

Course: Database management

Unit: Intermediate SQL 1

Material: View

In order to have the same database, please import this database:

```
CREATE DATABASE IF NOT EXISTS `P04_views` DEFAULT CHARACTER SET utf8mb4 COLLATE
utf8mb4_general_ci;
USE `P04_views`;
```

```
DROP TABLE IF EXISTS `DEPARTMENTS`;
CREATE TABLE `DEPARTMENTS` (
  `num` int(11) NOT NULL,
  `name` varchar(30) NOT NULL,
  `town_code` varchar(3) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

```
INSERT INTO `DEPARTMENTS` (`num`, `name`, `town_code`) VALUES
(10, 'ACCOUNTING', 'SVQ'),
(20, 'RESEARCH', 'MAD'),
(30, 'SALES', 'BCN'),
(40, 'PRODUCTION', 'BIO');
```

```
DROP TABLE IF EXISTS `EMPLOYEES`;
CREATE TABLE `EMPLOYEES` (
  `num` int(11) NOT NULL,
  `surname` varchar(50) NOT NULL,
  `name` varchar(50) NOT NULL,
  `manager` int(11) DEFAULT NULL,
  `start_date` date DEFAULT NULL,
  `salary` int(11) DEFAULT NULL,
  `commission` int(11) DEFAULT NULL,
  `dept_num` int(11) DEFAULT NULL,
  `occu_code` varchar(3) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

```
INSERT INTO `EMPLOYEES` (`num`, `surname`, `name`, `manager`, `start_date`, `salary`,
`commission`, `dept_num`, `occu_code`) VALUES
(800, 'BANDERAS', 'ANTONIO', NULL, '1991-01-09', 2885, NULL, 20, NULL),
(7369, 'SÁNCHEZ', 'SERGIO', 7902, '1990-12-17', 1040, NULL, NULL, NULL),
(7499, 'ARROYO', 'MARTA', 7698, '1990-02-20', 1500, 390, 30, 'SAL'),
(7521, 'AGUILO', 'JOSEP', 7698, '1991-02-22', 1625, 650, 30, 'SAL'),
(7566, 'AROCA', 'JUDIT', 7839, '1991-04-02', 2900, NULL, 20, 'MAN'),
(7654, 'MARTÍN', 'MONICA', 7698, '1991-09-29', 1600, 1020, 30, 'SAL'),
(7698, 'AMER', 'BARTOLOME', 7839, '1991-05-01', 3005, NULL, 30, NULL),
(7782, 'COLOM', 'ENRIQUE', 7839, '1991-06-09', 2885, NULL, 10, 'MAN'),
(7788, 'GIL', 'JAVIER', 7566, '1991-11-09', 3000, NULL, 20, 'ANA'),
(7844, 'TOVAR', 'LUIS', 7698, '1991-09-08', 1350, 0, 30, 'SAL'),
(7876, 'ALONSO', 'FERNANDO', 7788, '1991-09-23', 1430, NULL, 20, 'EMP'),
(7900, 'JIMENO', 'XAVIER', 7698, '1991-12-03', 1335, NULL, 30, 'EMP'),
(7902, 'FERNÁNDEZ', 'ANA', 7566, '1991-12-03', 3000, NULL, NULL, 'ANA'),
(7934, 'MUÑOZ', 'ANTONIA', 7782, '1992-01-23', 1690, NULL, 10, 'EMP'),
(8001, 'RUIZ', 'FERNANDA', 7839, '1992-06-10', 2885, NULL, 20, 'MAN');
```

```
DROP TABLE IF EXISTS `OCCUPATIONS`;
CREATE TABLE `OCCUPATIONS` (
  `code` varchar(3) NOT NULL,
  `name` varchar(30) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

```
INSERT INTO `OCCUPATIONS` (`code`, `name`) VALUES
```

```
( 'ANA', 'ANALYST'),
( 'EMP', 'EMPLOYEE'),
( 'MAN', 'MANAGER'),
( 'PRE', 'PRESIDENT'),
( 'SAL', 'SALESMAN');
```

```
DROP TABLE IF EXISTS `TOWNS`;
CREATE TABLE `TOWNS` (
  `code` varchar(3) NOT NULL,
  `name` varchar(30) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

```
INSERT INTO `TOWNS` (`code`, `name`) VALUES
( 'BCN', 'BARCELONA'),
( 'BIO', 'BILBAO'),
( 'MAD', 'MADRID'),
( 'SVQ', 'SEVILLA');
```

```
ALTER TABLE `DEPARTMENTS`
  ADD PRIMARY KEY (`num`),
  ADD KEY `town_code` (`town_code`);
```

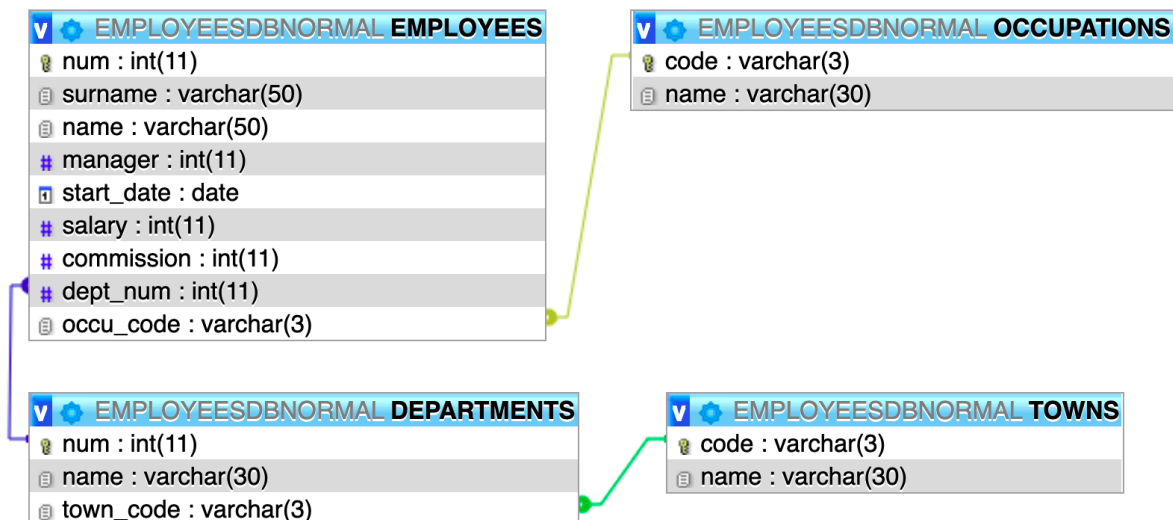
```
ALTER TABLE `EMPLOYEES`
  ADD PRIMARY KEY (`num`),
  ADD KEY `dept_num` (`dept_num`),
  ADD KEY `occu_code` (`occu_code`);
```

```
ALTER TABLE `OCCUPATIONS`
  ADD PRIMARY KEY (`code`);
```

```
ALTER TABLE `TOWNS`
  ADD PRIMARY KEY (`code`);
```

```
ALTER TABLE `DEPARTMENTS`
  ADD CONSTRAINT `DEPARTMENTS_ibfk_1` FOREIGN KEY (`town_code`) REFERENCES `TOWNS`
  (`code`);
```

```
ALTER TABLE `EMPLOYEES`
  ADD CONSTRAINT `EMPLOYEES_ibfk_1` FOREIGN KEY (`dept_num`) REFERENCES `DEPARTMENTS`
  (`num`),
  ADD CONSTRAINT `EMPLOYEES_ibfk_2` FOREIGN KEY (`occu_code`) REFERENCES `OCCUPATIONS`
  (`code`);
COMMIT;
```



1. Create a view (with name V_DEPARTMENTS) that shows all the departments with their number of employees and their town name.

```
MariaDB [P04_views]> select * from V_DEPARTMENTS;
```

num	name	town_code	town_name	num_employees
10	ACCOUNTING	SVQ	SEVILLA	2
20	RESEARCH	MAD	MADRID	5
30	SALES	BCN	BARCELONA	6
40	PRODUCTION	BIO	BILBAO	0

4 rows in set (0.001 sec)

2. Update the last view to add a field with the average salary of every department. To alter a view you can check this link: <https://mariadb.com/kb/en/library/alter-view/>

```
MariaDB [P04_views]> select * from V_DEPARTMENTS;
```

num	name	town_code	town_name	num_employees	average_salary
10	ACCOUNTING	SVQ	SEVILLA	2	2287.5000
20	RESEARCH	MAD	MADRID	5	2620.0000
30	SALES	BCN	BARCELONA	6	1735.8333
40	PRODUCTION	BIO	BILBAO	0	NULL

4 rows in set (0.004 sec)

3. Insert a new departments (60 - 'HUMAN RESOURCES' - 'MAD') and a new employee with salary 9000€ who belongs to the new department (9999 - 'GONZALEZ' - 'SERGI' - NULL - '2019-01-01' - 9000 - NULL - 60 - NULL). Check if the data of the view changed automatically. Note that you must insert data into the tables EMPLOYEES and DEPARTMENTS (not into the view).

4. Create a view (with name V_EMPLOYEES) that shows all the employees with the name of their occupation name instead of the occupation code and the name of their department instead of the department number.

```
MariaDB [P04_views]> select * from V_EMPLOYEES;
```

num	surname	name	manager	start_date	salary	dept_name	occu_name
800	BANDERAS	ANTONIO	NULL	1991-01-09	2885	RESEARCH	NULL
7369	SÁNCHEZ	SERGIO	7902	1990-12-17	1040	NULL	NULL
7499	ARROYO	MARTA	7698	1990-02-20	1500	SALES	SALESMAN
7521	AGUILO	JOSEP	7698	1991-02-22	1625	SALES	SALESMAN
7566	AROCA	JUDIT	7839	1991-04-02	2900	RESEARCH	MANAGER
7654	MARTÍN	MONICA	7698	1991-09-29	1600	SALES	SALESMAN
7698	AMER	BARTOLOME	7839	1991-05-01	3005	SALES	NULL
7782	COLOM	ENRIQUE	7839	1991-06-09	2885	ACCOUNTING	MANAGER
7788	GIL	JAVIER	7566	1991-11-09	3000	RESEARCH	ANALYST
7844	TOVAR	LUIS	7698	1991-09-08	1350	SALES	SALESMAN
7876	ALONSO	FERNANDO	7788	1991-09-23	1430	RESEARCH	EMPLOYEE
7900	JIMENO	XAVIER	7698	1991-12-03	1335	SALES	EMPLOYEE
7902	FERNÁNDEZ	ANA	7566	1991-12-03	3000	NULL	ANALYST
7934	MUÑOZ	ANTONIA	7782	1992-01-23	1690	ACCOUNTING	EMPLOYEE
8001	RUIZ	FERNANDA	7839	1992-06-10	2885	RESEARCH	MANAGER
9999	GONZALEZ	SERGI	NULL	2019-01-01	9000	HUMAN RESOURCES	NULL

16 rows in set (0.001 sec)

5. Create a view (with name V_EMPLOYEES_FULL) using V_EMPLOYEES that shows manager's surname and name instead of manager num (you can NOT use the table EMPLOYEES you must use the view V_EMPLOYEES).

MariaDB [P04_views]> select * from V_EMPLOYEES_FULL;

num	surname	name	manager	start_date	salary	dept_name	occu_name	man_surname	man_name
800	BANDERAS	ANTONIO	NULL	1991-01-09	2885	RESEARCH	NULL	NULL	NULL
7369	SÁNCHEZ	SERGIO	7902	1990-12-17	1040	NULL	NULL	FERNÁNDEZ	ANA
7499	ARROYO	MARTA	7698	1990-02-20	1500	SALES	SALESMAN	AMER	BARTOLOME
7521	AGUILO	JOSEP	7698	1991-02-22	1625	SALES	SALESMAN	AMER	BARTOLOME
7566	AROCA	JUDIT	7839	1991-04-02	2900	RESEARCH	MANAGER	NULL	NULL
7654	MARTÍN	MONICA	7698	1991-09-29	1600	SALES	SALESMAN	AMER	BARTOLOME
7698	AMER	BARTOLOME	7839	1991-05-01	3005	SALES	NULL	NULL	NULL
7782	COLOM	ENRIQUE	7839	1991-06-09	2885	ACCOUNTING	MANAGER	NULL	NULL
7788	GIL	JAVIER	7566	1991-11-09	3000	RESEARCH	ANALYST	AROCA	JUDIT
7844	TOVAR	LUIS	7698	1991-09-08	1350	SALES	SALESMAN	AMER	BARTOLOME
7876	ALONSO	FERNANDO	7788	1991-09-23	1430	RESEARCH	EMPLOYEE	GIL	JAVIER
7900	JIMENO	XAVIER	7698	1991-12-03	1335	SALES	EMPLOYEE	AMER	BARTOLOME
7902	FERNÁNDEZ	ANA	7566	1991-12-03	3000	NULL	ANALYST	AROCA	JUDIT
7934	MUÑOZ	ANTONIA	7782	1992-01-23	1690	ACCOUNTING	EMPLOYEE	COLOM	ENRIQUE
8001	RUIZ	FERNANDA	7839	1992-06-10	2885	RESEARCH	MANAGER	NULL	NULL
9999	GONZALEZ	SERGI	NULL	2019-01-01	9000	HUMAN RESOURCES	NULL	NULL	NULL

16 rows in set (0.001 sec)

6. Try to update the EMPLOYEE with number 9999 (for instance, try to change his/her surname) using the view V_EMPLOYEES. Did it work?

7. Now insert a new employee using the view V_EMPLOYEES. Did it work? Why?