

## 2-3. SQL 연산자와 표현식

홍형경

[chariehong@gmail.com](mailto:chariehong@gmail.com)

2020.11

# 1. SQL 연산자

## (1) 연산자란?

- 개별 데이터(피연산자)를 대상으로 특정 연산을 수행 후 결과를 반환
- 수학에서 사용하는 +, - 등이 대표적인 연산자  
( 예,  $1+2 = 3$  )
- 오라클에서는 다양한 기능의 연산자 제공
- 연산자별 우선 순위 존재  
(예,  $1+ 2*3$  )

# 1. SQL 연산자

## (2) 기본 연산자

연산자	내용	우선순위
+, -	단항 부호 연산자(양수, 음수)	1
*, /	수식연산자 (곱하기, 나누기)	2
+, -	수식연산자 (더하기, 빼기)	3
	문자열 결합 연산자 (예, 'a'    'b' → 'ab')	3

# 1. SQL 연산자

## (2) 기본 연산자

· 더하기, 빼기

```
SELECT 1+1 , 1-1  
FROM DUAL;
```

1+1	1-1
2	0

# 1. SQL 연산자

## (2) 기본 연산자

· 더하기, 빼기

```
SELECT 1+1 plus_test, 1-1 minus_test  
FROM DUAL;
```

PLUS_TEST	MINUS_TEST
2	0

# 1. SQL 연산자

## (2) 기본 연산자

- 곱하기, 나누기

```
SELECT 1+1*3 multiply, 7-4/2 divide  
FROM DUAL;
```

MULTIPLY	DIVIDE
4	5

# 1. SQL 연산자

## (2) 기본 연산자

### · 괄호 사용

```
SELECT (1+1)*3 multiply, (7-4)/2 divide  
FROM DUAL;
```



MULTIPLY	DIVIDE
6	1.5

# 1. SQL 연산자

## (2) 기본 연산자

- 문자열 결합

```
SELECT 'A' || 'B', 'C' || 'D' || 'F'  
FROM DUAL;
```

 'A'    'B'	 'C'    'D'    'F'
AB	CDF



# 1. SQL 연산자

## (2) 기본 연산자

### · 문자열 결합 2

```
SELECT first_name || ' ' || last_name full_name  
FROM EMPLOYEES;
```

⚙ FULL_NAME
Ellen Abel
Sundar Ande
Mozhe Atkinson
David Austin
Hermann Baer
Shelli Baida
Amit Banda
Elizabeth Bates
Sarah Bell
David Bernstein
Laura Bissot
Harrison Bloom
Alexis Bull
Anthony Cabrio
Gerald Cambrault
Nanette Cambrault
John Chen
Kelly Chung

# 1. SQL 연산자

## (3) 비교 연산자

연산자	내용	우선순위
=	동등 연산자, 값이 같으면 참	4
!=, <>	비동등 연산자, 값이 틀리면 참	4
>, <	부등호 연산자. 예, 4 > 3 (참), 4 < 3 (거짓)	4
>= , <=	부등호 연산자	4
BETWEEN...AND	대상값 BETWEEN 값1 AND 값2 (대상값 >= 값1 AND 대상값 <= 값2)	4
AND	AND 연산자	4
OR	OR 연산자	4
NOT	NOT 연산자	

# 1. SQL 연산자

## (3) 비교 연산자

- 동등 연산자

**SELECT \***

**FROM employees**

**WHERE salary = 2500;**

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
119	Karen	Colmenares	KCOLMENA	515.127.4566	2007-08-10 00:00:00	PU_CLERK	2500	(null)	114	30
131	James	Marlow	JAMRLOW	650.124.7234	2005-02-16 00:00:00	ST_CLERK	2500	(null)	121	50
140	Joshua	Patel	JPATEL	650.121.1834	2006-04-06 00:00:00	ST_CLERK	2500	(null)	123	50
144	Peter	Vargas	PVARGAS	650.121.2004	2006-07-09 00:00:00	ST_CLERK	2500	(null)	124	50
182	Martha	Sullivan	MSULLIVA	650.507.9878	2007-06-21 00:00:00	SH_CLERK	2500	(null)	120	50
191	Randall	Perkins	RPERKINS	650.505.4876	2007-12-19 00:00:00	SH_CLERK	2500	(null)	122	50

# 1. SQL 연산자

## (3) 비교 연산자

### · 비 동등 연산자

SELECT \*

FROM employees

WHERE salary <> 2500;

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY
198	Donald	OConnell	DOCONNEL	650.507.9833	2007-06-21 00:00:00	SH_CLERK	2600
199	Douglas	Grant	DGRANT	650.507.9844	2008-01-13 00:00:00	SH_CLERK	2600
200	Jennifer	Whalen	JWHALEN	515.123.4444	2003-09-17 00:00:00	AD_ASST	4400
201	Michael	Hartstein	MHARTSTE	515.123.5555	2004-02-17 00:00:00	MK_MAN	13000
202	Pat	Fay	PFAY	603.123.6666	2005-08-17 00:00:00	MK_REP	6000
203	Susan	Mavris	SMAVRIS	515.123.7777	2002-06-07 00:00:00	HR_REP	6500
204	Hermann	Baer	HBAER	515.123.8888	2002-06-07 00:00:00	PR_REP	10000
205	Shelley	Higgins	SHIGGINS	515.123.8080	2002-06-07 00:00:00	AC_MGR	12008
206	William	Gietz	WGIETZ	515.123.8181	2002-06-07 00:00:00	AC_ACCOUNT	8300
100	Steven	King	SKING	515.123.4567	2003-06-17 00:00:00	AD PRES	24000
101	Neena	Kochhar	NKOCHHAR	515.123.4568	2005-09-21 00:00:00	AD_VP	17000
102	Lex	De Haan	LDEHAAN	515.123.4569	2001-01-13 00:00:00	AD_VP	17000
103	Alexander	Hunold	AHUNOLD	590.423.4567	2006-01-03 00:00:00	IT_PROG	9000
104	Bruce	Ernst	BERNST	590.423.4568	2007-05-21 00:00:00	IT_PROG	6000
105	David	Austin	DAUSTIN	590.423.4569	2005-06-25 00:00:00	IT_PROG	4800
106	Valli	Pataballa	VPATABAL	590.423.4560	2006-02-05 00:00:00	IT_PROG	4800
107	Diana	Lorentz	DLORENTZ	590.423.5567	2007-02-07 00:00:00	IT_PROG	4200
108	Nancy	Greenberg	NGREENBE	515.124.4569	2002-08-17 00:00:00	FI_MGR	12008
109	Daniel	Faviet	DFAVIET	515.124.4169	2002-08-16 00:00:00	FI_ACCOUNT	9000

# 1. SQL 연산자

## (3) 비교 연산자

### · 부등호 연산자

```
SELECT *  
  FROM employees  
 WHERE salary > 3000  
 ORDER BY salary;
```

EMPLOY...	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY
142	Curtis	Davies	CDAVIES	650.121.2994	2005-01-29 00:00:00	ST_CLERK	3100
115	Alexander	Khoo	AKHOO	515.127.4562	2003-05-18 00:00:00	PU_CLERK	3100
181	Jean	Fleaur	JFLEAUR	650.507.9877	2006-02-23 00:00:00	SH_CLERK	3100
196	Alana	Walsh	AWALSH	650.507.9811	2006-04-24 00:00:00	SH_CLERK	3100
125	Julia	Nayer	JNAYER	650.124.1214	2005-07-16 00:00:00	ST_CLERK	3200
180	Winston	Taylor	WTAYLOR	650.507.9876	2006-01-24 00:00:00	SH_CLERK	3200
194	Samuel	McCain	SMCCAIN	650.501.3876	2006-07-01 00:00:00	SH_CLERK	3200
138	Stephen	Stiles	SSTILES	650.121.2034	2005-10-26 00:00:00	ST_CLERK	3200
133	Jason	Mallin	JMALLIN	650.127.1934	2004-06-14 00:00:00	ST_CLERK	3300
129	Laura	Bissot	LBISSOT	650.124.5234	2005-08-20 00:00:00	ST_CLERK	3300
186	Julia	Dellinger	JDELLING	650.509.3876	2006-06-24 00:00:00	SH_CLERK	3400
141	Trenna	Rajs	TRAJS	650.121.8009	2003-10-17 00:00:00	ST_CLERK	3500
189	Jennifer	Dilly	JDILLY	650.505.2876	2005-08-13 00:00:00	SH_CLERK	3600
137	Renske	Ladwig	RLADWIG	650.121.1234	2003-07-14 00:00:00	ST_CLERK	3600
188	Kelly	Chung	KCHUNG	650.505.1876	2005-06-14 00:00:00	SH_CLERK	3800
193	Britney	Everett	BEVERETT	650.501.2876	2005-03-03 00:00:00	SH_CLERK	3900
192	Sarah	Bell	SBELL	650.501.1876	2004-02-04 00:00:00	SH_CLERK	4000
185	Alexis	Bull	ABULL	650.509.2876	2005-02-20 00:00:00	SH_CLERK	4100
107	Diana	Lorentz	DLORENTZ	590.423.5567	2007-02-07 00:00:00	IT_PROG	4200

# 1. SQL 연산자

## (3) 비교 연산자

### · 부등호 연산자

**SELECT \***

**FROM employees**

**WHERE salary >= 3000**

**ORDER BY salary;**

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY
187	Anthony	Cabrio	ACABRIO	650.509.4876	2007-02-07 00:00:00	SH_CLERK	3000
197	Kevin	Feeney	KFEENEY	650.507.9822	2006-05-23 00:00:00	SH_CLERK	3000
115	Alexander	Khoo	AKHOO	515.127.4562	2003-05-18 00:00:00	PU_CLERK	3100
196	Alana	Walsh	AWALSH	650.507.9811	2006-04-24 00:00:00	SH_CLERK	3100
181	Jean	Fleaur	JFLEAUR	650.507.9877	2006-02-23 00:00:00	SH_CLERK	3100
142	Curtis	Davies	CDAVIES	650.121.2994	2005-01-29 00:00:00	ST_CLERK	3100
138	Stephen	Stiles	SSTILES	650.121.2034	2005-10-26 00:00:00	ST_CLERK	3200
180	Winston	Taylor	WTAYLOR	650.507.9876	2006-01-24 00:00:00	SH_CLERK	3200
194	Samuel	McCain	SMCCAIN	650.501.3876	2006-07-01 00:00:00	SH_CLERK	3200
125	Julia	Nayer	JNAYER	650.124.1214	2005-07-16 00:00:00	ST_CLERK	3200
129	Laura	Bissot	LBISSOT	650.124.5234	2005-08-20 00:00:00	ST_CLERK	3300
133	Jason	Mallin	JMALLIN	650.127.1934	2004-06-14 00:00:00	ST_CLERK	3300
186	Julia	Dellinger	JDELLING	650.509.3876	2006-06-24 00:00:00	SH_CLERK	3400
141	Trenna	Rajs	TRAJS	650.121.8009	2003-10-17 00:00:00	ST_CLERK	3500
189	Jennifer	Dilly	JDILLY	650.505.2876	2005-08-13 00:00:00	SH_CLERK	3600
137	Renske	Ladwig	RLADWIG	650.121.1234	2003-07-14 00:00:00	ST_CLERK	3600
188	Kelly	Chung	KCHUNG	650.505.1876	2005-06-14 00:00:00	SH_CLERK	3800
193	Britney	Everett	BEVERETT	650.501.2876	2005-03-03 00:00:00	SH_CLERK	3900
192	Sarah	Bell	SBELL	650.501.1876	2004-02-04 00:00:00	SH_CLERK	4000

# 1. SQL 연산자

## (3) 비교 연산자

### · 부등호 연산자

**SELECT \***

**FROM employees**

**WHERE salary < 3000**

**ORDER BY salary desc;**

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY
116	Shelli	Baida	SBAIDA	515.127.4563	2005-12-24 00:00:00	PU_CLERK	2900
190	Timothy	Gates	TGATES	650.505.3876	2006-07-11 00:00:00	SH_CLERK	2900
134	Michael	Rogers	MROGERS	650.127.1834	2006-08-26 00:00:00	ST_CLERK	2900
195	Vance	Jones	VJONES	650.501.4876	2007-03-17 00:00:00	SH_CLERK	2800
183	Girard	Geoni	GGEONI	650.507.9879	2008-02-03 00:00:00	SH_CLERK	2800
117	Sigal	Tobias	STOBIAS	515.127.4564	2005-07-24 00:00:00	PU_CLERK	2800
130	Mozhe	Atkinson	MATKINSO	650.124.6234	2005-10-30 00:00:00	ST_CLERK	2800
139	John	Seo	JSEO	650.121.2019	2006-02-12 00:00:00	ST_CLERK	2700
126	Irene	Mikkilineni	IMIKKILI	650.124.1224	2006-09-28 00:00:00	ST_CLERK	2700
118	Guy	Himuro	GHIMURO	515.127.4565	2006-11-15 00:00:00	PU_CLERK	2600
199	Douglas	Grant	DGRANT	650.507.9844	2008-01-13 00:00:00	SH_CLERK	2600
143	Randall	Matos	RMATOS	650.121.2874	2006-03-15 00:00:00	ST_CLERK	2600
198	Donald	OConnell	DOCONNEL	650.507.9833	2007-06-21 00:00:00	SH_CLERK	2600
131	James	Marlow	JAMRLOW	650.124.7234	2005-02-16 00:00:00	ST_CLERK	2500
119	Karen	Colmenares	KCOLMENA	515.127.4566	2007-08-10 00:00:00	PU_CLERK	2500
191	Randall	Perkins	RPERKINS	650.505.4876	2007-12-19 00:00:00	SH_CLERK	2500
182	Martha	Sullivan	MSULLIVA	650.507.9878	2007-06-21 00:00:00	SH_CLERK	2500
144	Peter	Vargas	PVARGAS	650.121.2004	2006-07-09 00:00:00	ST_CLERK	2500
146	John	Deena	JDEENA	650.121.1834	2006-04-06 00:00:00	ST_CLERK	2500



# 1. SQL 연산자

## (3) 비교 연산자

### · 부등호 연산자

**SELECT \***

**FROM employees**

**WHERE salary <= 3000**

**ORDER BY salary desc;**

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY
197	Kevin	Feeney	KFEENEY	650.507.9822	2006-05-23 00:00:00	SH_CLERK	3000
187	Anthony	Cabrio	ACABRIO	650.509.4876	2007-02-07 00:00:00	SH_CLERK	3000
134	Michael	Rogers	MROGERS	650.127.1834	2006-08-26 00:00:00	ST_CLERK	2900
190	Timothy	Gates	TGATES	650.505.3876	2006-07-11 00:00:00	SH_CLERK	2900
116	Shelli	Baida	SBAIDA	515.127.4563	2005-12-24 00:00:00	PU_CLERK	2900
117	Sigal	Tobias	STOBIAS	515.127.4564	2005-07-24 00:00:00	PU_CLERK	2800
195	Vance	Jones	VJONES	650.501.4876	2007-03-17 00:00:00	SH_CLERK	2800
183	Girard	Geoni	GGEONI	650.507.9879	2008-02-03 00:00:00	SH_CLERK	2800
130	Mozhe	Atkinson	MATKINSO	650.124.6234	2005-10-30 00:00:00	ST_CLERK	2800
126	Irene	Mikkilineni	IMIKKILI	650.124.1224	2006-09-28 00:00:00	ST_CLERK	2700
139	John	Seo	JSEO	650.121.2019	2006-02-12 00:00:00	ST_CLERK	2700
118	Guy	Himuro	GHIMURO	515.127.4565	2006-11-15 00:00:00	PU_CLERK	2600
143	Randall	Matos	RMATOS	650.121.2874	2006-03-15 00:00:00	ST_CLERK	2600
199	Douglas	Grant	DGRANT	650.507.9844	2008-01-13 00:00:00	SH_CLERK	2600
198	Donald	OConnell	DOCONNEL	650.507.9833	2007-06-21 00:00:00	SH_CLERK	2600
182	Martha	Sullivan	MSULLIVA	650.507.9878	2007-06-21 00:00:00	SH_CLERK	2500
144	Peter	Vargas	PVARGAS	650.121.2004	2006-07-09 00:00:00	ST_CLERK	2500



# 1. SQL 연산자

## (3) 비교 연산자

### · 부등호 연산자

```
SELECT *  
  FROM employees  
 WHERE salary >= 3000  
        AND salary <= 5000  
 ORDER BY salary;
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY
187	Anthony	Cabrio	ACABRIO	650.509.4876	2007-02-07 00:00:00	SH_CLERK	3000
197	Kevin	Feeney	KFEENEY	650.507.9822	2006-05-23 00:00:00	SH_CLERK	3000
142	Curtis	Davies	CDAVIES	650.121.2994	2005-01-29 00:00:00	ST_CLERK	3100
181	Jean	Fleaur	JFLEAUR	650.507.9877	2006-02-23 00:00:00	SH_CLERK	3100
115	Alexander	Khoo	AKHOO	515.127.4562	2003-05-18 00:00:00	PU_CLERK	3100
196	Alana	Walsh	AWALSH	650.507.9811	2006-04-24 00:00:00	SH_CLERK	3100

107	Diana	Lorentz	DLORENTZ	590.423.5567	2007-02-07 00:00:00	IT_PROG	4200
184	Nandita	Sarchand	NSARCHAN	650.509.1876	2004-01-27 00:00:00	SH_CLERK	4200
200	Jennifer	Whalen	JWHALEN	515.123.4444	2003-09-17 00:00:00	AD_ASST	4400
106	Valli	Pataballa	VPATABAL	590.423.4560	2006-02-05 00:00:00	IT_PROG	4800
105	David	Austin	DAUSTIN	590.423.4569	2005-06-25 00:00:00	IT_PROG	4800

# 1. SQL 연산자

## (3) 비교 연산자

### · BETWEEN AND 연산자

SELECT \*

FROM employees

WHERE salary BETWEEN 3000

AND 5000

ORDER BY salary;

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY
187	Anthony	Cabrio	ACABRIO	650.509.4876	2007-02-07 00:00:00	SH_CLERK	3000
197	Kevin	Feeney	KFEENEY	650.507.9822	2006-05-23 00:00:00	SH_CLERK	3000
142	Curtis	Davies	CDAVIES	650.121.2994	2005-01-29 00:00:00	ST_CLERK	3100
181	Jean	Fleaur	JFLEAUR	650.507.9877	2006-02-23 00:00:00	SH_CLERK	3100
115	Alexander	Khoo	AKHOO	515.127.4562	2003-05-18 00:00:00	PU_CLERK	3100
196	Alana	Walsh	AWALSH	650.507.9811	2006-04-24 00:00:00	SH_CLERK	3100

107	Diana	Lorentz	DLORENTZ	590.423.5567	2007-02-07 00:00:00	IT_PROG	4200
184	Nandita	Sarchand	NSARCHAN	650.509.1876	2004-01-27 00:00:00	SH_CLERK	4200
200	Jennifer	Whalen	JWHALEN	515.123.4444	2003-09-17 00:00:00	AD_ASST	4400
106	Valli	Pataballa	VPATABAL	590.423.4560	2006-02-05 00:00:00	IT_PROG	4800
105	David	Austin	DAUSTIN	590.423.4569	2005-06-25 00:00:00	IT_PROG	4800

# 1. SQL 연산자

## (3) 비교 연산자

### · NOT 연산자

```
SELECT *  
  FROM employees  
 WHERE NOT ( salary = 2500)  
ORDER BY salary;
```

EMPLOY...	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY
132	TJ	Olson	TJOLSON	650.124.8234	2007-04-10 00:00:00	ST_CLERK	2100
128	Steven	Markle	SMARKLE	650.124.1434	2008-03-08 00:00:00	ST_CLERK	2200
136	Hazel	Philtanker	HPHILTAN	650.127.1634	2008-02-06 00:00:00	ST_CLERK	2200
127	James	Landry	JLANDRY	650.124.1334	2007-01-14 00:00:00	ST_CLERK	2400
135	Ki	Gee	KGEE	650.127.1734	2007-12-12 00:00:00	ST_CLERK	2400
199	Douglas	Grant	DGRANT	650.507.9844	2008-01-13 00:00:00	SH_CLERK	2600
198	Donald	OConnell	DOCONNEL	650.507.9833	2007-06-21 00:00:00	SH_CLERK	2600
143	Randall	Matos	RMATOS	650.121.2874	2006-03-15 00:00:00	ST_CLERK	2600
118	Guy	Himuro	GHIMURO	515.127.4565	2006-11-15 00:00:00	PU_CLERK	2600
139	John	Seo	JSEO	650.121.2019	2006-02-12 00:00:00	ST_CLERK	2700
126	Irene	Mikkilineni	IMIKKILI	650.124.1224	2006-09-28 00:00:00	ST_CLERK	2700
105	-	-	-	650.504.4356	2007-03-15 00:00:00	-	2800

# 1. SQL 연산자

## (3) 기타 연산자

- NULL 연산자 : **IS NULL, IS NOT NULL**
- col1 값이 NULL인지 체크
  - col1 = NULL **(X)**
  - col1 IS NULL **(O)**
- NULL은 공백(' ')이 아님
- 오라클에서는 NULL과 empty string("") 을 동일시 함 ( 다른 DBMS에서는 구별)

# 1. SQL 연산자

## (3) 기타 연산자

- **LIKE** : 문자열 비교
  - last\_name like 'da%'
  - last\_name like '%d'
  - '%' 는 모든 문자를 의미
- **IN** : 컬럼 IN (값1, 값2, 값3, ...) → OR와 동일한 동작
- 집합(SET) 연산자 : **UNION, UNION ALL, INTERSECT, MINUS, ...**
- **EXISTS**

# 1. SQL 연산자

## (4) 기타 연산자

### · NULL 비교1

```
SELECT *  
FROM employees  
WHERE commission_pct = NULL;
```

EMPLO...	FIRST_N...	LAST_N...	EMAIL	PHONE_...	HIRE_DA...	JOB_ID	SALARY	COMMI...	MANAG...	DEPART...
----------	------------	-----------	-------	-----------	------------	--------	--------	----------	----------	-----------

# 1. SQL 연산자

## (4) 기타 연산자

### · NULL 비교2

SELECT \*

FROM employees

WHERE commission\_pct IS NULL;

EMPLOY...	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT
198	Donald	OConnell	DOCONNEL	650.507.9833	2007-06-21 00:00:00	SH_CLERK	2600	(null)
199	Douglas	Grant	DGRANT	650.507.9844	2008-01-13 00:00:00	SH_CLERK	2600	(null)
200	Jennifer	Whalen	JWHALEN	515.123.4444	2003-09-17 00:00:00	AD_ASST	4400	(null)
201	Michael	Hartstein	MHARTSTE	515.123.5555	2004-02-17 00:00:00	MK_MAN	13000	(null)
202	Pat	Fay	PFAY	603.123.6666	2005-08-17 00:00:00	MK_REP	6000	(null)
203	Susan	Mavris	SMAVRIS	515.123.7777	2002-06-07 00:00:00	HR_REP	6500	(null)
204	Hermann	Baer	HBAER	515.123.8888	2002-06-07 00:00:00	PR_REP	10000	(null)
205	Shelley	Higgins	SHIGGINS	515.123.8080	2002-06-07 00:00:00	AC_MGR	12008	(null)
206	William	Gietz	WGIETZ	515.123.8181	2002-06-07 00:00:00	AC_ACCOUNT	8300	(null)
100	Steven	King	SKING	515.123.4567	2003-06-17 00:00:00	AD_PRES	24000	(null)
101	Neena	Kochhar	NKOCHHAR	515.123.4568	2005-09-21 00:00:00	AD_VP	17000	(null)
102	Lex	De Haan	LDEHAAN	515.123.4569	2001-01-13 00:00:00	AD_VP	17000	(null)
103	Alexander	Hunold	AHUNOLD	590.423.4567	2006-01-03 00:00:00	TT_PROG	9000	(null)

# 1. SQL 연산자

## (4) 기타 연산자

### · NULL 비교3

SELECT \*

FROM employees

WHERE commission\_pct IS NOT NULL;

EMPLOY...	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT
145	John	Russell	JRUSSEL	011.44.1344.429268	2004-10-01 00:00:00	SA_MAN	14000	0.4
146	Karen	Partners	KPARTNER	011.44.1344.467268	2005-01-05 00:00:00	SA_MAN	13500	0.3
147	Alberto	Errazuriz	AERRAZUR	011.44.1344.429278	2005-03-10 00:00:00	SA_MAN	12000	0.3
148	Gerald	Cambrault	GCAMBRAU	011.44.1344.619268	2007-10-15 00:00:00	SA_MAN	11000	0.3
149	Eleni	Zlotkey	EZLOTKEY	011.44.1344.429018	2008-01-29 00:00:00	SA_MAN	10500	0.2
150	Peter	Tucker	PTUCKER	011.44.1344.129268	2005-01-30 00:00:00	SA_REP	10000	0.3
151	David	Bernstein	DBERNSTE	011.44.1344.345268	2005-03-24 00:00:00	SA_REP	9500	0.25
152	Peter	Hall	PHALL	011.44.1344.478968	2005-08-20 00:00:00	SA_REP	9000	0.25
153	Christopher	Olsen	COLSEN	011.44.1344.498718	2006-03-30 00:00:00	SA_REP	8000	0.2
154	Nanette	Cambrault	NCAMBRAU	011.44.1344.987668	2006-12-09 00:00:00	SA_REP	7500	0.2
155	Oliver	Tuvault	OTUVAULT	011.44.1344.486508	2007-11-23 00:00:00	SA_REP	7000	0.15
156	Janette	King	JKING	011.44.1345.429268	2004-01-30 00:00:00	SA_REP	10000	0.35
157	Patrick	Sully	PSULLY	011.44.1345.929268	2004-03-04 00:00:00	SA_REP	9500	0.35
158	Allan	McEwen	AMCEWEN	011.44.1345.829268	2004-08-01 00:00:00	SA_REP	9000	0.35
159	Lindsey	Smith	LSMITH	011.44.1345.729268	2005-03-10 00:00:00	SA_REP	8000	0.3
160	Louise	Doran	LDORAN	011.44.1345.629268	2005-12-15 00:00:00	SA_REP	7500	0.3
161	Sarath	Sewall	SSEWALL	011.44.1345.529268	2006-11-03 00:00:00	SA_REP	7000	0.25



# 1. SQL 연산자

## (4) 기타 연산자

### · LIKE 연산자

SELECT \*

FROM employees

WHERE phone\_number LIKE '011%';

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
145	John	Russell	JRUSSEL	011.44.1344.429268	2004-10-01 00:00:00	SA_MAN	14000	0.4	100	80
146	Karen	Partners	KPARTNER	011.44.1344.467268	2005-01-05 00:00:00	SA_MAN	13500	0.3	100	80
147	Alberto	Errazuriz	AERRAZUR	011.44.1344.429278	2005-03-10 00:00:00	SA_MAN	12000	0.3	100	80
148	Gerald	Cambrault	GCAMBRAU	011.44.1344.619268	2007-10-15 00:00:00	SA_MAN	11000	0.3	100	80
149	Eleni	Zlotkey	EZLOTKEY	011.44.1344.429018	2008-01-29 00:00:00	SA_MAN	10500	0.2	100	80
150	Peter	Tucker	PTUCKER	011.44.1344.129268	2005-01-30 00:00:00	SA_REP	10000	0.3	145	80
151	David	Bernstein	DBERNSTE	011.44.1344.345268	2005-03-24 00:00:00	SA_REP	9500	0.25	145	80
152	Peter	Hall	PHALL	011.44.1344.478968	2005-08-20 00:00:00	SA_REP	9000	0.25	145	80
153	Christopher	Olsen	COLSEN	011.44.1344.498718	2006-03-30 00:00:00	SA_REP	8000	0.2	145	80
154	Nanette	Cambrault	NCAMBRAU	011.44.1344.987668	2006-12-09 00:00:00	SA_REP	7500	0.2	145	80
155	Oliver	Tuvault	OTUVAULT	011.44.1344.486508	2007-11-23 00:00:00	SA_REP	7000	0.15	145	80
156	Janette	King	JKING	011.44.1345.429268	2004-01-30 00:00:00	SA_REP	10000	0.35	146	80
157	Patrick	Sully	PSULLY	011.44.1345.929268	2004-03-04 00:00:00	SA_REP	9500	0.35	146	80
158	Allan	McEwen	AMCEWEN	011.44.1345.829268	2004-08-01 00:00:00	SA_REP	9000	0.35	146	80
159	Lindsey	Smith	LSMITH	011.44.1345.729268	2005-03-10 00:00:00	SA_REP	8000	0.3	146	80
160	Louise	Doran	LDORAN	011.44.1345.629268	2005-12-15 00:00:00	SA_REP	7500	0.3	146	80
161	Sarath	Sewall	SSEWALL	011.44.1345.529268	2006-11-03 00:00:00	SA_REP	7000	0.25	146	80
162	Clara	Vishney	CVISHNEY	011.44.1346.129268	2005-11-11 00:00:00	SA_REP	10500	0.25	147	80

# 1. SQL 연산자

## (4) 기타 연산자

### · LIKE 연산자

SELECT \*

FROM employees

WHERE phone\_number LIKE '%9';

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
102	Lex	De Haan	LDEHAAN	515.123.4569	2001-01-13 00:00:00	AD_VP	17000	(null)	100	90
105	David	Austin	DAUSTIN	590.423.4569	2005-06-25 00:00:00	IT_PROG	4800	(null)	103	60
108	Nancy	Greenberg	NGREENBE	515.124.4569	2002-08-17 00:00:00	FI_MGR	12008	(null)	101	100
109	Daniel	Faviet	DFAVIET	515.124.4169	2002-08-16 00:00:00	FI_ACCOUNT	9000	(null)	108	100
110	John	Chen	JCHEN	515.124.4269	2005-09-28 00:00:00	FI_ACCOUNT	8200	(null)	108	100
111	Ismael	Sciarra	ISCIARRA	515.124.4369	2005-09-30 00:00:00	FI_ACCOUNT	7700	(null)	108	100
112	Jose Manuel	Urman	JMURMAN	515.124.4469	2006-03-07 00:00:00	FI_ACCOUNT	7800	(null)	108	100
139	John	Seo	JSEO	650.121.2019	2006-02-12 00:00:00	ST_CLERK	2700	(null)	123	50
141	Trenna	Rajs	TRAJS	650.121.8009	2003-10-17 00:00:00	ST_CLERK	3500	(null)	124	50
183	Girard	Geoni	GGEONI	650.507.9879	2008-02-03 00:00:00	SH_CLERK	2800	(null)	120	50

# 1. SQL 연산자

## (4) 기타 연산자

### · LIKE 연산자

SELECT \*

FROM employees

WHERE phone\_number LIKE '%124%';

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
108	Nancy	Greenberg	NGREENBE	515.124.4569	2002-08-17 00:00:00	FI_MGR	12008	(null)	101	100
109	Daniel	Faviet	DFAVIET	515.124.4169	2002-08-16 00:00:00	FI_ACCOUNT	9000	(null)	108	100
110	John	Chen	JCHEN	515.124.4269	2005-09-28 00:00:00	FI_ACCOUNT	8200	(null)	108	100
111	Ismael	Sciarra	ISCIARRA	515.124.4369	2005-09-30 00:00:00	FI_ACCOUNT	7700	(null)	108	100
112	Jose Manuel	Urman	JMURMAN	515.124.4469	2006-03-07 00:00:00	FI_ACCOUNT	7800	(null)	108	100
113	Luis	Popp	LPOPP	515.124.4567	2007-12-07 00:00:00	FI_ACCOUNT	6900	(null)	108	100
125	Julia	Nayer	JNAYER	650.124.1214	2005-07-16 00:00:00	ST_CLERK	3200	(null)	120	50
126	Irene	Mikkilineni	IMIKKILI	650.124.1224	2006-09-28 00:00:00	ST_CLERK	2700	(null)	120	50
127	James	Landry	JLANDRY	650.124.1334	2007-01-14 00:00:00	ST_CLERK	2400	(null)	120	50
128	Steven	Markle	SMARKLE	650.124.1434	2008-03-08 00:00:00	ST_CLERK	2200	(null)	120	50
129	Laura	Bissot	LBISSOT	650.124.5234	2005-08-20 00:00:00	ST_CLERK	3300	(null)	121	50
130	Mozhe	Atkinson	MATKINSO	650.124.6234	2005-10-30 00:00:00	ST_CLERK	2800	(null)	121	50
131	James	Marlow	JAMLOW	650.124.7234	2005-02-16 00:00:00	ST_CLERK	2500	(null)	121	50
132	TJ	Olson	TJOLSON	650.124.8234	2007-04-10 00:00:00	ST_CLERK	2100	(null)	121	50

# 1. SQL 연산자

## (4) 기타 연산자

### · IN 연산자

SELECT \*

FROM employees

WHERE JOB\_ID IN ('IT\_PROG', 'AD\_VP', 'FI\_ACCOUNT');

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
101	Neena	Kochhar	NKOCHHAR	515.123.4568	2005-09-21 00:00:00	AD_VP	17000	(null)	100	90
102	Lex	De Haan	LDEHAAN	515.123.4569	2001-01-13 00:00:00	AD_VP	17000	(null)	100	90
109	Daniel	Faviet	DFAVIET	515.124.4169	2002-08-16 00:00:00	FI_ACCOUNT	9000	(null)	108	100
110	John	Chen	JCHEN	515.124.4269	2005-09-28 00:00:00	FI_ACCOUNT	8200	(null)	108	100
111	Ismael	Sciarra	ISCIARRA	515.124.4369	2005-09-30 00:00:00	FI_ACCOUNT	7700	(null)	108	100
112	Jose Manuel	Urman	JMURMAN	515.124.4469	2006-03-07 00:00:00	FI_ACCOUNT	7800	(null)	108	100
113	Luis	Popp	LPOPP	515.124.4567	2007-12-07 00:00:00	FI_ACCOUNT	6900	(null)	108	100
103	Alexander	Hunold	AHUNOLD	590.423.4567	2006-01-03 00:00:00	IT_PROG	9000	(null)	102	60
104	Bruce	Ernst	BERNST	590.423.4568	2007-05-21 00:00:00	IT_PROG	6000	(null)	103	60
105	David	Austin	DAUSTIN	590.423.4569	2005-06-25 00:00:00	IT_PROG	4800	(null)	103	60
106	Valli	Pataballa	VPATABAL	590.423.4560	2006-02-05 00:00:00	IT_PROG	4800	(null)	103	60
107	Diana	Lorentz	DLORENTZ	590.423.5567	2007-02-07 00:00:00	IT_PROG	4200	(null)	103	60

# 1. SQL 연산자

## (4) 기타 연산자

### · IN 연산자

SELECT \*

FROM employees

WHERE JOB\_ID NOT IN ('IT\_PROG', 'AD\_VP', 'FI\_ACCOUNT');

EMPLOY...	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
198	Donald	OConnell	DOCONNEL	650.507.9833	2007-06-21 00:00:00	SH_CLERK	2600	(null)	124	50
199	Douglas	Grant	DGRANT	650.507.9844	2008-01-13 00:00:00	SH_CLERK	2600	(null)	124	50
200	Jennifer	Whalen	JWHALEN	515.123.4444	2003-09-17 00:00:00	AD_ASST	4400	(null)	101	10
201	Michael	Hartstein	MHARTSTE	515.123.5555	2004-02-17 00:00:00	MK_MAN	13000	(null)	100	20
202	Pat	Fay	PFAY	603.123.6666	2005-08-17 00:00:00	MK_REP	6000	(null)	201	20
203	Susan	Mavris	SMAVRIS	515.123.7777	2002-06-07 00:00:00	HR_REP	6500	(null)	101	40
204	Hermann	Baer	HBAER	515.123.8888	2002-06-07 00:00:00	PR_REP	10000	(null)	101	70
205	Shelley	Higgins	SHIGGINS	515.123.8080	2002-06-07 00:00:00	AC_MGR	12008	(null)	101	110
206	William	Gietz	WGIEZT	515.123.8181	2002-06-07 00:00:00	AC_ACCOUNT	8300	(null)	205	110
100	Steven	King	SKING	515.123.4567	2003-06-17 00:00:00	AD_PRES	24000	(null)	(null)	90
108	Nancy	Greenberg	NGREENBE	515.124.4569	2002-08-17 00:00:00	FI_MGR	12008	(null)	101	100
114	Den	Raphaely	DRAPHEAL	515.127.4561	2002-12-07 00:00:00	PU_MAN	11000	(null)	100	30
115	Alexander	Khoo	AKHOO	515.127.4562	2003-05-18 00:00:00	PU_CLERK	3100	(null)	114	30
116	Shelli	Baida	SBAIDA	515.127.4563	2005-12-24 00:00:00	PU_CLERK	2900	(null)	114	30
117	Sigal	Tobias	STOBIAS	515.127.4564	2005-07-24 00:00:00	PU_CLERK	2800	(null)	114	30
118	Guy	Himuro	GHIMURO	515.127.4565	2006-11-15 00:00:00	PU CLERK	2600	(null)	114	30

## 2. SQL 표현식 (expression)

### (1) 개요

- 1개 이상의 값, 연산자, 컬럼, SQL 함수가 결합된 식
- $1+1$ ,  $2*2$ , 컬럼1 || 컬럼2 등이 하나의 표현식
- SELECT, WHERE, ORDER BY 절 등에서 사용됨
- 오라클에서는 다양한 종류의 표현식 제공

## 2. SQL 표현식

### (2) CASE 표현식

- IF ~ THEN ~ ELSE 로직을 구현한 표현식
- 여러 조건을 체크해 조건별 값을 반환하는 표현식
- 단순형과 검색형이 있음

## 2. SQL 표현식

### (3) 단순형 CASE 표현식

```
· CASE expr WHEN 비교표현식1 THEN 값1  
            WHEN 비교표현식2 THEN 값2  
            ....  
            ELSE 값n  
  
END
```

- expr이 비교표현식1과 같으면 값1, 비교표현식2와 같으면 값2를 반환  
어느 비교표현식과도 같지 않으면 ELSE 다음의 값n을 반환



## 2. SQL 표현식

### (4) 검색형 CASE 표현식

```
· CASE WHEN 조건1 THEN 값1  
    WHEN 조건2 THEN 값2  
    ....  
    ELSE 값n  
END
```

- 조건1을 만족하면 값1, 조건2를 만족하면 값2를 반환  
어느 조건도 만족하지 않으면 ELSE 다음의 값n을 반환
- 단순형에 비해 다양한 조건 검색이 가능해 그 활용범위가 더 넓음

## 2. SQL 표현식

### (5) CASE 표현식 특징

- 반환하는 값의 데이터 유형이 모두 같아야 함  
( THEN과 ELSE 다음은 값 뿐만 아니라 표현식이 올 수 있음)
- ELSE는 생략이 가능
- 비교 데이터 기준 특정 WHEN절 조건이 참이면 이후 조건은 체크하지 않음

## 2. SQL 표현식

### · 단순형 CASE

```
SELECT country_id
       ,country_name
       ,CASE region_id WHEN 1 THEN '유럽'
                       WHEN 2 THEN '아메리카'
                       WHEN 3 THEN '아시아'
                       WHEN 4 THEN '중동 및 아프리카'
       END AS region_name
FROM countries;
```

COUNTRY_ID	COUNTRY_NAME	REGION_NAME
AR	Argentina	아메리카
AU	Australia	아시아
BE	Belgium	유럽
BR	Brazil	아메리카
CA	Canada	아메리카
CH	Switzerland	유럽
CN	China	아시아
DE	Germany	유럽
DK	Denmark	유럽
EG	Egypt	중동 및 아프리카
FR	France	유럽
IL	Israel	중동 및 아프리카
IN	India	아시아
IT	Italy	유럽
JP	Japan	아시아
KW	Kuwait	중동 및 아프리카
ML	Malaysia	아시아
...	...	...

## 2. SQL 표현식

### · 검색형 CASE 1

```
SELECT employee_id, first_name, last_name, salary, job_id
      ,CASE WHEN salary BETWEEN 1      AND 5000 THEN '낮음'
            WHEN salary BETWEEN 5001  AND 10000 THEN '중간'
            WHEN salary BETWEEN 10000 AND 15000 THEN '높음'
            ELSE '최상위'
      END salary_rank
FROM employees;
```

## 2. SQL 표현식

### · 검색형 CASE 1 - 결과

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	SALARY	JOB_ID	SALARY_RANK
198	Donald	OConnell	2600	SH_CLERK	낮음
199	Douglas	Grant	2600	SH_CLERK	낮음
200	Jennifer	Whalen	4400	AD_ASST	낮음
201	Michael	Hartstein	13000	MK_MAN	높음
202	Pat	Fay	6000	MK_REP	중간
203	Susan	Mavris	6500	HR_REP	중간
204	Hermann	Baer	10000	PR_REP	중간
205	Shelley	Higgins	12008	AC_MGR	높음
206	William	Gietz	8300	AC_ACCOUNT	중간
100	Steven	King	24000	AD_PRES	최상위
101	Neena	Kochhar	17000	AD_VP	최상위
102	Lex	De Haan	17000	AD_VP	최상위
103	Alexander	Hunold	9000	IT_PROG	중간
104	Bruce	Ernst	6000	IT_PROG	중간
105	David	Austin	4800	IT_PROG	낮음
106	Valli	Pataballa	4800	IT_PROG	낮음
107	Diana	Lorentz	4200	IT_PROG	낮음
108	Nancy	Greenberg	12008	FI_MGR	높음
109	Daniel	Faviet	9000	FI_ACCOUNT	중간

## 2. SQL 표현식

### · 검색형 CASE 2

```
SELECT employee_id, first_name, last_name, salary, job_id
      ,CASE WHEN salary BETWEEN 1      AND 5000 THEN '낮음'
            WHEN salary BETWEEN 5001  AND 10000 THEN '중간'
            WHEN salary BETWEEN 10000 AND 15000 THEN '높음'
            ELSE 9
      END salary_rank
FROM employees;
```

```
ORA-00932: 일관성 없는 데이터 유형: CHAR이(가) 필요하지만 NUMBER임
00932, 00000 - "inconsistent datatypes: expected %s got %s"
*Cause:
*Action:
6행, 11열에서 오류 발생
```

## 2. SQL 표현식

### · 검색형 CASE 3

```
SELECT employee_id, first_name, last_name, salary, job_id
      ,CASE WHEN salary BETWEEN 1    AND 5000 THEN 1
            WHEN salary BETWEEN 5001 AND 10000 THEN 2
            WHEN salary BETWEEN 10000 AND 15000 THEN 3
            ELSE 9
      END salary_rank
FROM employees;
```

## 2. SQL 표현식

### · 검색형 CASE 3 - 결과

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	SALARY	JOB_ID	SALARY_RANK
198	Donald	OConnell	2600	SH_CLERK	1
199	Douglas	Grant	2600	SH_CLERK	1
200	Jennifer	Whalen	4400	AD_ASST	1
201	Michael	Hartstein	13000	MK_MAN	3
202	Pat	Fay	6000	MK_REP	2
203	Susan	Mavris	6500	HR_REP	2
204	Hermann	Baer	10000	PR_REP	2
205	Shelley	Higgins	12008	AC_MGR	3
206	William	Gietz	8300	AC_ACCOUNT	2
100	Steven	King	24000	AD_PRES	9
101	Neena	Kochhar	17000	AD_VP	9
102	Lex	De Haan	17000	AD_VP	9
103	Alexander	Hunold	9000	IT_PROG	2
104	Bruce	Ernst	6000	IT_PROG	2
105	David	Austin	4800	IT_PROG	1
106	Valli	Pataballa	4800	IT_PROG	1
107	Diana	Lorentz	4200	IT_PROG	1
108	Nancy	Greenberg	12008	FI_MGR	3



### 3. 의사컬럼 (pseudocolumn)

- 테이블에 있는 컬럼 처럼 동작하지만 실제 컬럼은 아닌 가상 컬럼
- **ROWNUM** 의사컬럼
  - 쿼리 수행 후 조회된 각 로우에 대해 ROWNUM 의사컬럼은 그 순서를 가리키는 수를 반환
  - 첫 번째 선택된 로우는 1, 두 번째는 2, ... 순으로 증가됨
  - 주로 where 절에서 쿼리 결과로 반환되는 로우 수를 제어할 때 사용
- 이 외에도 계층형 쿼리, 시퀀스, XML 관련 의사컬럼이 있음

### 3. 의사컬럼 (pseudocolumn)

- ROWNUM

```
SELECT employee_id, first_name, last_name, rownum
FROM employees;
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	ROWNUM
100	Steven	King	1
101	Neena	Kochhar	2
102	Lex	De Haan	3
103	Alexander	Hunold	4
104	Bruce	Ernst	5
105	David	Austin	6
106	Valli	Pataballa	7
107	Diana	Lorentz	8
108	Nancy	Greenberg	9
109	Daniel	Faviet	10
110	John	Chen	11
111	Ismael	Sciarra	12
112	Jose Manuel	Urman	13
113	Luis	Popp	14
114	Den	Raphaely	15
115	Alexander	Khoo	16
116	Shelli	Baida	17
117	Sigal	Tobias	18
118	Guy	Himuro	19

### 3. 의사컬럼 (pseudocolumn)

- ROWNUM

```
SELECT employee_id, first_name, last_name, rownum
FROM employees
WHERE rownum <= 5;
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	ROWNUM
198	Donald	OConnell	1
199	Douglas	Grant	2
200	Jennifer	Whalen	3
201	Michael	Hartstein	4
202	Pat	Fay	5

# 학습정리

- SQL의 기본 연산자에는 수식, 문자열 결합, 비교 연산자, NULL 비교, LIKE, IN 연산자 등이 있다.
- 수식연산자는 수학에서 사용하는 연산자와 같은 기능을 하며 연산자 우선순위가 있다.
- 조건절에서 사용되는 비교 연산자로는 동등과 비동등연산자, 부등호 연산자, BETWEEN ... AND 연산자, AND, OR, NOT 연산자가 있다.
- 1개 이상의 값과 연산자, SQL 함수 등이 결합된 식을 표현식이라고 한다.
- 가장 대표적인 표현식인 CASE 표현식은 단순형과 검색형으로 나눌 수 있는데, 그 중에서 다양한 조건 체크가 가능한 검색형이 주로 사용된다.
- 오라클에서 제공하는 ROWNUM 의사컬럼은 실제 컬럼은 아니지만 컬럼처럼 동작하며 조회된 각 로우에 대한 순번을 반환한다.

## Quiz

1. Employees 테이블의 manager\_id 컬럼에는 해당 사원의 상관의 사번이 저장되어 있습니다. 따라서 가장 높은 직급인 사장은 이 컬럼에 값이 들어 있지 않습니다. 사장을 조회하는 쿼리를 작성해 보세요.

## Quiz

2. employees 테이블에는 인센티브 값이 있는 commission\_pct 컬럼이 있습니다. 그런데 commission\_pct를 모든 사원이 받는 것은 아니어서 이 컬럼 값이 null인 건이 존재합니다. Null인 건은 salary만, null이 아닌 건은  $\text{salary} + (\text{salary} * \text{commission\_pct})$  로 처리하는 Case 표현식을 작성해 보세요.

## Quiz

3. 다음 문장을 실행하면 조회되는 로우는 몇 건일까요?

```
SELECT employee_id, first_name, last_name  
FROM employees  
WHERE ROWNUM < 1;
```

## Quiz

**4. LOCATIONS 테이블에서 도시 이름이 S로 시작하는 건물 도시이름으로 내림차순 정렬해 조회하는 문장을 작성하시오.**



# Quiz

5. LOCATIONS 테이블에서 미국에 있는 사무실(country\_id 값이 US)에 우편물을 보내려고 주소를 작성하고자 합니다. 다음과 같은 형태로 결과가 조회되도록 문장을 작성하시오.

(우편번호 – 거리명 – 도시명 – 주명 – 국가코드 )

	주소	
1	1730 - 20 Rue des Corps-Saints - Geneva - Geneve - CH	
2	3095 - Murtenstrasse 921 - Bern - BE - CH	

# Quiz

6. 5번 문제에서 미국이 아닌 영국(country\_id값이 UK)에 있는 사무실 주소를 조회한 결과인데, 첫 번째 건의 우편번호가 없습니다. 우편번호가 없는 건을 제외하고 조회하는 문장을 작성하시오.

주소	
1	- 8204 Arthur St - London - - UK
2	09629850293 - 9702 Chester Road - Stretford - Manchester - UK
3	OX9 9ZB - Magdalen Centre, The Oxford Science Park - Oxford - Oxford - UK

# Quiz

7. 6번 문제에서 우편번호가 없는 건을 제외하는 대신 우편번호가 없는 건은 우편번호를 '99999'로 나오도록 조회하는 문장을 작성하시오.

	주소
1	09629850293 - 9702 Chester Road - Stretford - Manchester - UK
2	99999 - 8204 Arthur St - London - - UK
3	OX9 9ZB - Magdalen Centre, The Oxford Science Park - Oxford - Oxford - UK