT last_name, TRUNC((sysdate-hire_date)/7, 0) AS TENURE  
FROM hr.employees  
WHERE department_id = 90  
ORDER BY TENURE DESC;
```

	LAST_NAME	TENURE
1	Garcia	749
2	King	623
3	Yang	505

Chapter 04

Problem 1

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

	Dream Salaries
1	King earns \$24,000.00 monthly but wants \$72,000.00.
2	Kochhar earns \$17,000.00 monthly but wants \$51,000.00.
3	De Haan earns \$17,000.00 monthly but wants \$51,000.00.
4	Hunold earns \$9,000.00 monthly but wants \$27,000.00.
5	Ernst earns \$6,000.00 monthly but wants \$18,000.00.
...	
19	Higgins earns \$12,000.00 monthly but wants \$36,000.00.
20	Gietz earns \$8,300.00 monthly but wants \$24,900.00.

A:

```
SELECT last_name || ' earns ' || TO_CHAR(salary, 'FM$999,999') ||  
       ' monthly but wants ' || TO_CHAR(salary * 3, 'FM$999,999') || '.'  
       AS "Dream Salaries"  
FROM hr.employees;
```

	DREAM SALARIES
1	King earns \$24,000 monthly but wants \$72,000.
2	Yang earns \$17,000 monthly but wants \$51,000.
3	Garcia earns \$17,000 monthly but wants \$51,000.
4	James earns \$9,000 monthly but wants \$27,000.
5	Miller earns \$6,000 monthly but wants \$18,000.

Problem 2

Q: 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".

	LAST_NAME	HIRE_DATE	REVIEW
1	King	17-JUN-87	Monday, the Twenty-First of December, 1987
2	Kochhar	21-SEP-89	Monday, the Twenty-Sixth of March, 1990
3	De Haan	13-JAN-93	Monday, the Nineteenth of July, 1993
4	Hunold	03-JAN-90	Monday, the Ninth of July, 1990
5	Ernst	21-MAY-91	Monday, the Twenty-Fifth of November, 1991
...			
19	Higgins	07-JUN-94	Monday, the Twelfth of December, 1994
20	Gietz	07-JUN-94	Monday, the Twelfth of December, 1994

A:

```

SELECT
  last_name,
  TO_CHAR(hire_date, 'DD-MON-YY'),
  'MONDAY, the ' || TO_CHAR(
    NEXT_DAY(ADD_MONTHS(hire_date, 6), 'MONDAY'),
    'fmDdspth "of" Month, YYYY'
  ) AS REVIEW
FROM hr.employees;

```

	LAST_NAME	HIRE_DATE	REVIEW
1	King	17-JUN-13	MONDAY, the Twenty-Third of December, 2013
2	Yang	21-SEP-15	MONDAY, the Twenty-Eighth of March, 2016
3	Garcia	13-JAN-11	MONDAY, the Eighteenth of July, 2011
4	James	03-JAN-16	MONDAY, the Fourth of July, 2016
5	Miller	21-MAY-17	MONDAY, the Twenty-Seventh of November, 2017
6	Williams	25-JUN-15	MONDAY, the Twenty-Eighth of December, 2015
7	Jackson	05-FEB-16	MONDAY, the Eighth of August, 2016
8	Nguyen	07-FEB-17	MONDAY, the Fourteenth of August, 2017

Problem 3

Q: 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.

	LAST_NAME	HIRE_DATE	DAY
1	Grant	24-MAY-99	MONDAY
2	Gietz	07-JUN-94	TUESDAY
3	Taylor	24-MAR-98	TUESDAY
4	Higgins	07-JUN-94	TUESDAY
5	Rajs	17-OCT-95	TUESDAY
...			
19	Lorentz	07-FEB-99	SUNDAY
20	Fay	17-AUG-97	SUNDAY

A:

```
SELECT
  last_name,
  hire_date,
  TO_CHAR(hire_date, 'fmDay') AS DAY
FROM hr.employees
ORDER BY
  DECODE(TO_CHAR(hire_date, 'DY', 'NLS_DATE_LANGUAGE = ENGLISH'),
    'MON', 1,
    'TUE', 2,
    'WED', 3,
    'THU', 4,
    'FRI', 5,
    'SAT', 6,
    'SUN', 7
  );
```

	LAST_NAME	HIRE_DATE	DAY
1	King	6/17/2013, 12:00:00 AM	Monday
2	Davis	8/17/2015, 12:00:00 AM	Monday
3	Yang	9/21/2015, 12:00:00 AM	Monday
4	Martinez	2/17/2014, 12:00:00 AM	Monday
5	Feeney	5/23/2016, 12:00:00 AM	Monday
6	Venzl	7/11/2016, 12:00:00 AM	Monday
7	Sarchand	1/27/2014, 12:00:00 AM	Monday

Problem 4

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

	LAST_NAME	COMM
1	King	No Commission
2	Kochhar	No Commission
3	De Haan	No Commission
4	Hunold	No Commission
5	Ernst	No Commission
6	Lorentz	No Commission
...		
12	Zlotkey	.2
13	Abel	.3
14	Taylor	.2
15	Grant	.15
16	Whalen	No Commission
17	Hartstein	No Commission
18	Fay	No Commission
19	Higgins	No Commission
20	Gietz	No Commission

A:

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

	LAST_NAME	COMM
1	King	No Commission
2	Yang	No Commission
3	Garcia	No Commission
4	James	No Commission
5	Miller	No Commission
74	Kumar	.1
75	Abel	.3
76	Hutton	.25
77	Taylor	.2
78	Livingston	.2
79	Grant	.15

Problem 5

Q: Using the DECODE function, write a query that displays the grade of all employees based on the value of the column JOB_ID, using 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

	JOB_ID	GRADE
1	AC_ACCOUNT	0
2	AC_MGR	0
3	AD_ASST	0
4	AD_PRES	A
5	AD_VP	0

...

18	ST_CLERK	E
19	ST_CLERK	E
20	ST_MAN	B

A:

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

	JOB_ID	GRADE
1	AC_ACCOUNT	0
2	AC_MGR	0
3	AD_ASST	0
4	AD_PRES	A
5	AD_VP	0
101	ST_CLERK	E
102	ST_CLERK	E
103	ST_MAN	B
104	ST_MAN	B
105	ST_MAN	B

Problem 6

Q: Rewrite the statement in the preceding exercise using the CASE syntax.

	<small>HR</small> <small>2</small> JOB_ID	<small>HR</small> <small>2</small> GRADE
1	AC_ACCOUNT	0
2	AC_MGR	0
3	AD_ASST	0
4	AD_PRES	A
5	AD_VP	0
...		
18	ST_CLERK	E
19	ST_CLERK	E
20	ST_MAN	B

A:

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

	JOB_ID	GRADE
1	AC_ACCOUNT	0
2	AC_MGR	0
3	AD_ASST	0
4	AD_PRES	A
5	AD_VP	0
...		
101	ST_CLERK	E
102	ST_CLERK	E
103	ST_MAN	B
104	ST_MAN	B
105	ST_MAN	B