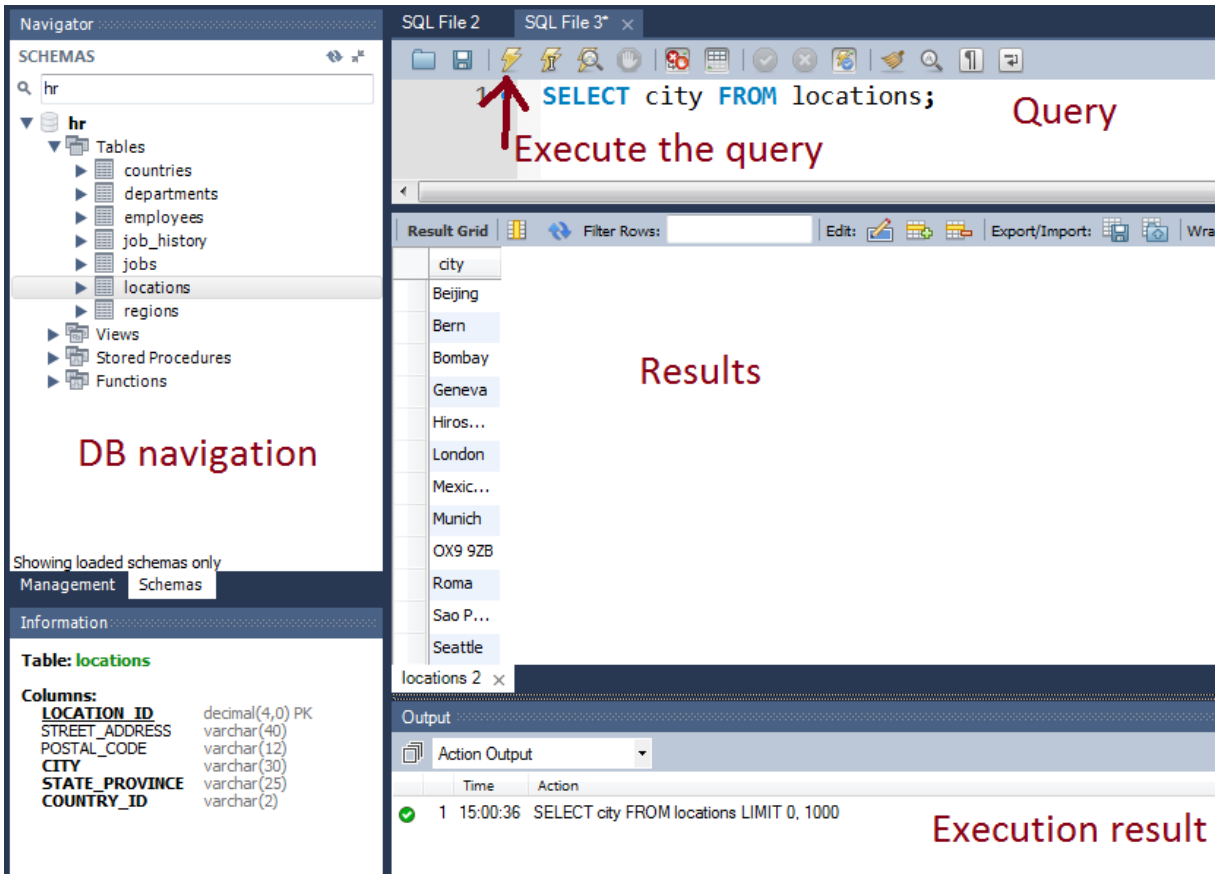
Lab 1&2 - SELECT, FUNCTIONS

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.



Part 1 - SELECT

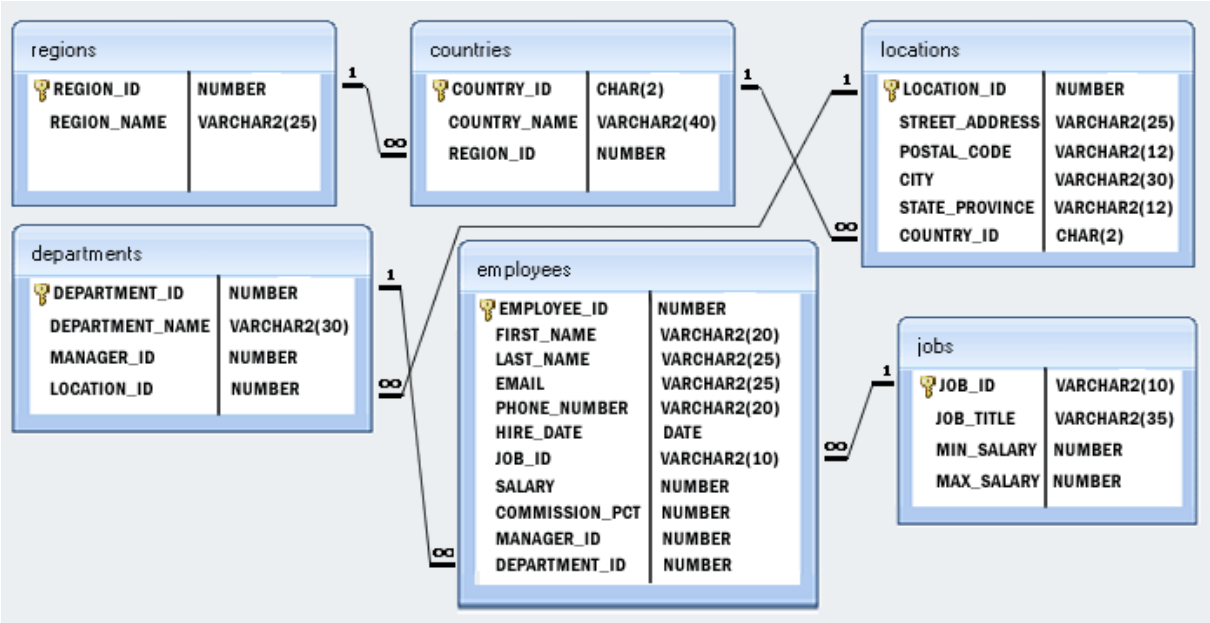


Figure 1: The Human Resources Database Layout

Today's syntax

```
SELECT [COUNT] [DISTINCT] column names
FROM table_name
[WHERE condition or restrictions, combined by AND / OR]
[ORDER BY] column names to be ordered
[ASC or DESC] ascending or descending
[LIMIT] number of results to retun
```

1. Write a query to display the content of the table *regions*

REGION_ID	REGION_NAME
1	Europe
2	Americas
3	Asia
4	Middle East and A…

2. Write a query to display the content of the table *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	24000.00	0.00	0	90
101	Neena	Kochhar	NKOCHH...	515.123.4568	1987-06-18	AD_VP	17000.00	0.00	100	90
102	Lex	De Haan	LDEHAAN	515.123.4569	1987-06-19	AD_VP	17000.00	0.00	100	90
103	Alexander	Hunold	AHUNOLD	590.423.4567	1987-06-20	IT_PROG	9000.00	0.00	102	60
104	Bruce	Ernst	BERNST	590.423.4568	1987-06-21	IT_PROG	6000.00	0.00	103	60
105	David	Austin	DAUSTIN	590.423.4569	1987-06-22	IT_PROG	4800.00	0.00	103	60

…

3. Write a query to display the titles of the jobs

JOB_TITLE
President
Administratio...
Administratio...
Finance Man...
Accountant
Accounting M...
Public Accou...
Sales Manager
Sales Repres...
Purchasing M...

…

4. Write a query to display the employees working in the department #20

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
201	Michael	Hartstein	MHARTSTE	515.123.5555	1987-09-26	MK_MAN	13000.00	0.00	100	20
202	Pat	Fay	PFAY	603.123.6666	1987-09-27	MK_REP	6000.00	0.00	201	20
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

5. Write a query to display the first and last name of the employees working in department #20

FIRST_NAME	LAST_NAME
Michael	Hartstein
Pat	Fay
NULL	NULL

6. Write a query to display the first and last name of employees from departments #20, #30

FIRST_NAME	LAST_NAME
Michael	Hartstein
Pat	Fay
Den	Raphaely
Alexander	Khoo
Shelli	Baida
Sigal	Tobias
Guy	Himuro
Karen	Colmenares
NULL	NULL

7. Write a query to get the names of the departments, using the dname alias, ordered from A to Z

dname
Accounting
Administr…
Benefits
Construc…

…

8. Write a query to get the lastname, firstname and salary of the three employees having the largest salaries

FIRST_NAME	LAST_NAME	SALARY
Steven	King	24000.00
Neena	Kochhar	17000.00
Lex	De Haan	17000.00
NULL	NULL	NULL

DISTINCT	The DISTINCT keyword can be used to return only distinct (different) values.
	`SELECT DISTINCT column_name,column_name`
	`FROM table_name;`

COUNT	The COUNT() function returns the number of rows that matches a specified criteria. `SELECT COUNT(column_name) FROM table_name;`

9. Write a query to return the number of employees as employeeCount

employeeCount
107

10. Write a query to display the manager ids, without duplicates

MANAGER_ID
0
100
101
102
103
108

....

11. Write a query that displays the number of unique managers as managerCount

managerCount
19

12. Write a query to get the number of employees having a salary strictly greater than 10000, using the riches alias

riches
15

13. Write a query to get the number of departments where some employees have a commission percentage

dptHasCommission
2

MAX	The MAX keywords returns the maximum value `SELECT MAX(column_name) FROM table_name;`
MIN	The MIN keywords returns the minimum value `SELECT MAX(column_name) FROM table_name;`
SUM	The SUM keywords returns the sum of the values `SELECT SUM(column_name) FROM table_name;`
AVG	The AVG keywords returns the average value `SELECT AVG(column_name) FROM table_name;`
STD	The STD keywords returns the standard deviation `SELECT STD(column_name) FROM table_name;`

14. Write a query to get the average salary within the company

	average salary
▶	6461.682243

15. Write a query to get the average and standard deviation of salary from employees of the department 80

	average	std
▶	8955.882353	2003.5543675693527

16. Write a query to get the total bonuses (salary times commission) earnt by the employees of department 80, as well as the minimum and maximum. Also return the number of employees in this department.

	total bonus	min bonus	max bonus	emoployees
▶	72640.0000	610.0000	5600.0000	34

Part 2 – String manipulation

LOWER()	Convert character data to lowercase
UPPER()	Convert character data to uppercase
MID() SUBSTRING() SUBSTR()	The MID() function is used to extract characters from a text field. `SELECT MID(column_name,start,length) AS some_name FROM table_name;`
SOUNDS LIKE	Compare if two expressions sounds the same ***expr1*** SOUNDS LIKE ***expr2***
CONCAT	Concatenate two expressions CONCAT(***str1,str2,...***)
CONCAT_WS	Concatenate with a separator CONCAT_WS(***separator,str1,str2,...***)
CHAR_LENGTH	Returns the size in character of a given expression CHAR_LENGTH(***str***)

17. Write a query that displays the five first characters of the five first employees' last names by alphabetical order

shortname
Abel
Ande
Atkin
Austi
Baer

18. Your new french employee speaks a very poor english. He is looking for an employee whom he calls « Brousse », but nobody matches this first name in the database. Using the soundex function, find this employee and display the information about him.

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID
104	Bruce	Ernst	BERNST	590.423.4568	1987-06-21	IT_PROG
NULL	NULL	NULL	NULL	NULL	NULL	NULL

19. Write a query to display the information about the employee who has the longest last name

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID
126	Irene	Mikkilineni	IMIKKILI	650.124.1224	1987-07-13	ST_CLERK
NULL	NULL	NULL	NULL	NULL	NULL	NULL

20. Write a query to display in a single column called fullname the first and last names of the three first employees. The last name must be in upper case

fullname
Ellen ABEL
Sundar ANDE
Mozhe ATKINSON

Part 3 – Dates

now()	
DAYNAME(*date*)	
• DAYOFMONTH(*date*) • DAYOFWEEK(*date*) • DAYOFYEAR(*date*)	Return the number of the day. 1-7 for week, 1-31 for month …
DATE_ADD(Date1 , INTERVAL N DAY)	Date1 plus N days (similar with DATE_SUB for minus)
STR_TO_DATE	Convert String to Date
DATE_FORMAT	Convert Date to String
PERIOD ADD	Add a period to a year-month

Official documentation here :

https://dev.mysql.com/doc/refman/5.7/en/date-and-time-functions.html

21. Write a query to display how long the employees have been working for the company, in days

FIRST_NAME	SYSDATE()	HIRE_DATE	time
Steven	2017-04-05 15:53:19	1987-06-17	10885
Neena	2017-04-05 15:53:19	1987-06-18	10884
Lex	2017-04-05 15:53:19	1987-06-19	10883
Alexander	2017-04-05 15:53:19	1987-06-20	10882

22. Write a query to extract the month from the current date.

23. Write a query to get the first name and hire date from employees table where hire date between '1987-06-01' and '1987-07-30'

FIRST_NAME	HIRE_DATE
Steven	1987-06-17
Neena	1987-06-18
Lex	1987-06-19
Alexander	1987-06-20
Bruce	1987-06-21
David	1987-06-22

24. Write a query to get the firstname, lastname of employees who joined in 1987.

FIRST_NAME	HIRE_DATE
Steven	1987-06-17
Neena	1987-06-18
Lex	1987-06-19
Alexander	1987-06-20
Bruce	1987-06-21

25. Write a query to get the first name, last name of people who joined the company one Monday.

FIRST_NAME	HIRE_DATE
David	1987-06-22
Jose Manuel	1987-06-29
Karen	1987-07-06
Irene	1987-07-13
Jason	1987-07-20

26. Write a query to display the first day of the month (in datetime format) three months before the current month.

27. Write a query that lets you know which day of the week you were born.