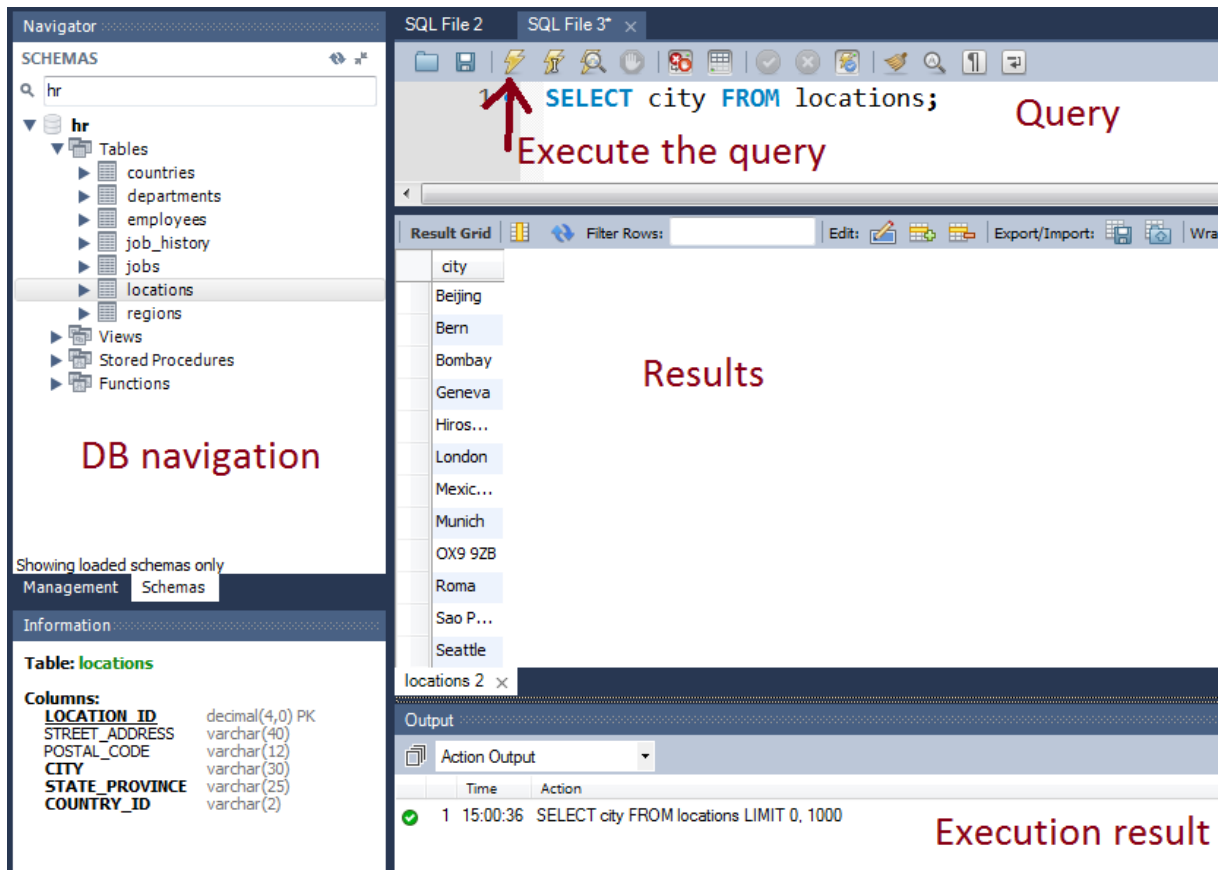


# Lab 3&4 - JOINS AND SUBQUERIES

## 3H

### Intro

Connection to the database : Click the *MySQL Workbench* icon on your desktop, then select the local connection. The database server is already installed on your virtual machine and the *humanresources* database has already been imported.



The screenshot shows the MySQL Workbench interface with the following components:

- Navigator (Left Panel):** Displays the 'hr' schema structure. The 'locations' table is selected under the 'Tables' folder. Below the tree, the 'Table: locations' structure is shown with columns: LOCATION\_ID (decimal(4,0) PK), STREET\_ADDRESS (varchar(40)), POSTAL\_CODE (varchar(12)), CITY (varchar(30)), STATE\_PROVINCE (varchar(25)), and COUNTRY\_ID (varchar(2)).
- SQL File 2 (Top Right):** Contains the query: `SELECT city FROM locations;`. A red arrow points to the 'Execute' button (a lightning bolt icon) with the text 'Execute the query'.
- Result Grid (Middle Right):** Displays the results of the query as a list of city names: Beijing, Bern, Bombay, Geneva, Hiros..., London, Mexic..., Munich, OX9 9ZB, Roma, Sao P..., and Seattle. The word 'Results' is written in red next to the list.
- Output (Bottom Right):** Shows the execution log with a green checkmark, the time '15:00:36', and the command 'SELECT city FROM locations LIMIT 0, 1000'. The text 'Execution result' is written in red next to the log.

Unless specified, you must use a JOIN to solve the questions.

- Write a query to find the addresses (location\_id, street\_address, city, state\_province, country\_name) in the database.

location_id	street_address	city	state_province	country_name
1000	1297 Via Cola di Rie	Roma		Italy
1100	93091 Calle della ...	Venice		Italy
1200	2017 Shinjuku-ku	Tokyo	Tokyo Prefecture	Japan
1300	9450 Kamiya-cho	Hiros...		Japan
1400	2014 Jabberwock...	South...	Texas	United States of ...
1500	2011 Interiors Blvd	South...	California	United States of ...
1600	2007 Zagora St	South...	New Jersey	United States of ...
1700	2004 Charade Rd	Seattle	Washington	United States of ...
1800	147 Spadina Ave	Toronto	Ontario	Canada
1900	6092 Boxwood St	White...	Yukon	Canada
2000	40-5-12 Laogiang...	Beijing		China
2100	1298 Vileparle (E)	Bombay	Maharashtra	India

- Write a query to find the names (first\_name, last name), department ID and department name of all the employees. Compare results with INNER JOIN and NATURAL JOIN. Explain Why

first_name	last_name	department_id	department_name
Steven	King	90	Executive
Neena	Kochhar	90	Executive
Lex	De Haan	90	Executive
Alexander	Hunold	60	IT
Bruce	Ernst	60	IT

- Display job title, employee name, and the difference between salary of the employee and minimum salary for the job

	job_title	first_name	Salary - Min_Salary
►	President	Steven	4000.00
	Administration Vice President	Neena	2000.00
	Administration Vice President	Lex	2000.00
	Administration Assistant	Jennifer	1400.00
	Finance Manager	Nancy	3800.00
	Accountant	Daniel	4800.00
	Accountant	John	4000.00

4. Write a query to display the department name, manager name, and city

	department_name	first_name	city
►	Administration	Jennifer	Seattle
	Marketing	Michael	Toronto
	Purchasing	Den	Seattle
	Human Resources	Susan	London
	Shipping	Adam	South San Francisco
	IT	Alexander	Southlake
	Public Relations	Hermann	Munich
	Sales	John	OX9 9ZB
	Executive	Steven	Seattle
	Finance	Nancy	Seattle
	Accounting	Shelley	Seattle

5. Write a query (using subquery) to find the names (first\_name, last\_name), the salary of the employees whose salary is greater than the average salary

	first_name	last_name	salary
►	Steven	King	24000.00
	Neena	Kochhar	17000.00
	Lex	De Haan	17000.00
	Alexander	Hunold	9000.00
	Nancy	Greenberg	12000.00
	Daniel	Faviet	9000.00
	John	Chen	8200.00
	Ismael	Sciarra	7700.00
	Jose Manuel	Urman	7800.00
	Luis	Popp	6900.00
	Den	Barbalev	11000.00

6. Write a query to find the cities that have unused offices within the company.

CITY
Roma
Venice
Tokyo
Hiroshima
South Brunswick
Whitehorse
Beijing
Bombay
Sydney

7. Same query, but restricted to cities in Japan

city
Tokyo
Hiroshima

8. Find the names (first\_name, last\_name), job, department number, and department name of the employees who work in London

first_name	last_name	job_id	department_id	department_name
Susan	Mavris	HR_REP	40	Human Resources

9. Write a query to find all the employees hired before all the employees of department « SALES »

FIRST_NAME	LAST_NAME	HIRE_DATE
Steven	King	1987-06-17
Neena	Kochhar	1987-06-18
Lex	De Haan	1987-06-19
Alexander	Hunold	1987-06-20
Bruce	Ernst	1987-06-21
David	Austin	1987-06-22
Valli	Pataballa	1987-06-23
Diana	Lorentz	1987-06-24

10. Write a query to find the employee id, name (last\_name) along with their manager\_id, manager name (last\_name)

Emp_Id	Employee	Mgr_Id	Manager
101	Kochhar	100	King
102	De Haan	100	King
103	Hunold	102	De Haan
104	Ernst	103	Hunold
105	Austin	103	Hunold

11. In the previous query, King(ID 100) does not appear in the employee list, how to integrate him ?

Emp_Id	Employee	Mgr_Id	Manager
103	Hunold	102	De Haan
175	Hutton	149	Zlotkey
179	Johnson	149	Zlotkey
195	Jones	123	Vollman
122	Kaufling	100	King
115	Khoo	114	Raphaely
100	King	NULL	NULL
156	King	146	Partners
101	Kochhar	100	King
173	Kumar	148	Cambrault
137	Ladwig	123	Vollman
127	Landry	120	Weiss

12. Write a query to find the employees whose manager is not managing a department

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL
103	Alexander	Hunold	AHUN
108	Nancy	Greenberg	NGRE
125	Julia	Nayer	JNAY
126	Irene	Mikkilineni	IMIK
127	James	Landry	JLAN
128	Steven	Markle	SMAR

13. Write a query to display the name (first\_name, last\_name), hire date, salary of the manager for all managers whose experience is more than 15 years.

first_name	last_name	hire_date	salary	Experience
Steven	King	1987-06-17	24000.00	30.0137
Alexander	Hunold	1987-06-20	9000.00	30.0055
Nancy	Greenberg	1987-06-25	12000.00	29.9918
Den	Raphaely	1987-07-01	11000.00	29.9753
Adam	Fripp	1987-07-08	8200.00	29.9562
John	Russell	1987-08-01	14000.00	29.8904

14. Write a query to display all people hired before « Ernst » using both join and subqueries

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB
100	Steven	King	SKING	515.123.4567	1987-06-17	AD
101	Neena	Kochhar	NKOCHHAR	515.123.4568	1987-06-18	AD
102	Lex	De Haan	LDEHAAN	515.123.4569	1987-06-19	AD
103	Alexander	Hunold	AHUNOLD	590.423.4567	1987-06-20	IT

15. Write a query (using join) to find all the employees hired before « Greenberg » and who have a lower salary than him.

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	HIRE_DATE	SALARY
103	Alexander	Hunold	AHUNOLD	1987-06-20	9000.00
104	Bruce	Ernst	BERNST	1987-06-21	6000.00
105	David	Austin	DAUSTIN	1987-06-22	4800.00
106	Valli	Pataballa	VPATABAL	1987-06-23	4800.00
107	Diana	Lorentz	DLORENTZ	1987-06-24	4200.00

16. Using a subquery, write a query to find the names of employees who are not managers. Hint use the keyword EXISTS

	first_name	last_name
►	Bruce	Ernst
	David	Austin
	Valli	Pataballa
	Diana	Lorentz
	Daniel	Faviet
	John	Chen
	Ismael	Sciarra
	Jose Manuel	Urman

17. Write a query to display the department ID, department name and manager first name.

department_id	department_name	manager_id	first_name
10	Administration	101	Jennifer
20	Marketing	100	Michael
30	Purchasing	100	Den
40	Human Resources	101	Susan
50	Shipping	100	Adam

18. Write a query to find the employees who have the same job as « Ernst » but a different manager

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE
103	Alexander	Hunold	AHUNOLD	590.423.4567	1987-06-

19. Write a query to display the department name, manager name, and city

department_name	first_name	city
Administration	Jennifer	Seattle
Marketing	Michael	Toronto
Purchasing	Den	Seattle
Human Resources	Susan	London
Shipping	Adam	South...

20. Write a query to find the firstname and lastname of people who have no job history

EMPLOYEE_ID	FIRST_NAME	LAST_NAME
100	Steven	King
103	Alexander	Hunold
104	Bruce	Ernst
105	David	Austin
106	Valli	Pataballa

21. Write a query to get department name, manager name, and salary of the manager for all managers that are employed for more than 5 years

	DEPARTMENT_NAME	FIRST_NAME	SALARY
►	Marketing	Pat	6000.00
	Purchasing	Alexander	3100.00
	Purchasing	Shelli	2900.00
	Purchasing	Sigal	2800.00
	Purchasing	Guv	2600.00

22. Write a query to return the cities, their country and region names where some employees earn more than 3000

	CITY	COUNTRY_NAME	REGION_NAME
►	Seattle	United States of America	Americas
	Southlake	United States of America	Americas
	South San Francisco	United States of America	Americas
	OX9 9ZB	United Kingdom	Europe
	Toronto	Canada	Americas