

SQL Project

Fundamentals of Structured Query Language - 1

1. Retrieve all details of employees

```
SELECT * FROM employees;
```

	employee_id	first_name	last_name	email	phone_number	hire_date	job_id	salary	commission_pct	manager_id	department_id
▶	100	Steven	King	SKING	515.123.4567	1987-06-17	AD_PRES	24000	NULL	NULL	90
	101	Neena	Kochhar	NKOCHHAR	515.123.4568	1989-09-21	AD_VP	17000	NULL	100	90
	102	Lex	De Haan	LDEHAAN	515.123.4569	1993-01-13	AD_VP	17000	NULL	100	90
	103	Alexander	Hunold	AHUNOLD	590.423.4567	1990-01-03	IT_PROG	9000	NULL	102	60
	104	Bruce	Ernst	BERNST	590.423.4568	1991-05-21	IT_PROG	6000	NULL	103	60
	105	David	Austin	DAUSTIN	590.423.4569	1997-06-25	IT_PROG	4800	NULL	103	60
	106	Valli	Pataballa	VPATABAL	590.423.4560	1998-02-05	IT_PROG	4800	NULL	103	60
	107	Diana	Lorentz	DLORENTZ	590.423.5567	1999-02-07	IT_PROG	4200	NULL	103	60
	108	Nancy	Greenberg	NGREENBE	515.124.4569	1994-08-17	FI_MGR	12000	NULL	101	100
	109	Daniel	Faviet	DFAVIET	515.124.4169	1994-08-16	FI_ACCOUNT	9000	NULL	108	100
	110	John	Chen	JCHEN	515.124.4269	1997-09-28	FI_ACCOUNT	8200	NULL	108	100
	111	Ismael	Sciarra	ISCIARRA	515.124.4369	1997-09-30	FI_ACCOUNT	7700	NULL	108	100
	112	Jose Manuel	Urman	JMURMAN	515.124.4469	1998-03-07	FI_ACCOUNT	7800	NULL	108	100
	113	Luis	Popp	LPOPP	515.124.4567	1999-12-07	FI_ACCOUNT	6900	NULL	108	100
	114	Den	Raphaely	DRAPHEAL	515.127.4561	1994-12-07	PU_MAN	11000	NULL	100	30
	115	Alexander	Khoo	AKHOO	515.127.4562	1995-05-18	PU_CLERK	3100	NULL	114	30
	116	Shelli	Baida	SBAIDA	515.127.4563	1997-12-24	PU_CLERK	2900	NULL	114	30
	117	Sigal	Tobias	STOBIAS	515.127.4564	1997-07-24	PU_CLERK	2800	NULL	114	30
	118	Guy	Himuro	GHIMURO	515.127.4565	1998-11-15	PU_CLERK	2600	NULL	114	30
	119	Karen	Colmenares	KCOLMENA	515.127.4566	1999-08-10	PU_CLERK	2500	NULL	114	30
	120	Matthew	Weiss	MWEISS	650.123.1234	1996-07-18	ST_MAN	8000	NULL	100	50
	121	Adam	Fripp	AFRIPP	650.123.2234	1997-04-10	ST_MAN	8200	NULL	100	50
	122	Payam	Kaufling	PKAUFLIN	650.123.3234	1995-05-01	ST_MAN	7900	NULL	100	50
	123	Shanta	Vollman	SVOLLMAN	650.123.4234	1997-10-10	ST_MAN	6500	NULL	100	50
	124	Kevin	Mourgos	KMOURGOS	650.123.5234	1999-11-16	ST_MAN	5800	NULL	100	50
	125	Julia	Nayer	JNAYER	650.124.1214	1997-07-16	ST_CLERK	3200	NULL	120	50

2. Display the first name, last name, and email of all employees

```
SELECT first_name, last_name, email FROM employees;
```

	first_name	last_name	email
►	Steven	King	SKING
	Neena	Kochhar	NKOCHHAR
	Lex	De Haan	LDEHAAN
	Alexander	Hunold	AHUNOLD
	Bruce	Ernst	BERNST
	David	Austin	DAUSTIN
	Valli	Pataballa	VPATABAL
	Diana	Lorentz	DLORENTZ
	Nancy	Greenberg	NGREENBE
	Daniel	Faviet	DFAVIET
	John	Chen	JCHEN
	Ismael	Sciarra	ISCIARRA
	Jose Manuel	Urman	JMURMAN
	Luis	Popp	LPOPP
	Den	Raphaely	DRAPHEAL
	Alexander	Khoo	AKHOO
	Shelli	Baida	SBAIDA
	Sigal	Tobias	STOBIAS
	Guy	Himuro	GHIMURO
	Karen	Colmenares	KCOLMENA

3. Retrieve the distinct job titles from the jobs table

```
SELECT DISTINCT job_title FROM jobs;
```

	job_title
►	Public Accountant
	Accounting Manager
	Administration Assistant
	President
	Administration Vice President
	Accountant
	Finance Manager
	Human Resources Representative
	Programmer
	Marketing Manager
	Marketing Representative
	Public Relations Representative
	Purchasing Clerk
	Purchasing Manager
	Sales Manager
	Sales Representative
	Shipping Clerk
	Stock Clerk
	Stock Manager

4. Find the total number of employees in the company

```
SELECT COUNT(*) AS total_employees FROM employees;
```

	total_employees
▶	107

5. Retrieve the employees who were hired after January 1, 2015

```
SELECT * FROM employees WHERE hire_date > '2015-01-01';
```

[illegible]

[illegible]

```
SELECT * FROM employees WHERE commission_pct IS NULL OR commission_pct = 0;
```

	employee_id	first_name	last_name	email	phone_number	hire_date	job_id	salary	commission_pct	manager_id	department_id
▶	100	Steven	King	SKING	515.123.4567	1987-06-17	AD_PRES	24000	NULL	NULL	90
	101	Neena	Kochhar	NKOCHHAR	515.123.4568	1989-09-21	AD_VP	17000	NULL	100	90
	102	Lex	De Haan	LDEHAAN	515.123.4569	1993-01-13	AD_VP	17000	NULL	100	90
	103	Alexander	Hunold	AHUNOLD	590.423.4567	1990-01-03	IT_PROG	9000	NULL	102	60
	104	Bruce	Ernst	BERNST	590.423.4568	1991-05-21	IT_PROG	6000	NULL	103	60
	105	David	Austin	DAUSTIN	590.423.4569	1997-06-25	IT_PROG	4800	NULL	103	60
	106	Valli	Pataballa	VPATABAL	590.423.4560	1998-02-05	IT_PROG	4800	NULL	103	60
	107	Diana	Lorentz	DLORENTZ	590.423.5567	1999-02-07	IT_PROG	4200	NULL	103	60
	108	Nancy	Greenberg	NGREENBE	515.124.4569	1994-08-17	FI_MGR	12000	NULL	101	100
	109	Daniel	Faviet	DFAVIET	515.124.4169	1994-08-16	FI_ACCOUNT	9000	NULL	108	100
	110	John	Chen	JCHEN	515.124.4269	1997-09-28	FI_ACCOUNT	8200	NULL	108	100
	111	Ismael	Sciarra	ISCIARRA	515.124.4369	1997-09-30	FI_ACCOUNT	7700	NULL	108	100
	112	Jose Manuel	Urman	JMURMAN	515.124.4469	1998-03-07	FI_ACCOUNT	7800	NULL	108	100
	113	Luis	Popp	LPOPP	515.124.4567	1999-12-07	FI_ACCOUNT	6900	NULL	108	100
	114	Den	Raphaely	DRAPHEAL	515.127.4561	1994-12-07	PU_MAN	11000	NULL	100	30
	115	Alexander	Khoo	AKHOO	515.127.4562	1995-05-18	PU_CLERK	3100	NULL	114	30
	116	Shelli	Baida	SBAIDA	515.127.4563	1997-12-24	PU_CLERK	2900	NULL	114	30
	117	Sigal	Tobias	STOBIAS	515.127.4564	1997-07-24	PU_CLERK	2800	NULL	114	30
	118	Guy	Himuro	GHIMURO	515.127.4565	1998-11-15	PU_CLERK	2600	NULL	114	30
	119	Karen	Colmenares	KCOLMENA	515.127.4566	1999-08-10	PU_CLERK	2500	NULL	114	30

```
SELECT * FROM employees ORDER BY salary DESC LIMIT 5;
```

[illegible]

SQL Functions

11. Find the average salary of all employees

```
SELECT AVG(salary) AS avg_salary FROM employees;
```

	avg_salary
▶	6461.682242990654

12. Retrieve the total number of employees working in each department

```
SELECT department_id, COUNT(*) AS employee_count FROM employees GROUP BY department_id;
```

	department_id	employee_count
▶	NULL	1
	10	1
	20	2
	30	6
	40	1
	50	45
	60	5
	70	1
	80	34
	90	3
	100	6
	110	2

13. Display the employee's first name and the length of their first name

```
SELECT first_name, LENGTH(first_name) AS name_length FROM employees;
```

	first_name	name_length
►	Steven	6
	Neena	5
	Lex	3
	Alexander	9
	Bruce	5
	David	5
	Valli	5
	Diana	5
	Nancy	5
	Daniel	6
	John	4
	Ismael	6
	Jose Manuel	11
	Luis	4
	Den	3
	Alexander	9
	Shelli	6
	Sigal	5
	Guy	3
	Karen	5
	Matthew	7

14. Convert the hire_date of employees to display only the year

```
SELECT first_name, last_name, YEAR(hire_date) AS hire_year FROM employees;
```

	first_name	last_name	hire_year
►	Steven	King	1987
	Neena	Kochhar	1989
	Lex	De Haan	1993
	Alexander	Hunold	1990
	Bruce	Ernst	1991
	David	Austin	1997
	Valli	Pataballa	1998
	Diana	Lorentz	1999
	Nancy	Greenberg	1994
	Daniel	Faviet	1994
	John	Chen	1997
	Ismael	Sciarra	1997
	Jose Manuel	Urman	1998
	Luis	Popp	1999
	Den	Raphaely	1994
	Alexander	Khoo	1995
	Shelli	Baida	1997
	Sigal	Tobias	1997
	Guy	Himuro	1998
	Karen	Colmenares	1999
	Matthew	Weiss	1996
	Adam	Fripp	1997
	Payam	Kaufling	1995
	Shanta	Vollman	1997
	Kevin	Mourgos	1999

15. Retrieve the minimum and maximum salary for each job title

```
SELECT j.job_title, MIN(e.salary) AS min_salary, MAX(e.salary) AS  
max_salary
```

```
FROM employees e
```

```
JOIN jobs j ON e.job_id = j.job_id
```

```
GROUP BY j.job_title;
```

	job_title	min_salary	max_salary
►	Public Accountant	8300	8300
	Accounting Manager	12000	12000
	Administration Assistant	4400	4400
	President	24000	24000
	Administration Vice President	17000	17000
	Accountant	6900	9000
	Finance Manager	12000	12000
	Human Resources Representative	6500	6500
	Programmer	4200	9000
	Marketing Manager	13000	13000
	Marketing Representative	6000	6000
	Public Relations Representative	10000	10000
	Purchasing Clerk	2500	3100
	Purchasing Manager	11000	11000
	Sales Manager	10500	14000
	Sales Representative	6100	11500
	Shipping Clerk	2500	4200
	Stock Clerk	2100	3600
	Stock Manager	5800	8200

SQL Tables, Joins

16. Retrieve the employee names along with their department names

```
SELECT e.first_name, e.last_name, d.department_name  
FROM employees e  
JOIN departments d ON e.department_id = d.department_id;
```

	first_name	last_name	department_name
►	Jennifer	Whalen	Administration
	Michael	Hartstein	Marketing
	Pat	Fay	Marketing
	Den	Raphaely	Purchasing
	Alexander	Khoo	Purchasing
	Shelli	Baida	Purchasing
	Sigal	Tobias	Purchasing
	Guy	Himuro	Purchasing
	Karen	Colmenares	Purchasing
	Susan	Mavris	Human Resources
	Matthew	Weiss	Shipping
	Adam	Fripp	Shipping
	Payam	Kaufling	Shipping
	Shanta	Vollman	Shipping
	Kevin	Mourgos	Shipping
	Julia	Nayer	Shipping
	Irene	Mikkilineni	Shipping
	James	Landry	Shipping
	Steven	Markle	Shipping
	Laura	Bissot	Shipping

17. List the employees along with their job titles and the location of their department

```
SELECT e.first_name, e.last_name, j.job_title, l.city
FROM employees e
JOIN jobs j ON e.job_id = j.job_id
JOIN departments d ON e.department_id = d.department_id
JOIN locations l ON d.location_id = l.location_id;
```

	first_name	last_name	job_title	city
►	William	Gietz	Public Accountant	Seattle
	Shelley	Higgins	Accounting Manager	Seattle
	Jennifer	Whalen	Administration Assistant	Seattle
	Steven	King	President	Seattle
	Neena	Kochhar	Administration Vice President	Seattle
	Lex	De Haan	Administration Vice President	Seattle
	Daniel	Faviet	Accountant	Seattle
	John	Chen	Accountant	Seattle
	Ismael	Sciarra	Accountant	Seattle
	Jose Manuel	Urman	Accountant	Seattle
	Luis	Popp	Accountant	Seattle
	Nancy	Greenberg	Finance Manager	Seattle
	Susan	Mavris	Human Resources Represen...	London
	Alexander	Hunold	Programmer	Southl...
	Bruce	Ernst	Programmer	Southl...
	David	Austin	Programmer	Southl...
	Valli	Pataballa	Programmer	Southl...
	Diana	Lorentz	Programmer	Southl...
	Michael	Hartstein	Marketing Manager	Toronto

18. Retrieve the department names along with the count of employees in each department

```
SELECT d.department_name, COUNT(e.employee_id) AS employee_count
FROM departments d
LEFT JOIN employees e ON d.department_id = e.department_id
GROUP BY d.department_name;
```

	department_name	employee_count
▶	Administration	1
	Marketing	2
	Purchasing	6
	Human Resources	1
	Shipping	45
	IT	5
	Public Relations	1
	Sales	34
	Executive	3
	Finance	6
	Accounting	2
	Treasury	0
	Corporate Tax	0
	Control And Credit	0
	Shareholder Servi...	0
	Benefits	0
	Manufacturing	0
	Construction	0
	Contracting	0
	Operations	0

19. Find employees who have the same job as their manager

```
SELECT e.first_name, e.last_name, e.job_id
FROM employees e
JOIN employees m ON e.manager_id = m.employee_id
WHERE e.job_id = m.job_id;
```

	first_name	last_name	job_id
▶	Bruce	Ernst	IT_PROG
	David	Austin	IT_PROG
	Valli	Pataballa	IT_PROG
	Diana	Lorentz	IT_PROG

20. Display the names of employees who worked in different jobs in the past (use job_history)

```
SELECT DISTINCT e.first_name, e.last_name
```

```
FROM employees e
```

```
JOIN job_history jh ON e.employee_id = jh.employee_id;
```

	first_name	last_name
▶	Neena	Kochhar
	Jennifer	Whalen
	Lex	De Haan
	Michael	Hartstein
	Jonathon	Taylor
	Den	Raphaely
	Payam	Kaufling