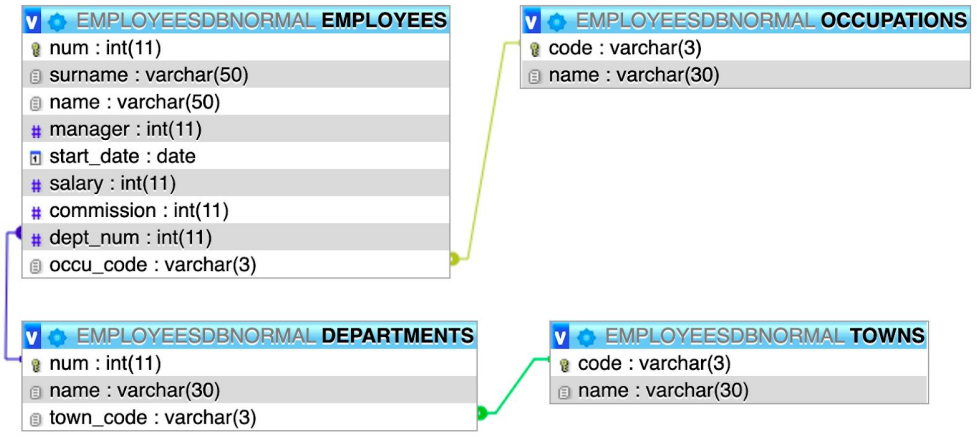
JOINS


EMPLOYEESDBNORMAL EMPLOYEES
num : int(11)
surname : varchar(50)
name : varchar(50)
manager : int(11)
start_date : date
salary : int(11)
commission : int(11)
dept_num : int(11)
occu_code : varchar(3)
EMPLOYEESDBNORMAL OCCUPATIONS
code : varchar(3)
name : varchar(30)
EMPLOYEESDBNORMAL DEPARTMENTS
num : int(11)
name : varchar(30)
town_code : varchar(3)
EMPLOYEESDBNORMAL TOWNS
code : varchar(3)
name : varchar(30)

1. Show the full name of employees, salary and occupation name whose salary is not between 1100 and 2000. Sort the results by full name. Make four versions:

- Using an explicit inner join

```
select concat(e.name,' ', e.surname) as name, e.salary,
O.name as Occupation
from EMPLOYEES as e
join OCCUPATIONS O on O.code =
e.occu_code
where e.salary > 2000 or e.salary< 1100;
```

	name	salary	Occupation
1	JAVIER GIL	3000	ANALYST
2	ANA FERNÁNDEZ	3000	ANALYST
3	JUDIT AROCA	2900	MANAGER
4	ENRIQUE COLOM	2885	MANAGER
5	FERNANDA RUIZ	2885	MANAGER

- using an implicit inner join

```
select concat(e.name,' ', e.surname) as name, e.salary,
o.name as Occupation
from EMPLOYEES as e, OCCUPATIONS as o
where (e.salary > 2000 or e.salary< 1100) and o.code =
e.occu_code;
```

	name	salary	Occupation
1	JAVIER GIL	3000	ANALYST
2	ANA FERNÁNDEZ	3000	ANALYST
3	JUDIT AROCA	2900	MANAGER
4	ENRIQUE COLOM	2885	MANAGER
5	FERNANDA RUIZ	2885	MANAGER

- using a left outer join

```
select concat(e.name,' ', e.surname) as name, e.salary,
O.name as Occupation
from EMPLOYEES as e
left outer join OCCUPATIONS O on O.code = e.occu_code
where e.salary > 2000 or e.salary< 1100;
```

	name	salary	Occupation
1	ANTONIO BANDERAS	2885	<null>
2	SERGIO SÁNCHEZ	1040	<null>
3	JUDIT AROCA	2900	MANAGER
4	BARTOLOME AMER	3005	<null>
5	ENRIQUE COLOM	2885	MANAGER
6	JAVIER GIL	3000	ANALYST
7	ANA FERNÁNDEZ	3000	ANALYST
8	FERNANDA RUIZ	2885	MANAGER

- and using a right outer join.

```
select concat(e.name,' ', e.surname) as name, e.salary,
o.name as Occupation
from OCCUPATIONS as o
right outer join EMPLOYEES e on o.code = e.occu_code
where e.salary > 2000 or e.salary< 1100;
```

	name	salary	Occupation
1	ANTONIO BANDERAS	2885	<null>
2	SERGIO SÁNCHEZ	1040	<null>
3	JUDIT AROCA	2900	MANAGER
4	BARTOLOME AMER	3005	<null>
5	ENRIQUE COLOM	2885	MANAGER
6	JAVIER GIL	3000	ANALYST
7	ANA FERNÁNDEZ	3000	ANALYST
8	FERNANDA RUIZ	2885	MANAGER

2. Select the surname and occupation of the employees of department number 20 (show occupation name instead occupation code). Make four versions:

- Using an explicit inner join

```
select e.surname, O.name from EMPLOYEES as e
join OCCUPATIONS O on e.occu_code = O.code
where dept_num=20;
```

	surname	name
1	GIL	ANALYST
2	ALONSO	EMPLOYEE
3	AROCA	MANAGER
4	RUIZ	MANAGER

- using an implicit inner join

```
select e.surname, O.name from EMPLOYEES as e, OCCUPATIONS as
O
where dept_num=20 and e.occu_code = O.code;
```

	surname	name
1	GIL	ANALYST
2	ALONSO	EMPLOYEE
3	AROCA	MANAGER
4	RUIZ	MANAGER

- using a left outer join

```
select e.surname, O.name from EMPLOYEES as e
left outer join OCCUPATIONS O on e.occu_code = O.code
where dept_num=20;
```

	surname	name
1	BANDERAS	<null>
2	AROCA	MANAGER
3	GIL	ANALYST
4	ALONSO	EMPLOYEE
5	RUIZ	MANAGER

- and using a right outer join.

```
select e.surname, O.name from OCCUPATIONS as O
right outer join EMPLOYEES e on e.occu_code = O.code
where dept_num=20;
```

	surname	name
1	BANDERAS	<null>
2	AROCA	MANAGER
3	GIL	ANALYST
4	ALONSO	EMPLOYEE
5	RUIZ	MANAGER

3. Show employee full name of the employees with no occupation and no department (sorted by full name).

```
select concat(e.name, ' ', e.surname) as FullName from EMPLOYEES as e
where occu_code is null and dept_num is null
order by FullName;
```

	FullName
1	SERGIO SÁNCHEZ

4. Show employee full name of the employees with no occupation or no department (sorted by full name).

```
select concat(e.name, ' ', e.surname) as FullName from EMPLOYEES as e
where occu_code is null or dept_num is null
order by FullName;
```

	FullName
1	ANA FERNÁNDEZ
2	ANTONIO BANDERAS
3	BARTOLOME AMER
4	SERGIO SÁNCHEZ

6. Show all the data of all the employees (show department name instead department code, occupation name instead occupation code and manager surname instead manager num). Make two versions:

1. Using INNER JOIN.

```
select EMPLOYEES.num, EMPLOYEES.name,EMPLOYEES.surname,
concat(E.name,' ',E.surname) as manager,
EMPLOYEES.start_date,EMPLOYEES.salary,EMPLOYEES.commission,D.
name,O.name
from EMPLOYEES
inner join DEPARTMENTS D on EMPLOYEES.dept_num = D.num
inner join OCCUPATIONS O on EMPLOYEES.occu_code = O.code
inner join EMPLOYEES E on EMPLOYEES.manager=E.num;
```

	num	EMPLOYEES.name	surname	manager	start_date	salary	commission	D.name	O.name
1	7934	ANTONIA	MUÑOZ	ENRIQUE COLOM	1992-01-23	1690	<null>	ACCOUNTING	EMPLOYEE
2	7788	JAVIER	GIL	JUDIT AROCA	1991-11-09	3000	<null>	RESEARCH	ANALYST
3	7876	FERNANDO	ALONSO	JAVIER GIL	1991-09-23	1430	<null>	RESEARCH	EMPLOYEE
4	7499	MARTA	ARROYO	BARTOLOME AMER	1990-02-20	1500	390	SALES	SALESMAN
5	7521	JOSEP	AGUILO	BARTOLOME AMER	1991-02-22	1625	650	SALES	SALESMAN
6	7654	MONICA	MARTÍN	BARTOLOME AMER	1991-09-29	1600	1020	SALES	SALESMAN
7	7844	LUIS	TOVAR	BARTOLOME AMER	1991-09-08	1350	0	SALES	SALESMAN
8	7900	XAVIER	JIMENO	BARTOLOME AMER	1991-12-03	1335	<null>	SALES	EMPLOYEE

2. Using LEFT OUTER JOIN.

```
select EMPLOYEES.num, EMPLOYEES.name,EMPLOYEES.surname,
concat(E.name,' ',E.surname) as manager,
EMPLOYEES.start_date,EMPLOYEES.salary,EMPLOYEES.commission,D.
name,O.name from EMPLOYEES
left outer join DEPARTMENTS D on EMPLOYEES.dept_num = D.num
left outer join OCCUPATIONS O on EMPLOYEES.occu_code = O.code
left outer join EMPLOYEES E on EMPLOYEES.manager=E.num;
```

	num	EMPLOYEES.name	surname	manager	start_date	salary	commission	D.name	O.name
1	800	ANTONIO	BANDERAS	<null>	1991-01-09	2885	<null>	RESEARCH	<null>
2	7369	SERGIO	SÁNCHEZ	ANA FERNÁNDEZ	1990-12-17	1040	<null>	<null>	<null>
3	7499	MARTA	ARROYO	BARTOLOME AMER	1990-02-20	1500	390	SALES	SALESMAN
4	7521	JOSEP	AGUILO	BARTOLOME AMER	1991-02-22	1625	650	SALES	SALESMAN
5	7566	JUDIT	AROCA	<null>	1991-04-02	2900	<null>	RESEARCH	MANAGER
6	7654	MONICA	MARTÍN	BARTOLOME AMER	1991-09-29	1600	1020	SALES	SALESMAN
7	7698	BARTOLOME	AMER	<null>	1991-05-01	3005	<null>	SALES	<null>
8	7782	ENRIQUE	COLOM	<null>	1991-06-09	2885	<null>	ACCOUNTING	MANAGER
9	7788	JAVIER	GIL	JUDIT AROCA	1991-11-09	3000	<null>	RESEARCH	ANALYST
10	7844	LUIS	TOVAR	BARTOLOME AMER	1991-09-08	1350	0	SALES	SALESMAN
11	7876	FERNANDO	ALONSO	JAVIER GIL	1991-09-23	1430	<null>	RESEARCH	EMPLOYEE
12	7900	XAVIER	JIMENO	BARTOLOME AMER	1991-12-03	1335	<null>	SALES	EMPLOYEE
13	7902	ANA	FERNÁNDEZ	JUDIT AROCA	1991-12-03	3000	<null>	<null>	ANALYST
14	7934	ANTONIA	MUÑOZ	ENRIQUE COLOM	1992-01-23	1690	<null>	ACCOUNTING	EMPLOYEE
15	8001	FERNANDA	RUIZ	<null>	1992-06-10	2885	<null>	RESEARCH	MANAGER

7. Show the data of the employees whose salary is greater than 2000 (show department name instead department code, occupation name instead occupation code and manager surname instead manager num). Make two versions:

1. Using INNER JOIN.

```
select E.num, E.name,E.surname, concat(M.name,' ',M.surname)
as manager, E.start_date,E.salary,E.commission,D.name,O.name
from EMPLOYEES E
inner join DEPARTMENTS D on E.dept_num = D.num
inner join OCCUPATIONS O on E.occu_code = O.code
inner join EMPLOYEES M on  M.num = E.manager
where E.salary>2000;
```

	num	E.name	surname	manager	start_date	salary	commission	D.name	O.name
1	7788	JAVIER	GIL	JUDIT AROCA	1991-11-09	3000	<null>	RESEARCH	ANALYST

2. Using LEFT OUTER JOIN.

```
select E.num, E.name,E.surname, concat(M.name,' ',M.surname)
as manager, E.start_date,E.salary,E.commission,D.name,O.name
from EMPLOYEES E
left outer join DEPARTMENTS D on E.dept_num = D.num
left outer join OCCUPATIONS O on E.occu_code = O.code
left outer join EMPLOYEES M on  M.num = E.manager
where E.salary>2000;
```

	num	E.name	surname	manager	start_date	salary	commission	D.name	O.name
1	800	ANTONIO	BANDERAS	<null>	1991-01-09	2885	<null>	RESEARCH	<null>
2	7566	JUDIT	AROCA	<null>	1991-04-02	2900	<null>	RESEARCH	MANAGER
3	7698	BARTOLOME	AMER	<null>	1991-05-01	3005	<null>	SALES	<null>
4	7782	ENRIQUE	COLOM	<null>	1991-06-09	2885	<null>	ACCOUNTING	MANAGER
5	7788	JAVIER	GIL	JUDIT AROCA	1991-11-09	3000	<null>	RESEARCH	ANALYST
6	7902	ANA	FERNÁNDEZ	JUDIT AROCA	1991-12-03	3000	<null>	<null>	ANALYST
7	8001	FERNANDA	RUIZ	<null>	1992-06-10	2885	<null>	RESEARCH	MANAGER

8.- Show number of employees per department considering employees with no department (clue: two queries with UNION).

```
select D.name, count(*) as num_employees from EMPLOYEES E
right outer join DEPARTMENTS D on E.dept_num = D.num
group by dept_num
union
select dept_num, count(*) from EMPLOYEES
where dept_num is null
group by dept_num;
```

	name	num_employees
1	PRODUCTION	1
2	ACCOUNTING	2
3	RESEARCH	5
4	SALES	6
5	<null>	2