

**Course: Database management**  
**Unit: Intermediate SQL 2**  
**Material: Dates**

In order to have the same database, please, run the following SQL code:

```
DROP DATABASE IF EXISTS `SQL1NORMALDATES`;
CREATE DATABASE `SQL1NORMALDATES`;
USE `SQL1NORMALDATES`;

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');

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
(1000, 'PITT', 'BRAD', NULL, '2004-01-01', 1040, NULL, 20, NULL),
(7369, 'SÁNCHEZ', 'SERGIO', 8001, '2010-12-17', 1040, NULL, 20, 'EMP'),
(7499, 'ARROYO', 'MARTA', 7698, '2010-02-20', 1500, 390, 30, 'SAL'),
(7521, 'GONZÁLEZ', 'RAUL', 7782, '2011-02-22', 1625, 650, 30, 'SAL'),
(7566, 'JIMÉNEZ', 'JUAN JOSÉ', 1000, '2017-04-02', 2900, NULL, 20, 'MAN'),
(7654, 'MARTÍN', 'MONICA', 7698, '2017-09-29', 1600, 1020, 30, 'SAL'),
(7698, 'GUASP', 'BARTOLOME', 1000, '2017-05-01', 3005, NULL, 30, 'MAN'),
(7782, 'CEREZO', 'JOSÉ', 1000, '2010-06-09', 2885, NULL, 10, 'MAN'),
(7788, 'GIL', 'JAVIER', 8000, '2010-11-09', 3000, NULL, 20, NULL),
(7844, 'TOVAR', 'LUIS', 7698, '2018-09-08', 1350, 0, 30, 'SAL'),
(7876, 'ALONSO', 'FERNANDO', 7788, '2018-09-23', 1430, NULL, 20, 'EMP'),
(7900, 'JIMENO', 'XAVIER', 8001, '2017-12-03', 1335, NULL, 30, 'EMP'),
(7902, 'FERNÁNDEZ', 'ANA', 8000, '2016-12-03', 3000, NULL, 20, NULL),
(7934, 'MUÑOZ', 'ANTONIA', 8001, '2016-01-23', 1690, NULL, 10, 'EMP'),
(8000, 'BANDERAS', 'ANTONIO', 1000, '2017-01-09', 2885, NULL, 20, 'MAN'),
(8001, 'RUIZ', 'FERNANDA', 1000, '2018-06-10', 2885, NULL, 20, 'MAN');

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', 'ANALIST'),
('EMP', 'EMPLOYEE'),
('MAN', 'MANAGER'),
('PRE', 'PRESIDENT'),
('SAL', 'SALESMAN');

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 `manager` (`manager`),  
  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 (`manager`) REFERENCES `EMPLOYEES`  
  (`num`),  
  ADD CONSTRAINT `EMPLOYEES_ibfk_3` FOREIGN KEY (`occu_code`) REFERENCES `OCCUPATIONS`  
  (`code`);
```

Note that the results depend on the date that you run them...

0. To do this practice we need to activate root access and to load the time zone table into MySQL/MariaDB:

**Activate root access:**

- `$> su`
- `root> mysql`
- `mysql> FLUSH PRIVILEGES;`
- `mysql> SET PASSWORD FOR 'root'@'localhost' = PASSWORD('alualualu');`
- `mysql> exit`

**Load the time zone table:**

- `root> mysql_tzinfo_to_sql /usr/share/zoneinfo | mysql -u root -p mysql`

**Screenshot:**

```
[root@alumne-VirtualBox:/home/alumne# mysql -h localhost -u root -p
Enter password:
alumne@alumne-VirtualBox:~$ su
Password:
[root@alumne-VirtualBox:/home/alumne# mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2
Server version: 5.7.25-0ubuntu0.18.10.2 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)

mysql> SET PASSWORD FOR 'root'@'localhost' = PASSWORD('alualualu');
Query OK, 0 rows affected, 2 warnings (0.01 sec)

mysql> exit
Bye
root@alumne-VirtualBox:/home/alumne# service mysql restart
root@alumne-VirtualBox:/home/alumne# mysql_tzinfo_to_sql /usr/share/zoneinfo | mysql -u root -p mysql
Enter password:
Warning: Unable to load '/usr/share/zoneinfo/iso3166.tab' as time zone. Skipping it.
Warning: Unable to load '/usr/share/zoneinfo/leap-seconds.list' as time zone. Skipping it.
Warning: Unable to load '/usr/share/zoneinfo/zone.tab' as time zone. Skipping it.
Warning: Unable to load '/usr/share/zoneinfo/zone1970.tab' as time zone. Skipping it.
root@alumne-VirtualBox:/home/alumne#
```

More references here: [https://mariadb.com/kb/en/library/mysql\\_tzinfo\\_to\\_sql/](https://mariadb.com/kb/en/library/mysql_tzinfo_to_sql/)

1. Select the last day of the present month.

```
+-----+
| MyDay |
+-----+
| 2019-01-31 |
+-----+
```

2. Select the last day of the month three months before today.

```
+-----+
| MyDay |
+-----+
| 2018-10-31 |
+-----+
```

3. Show the date of exercise 2 with format “Name\_of\_month day, year with 2 digits”.

```
+-----+
| MyDay |
+-----+
| October 31, 18 |
+-----+
```

4. Write a query to convert 680001 days in a date.

MyDay
1861-10-12

6. Use CONVERT\_TZ to convert the current date/time (UTC) to Panama. Clue: Visit this [link](#).

DateMadrid	DatePanama
2019-01-31 13:19:58	2019-01-31 07:19:58

7. Use CONVERT\_TZ to convert the current date/time (UTC) to Sydney. Clue: Visit this [link](#).

DateMadrid	DateSydney
2019-01-31 13:18:29	2019-01-31 23:18:29

8. Subtract 3 hours 25 minutes to the current date/time using DATE\_SUB.

Now	MyTimestamp
2019-01-31 13:25:57	2019-01-31 03:00:57

9. Which day of the year (1, 2, 3, etc., 365) is today (example for 31-01-2019 not for today)?

Today	TodayDayNumber
2019-01-31 13:27:45	31

10. Can you convert a String to a Date and/or Time? Write an example.

11. Search on the Internet what's a period and make an example using the function PERIOD\_ADD.

12. Difference in days between the employee who started in the first place and the employee who started in the last place.

MyDay
5379

13. Select the dates inside the field EMPLOYEES.start\_date that are Tuesday.

surname	name	start_date
GONZÁLEZ	RAUL	2011-02-22
GIL	JAVIER	2010-11-09

14. Select the data of the older employee in the enterprise.

num	surname	name	manager	start_date	salary	commission	dept_num	occu_code
1000	PITT	BRAD	NULL	2004-01-01	1040	NULL	20	NULL

15. Select the employees' name, surname and years working in our enterprise (order by those years descendnt).

Option 1:	Option 2:																																																																																																						
<table><tr><th>name</th><th>surname</th><th>Years</th></tr><tr><td>BRAD</td><td>PITT</td><td>15.9479</td></tr><tr><td>MARTA</td><td>ARROYO</td><td>9.8055</td></tr><tr><td>JOSÉ</td><td>CEREZO</td><td>9.5068</td></tr><tr><td>JAVIER</td><td>GIL</td><td>9.0877</td></tr><tr><td>SERGIO</td><td>SÁNCHEZ</td><td>8.9836</td></tr><tr><td>RAUL</td><td>GONZÁLEZ</td><td>8.8000</td></tr><tr><td>ANTONIA</td><td>MUÑOZ</td><td>3.8795</td></tr><tr><td>ANA</td><td>FERNÁNDEZ</td><td>3.0164</td></tr><tr><td>ANTONIO</td><td>BANDERAS</td><td>2.9151</td></tr><tr><td>JUAN JOSÉ</td><td>JIMÉNEZ</td><td>2.6877</td></tr><tr><td>BARTOLOME</td><td>GUASP</td><td>2.6082</td></tr><tr><td>MONICA</td><td>MARTÍN</td><td>2.1945</td></tr><tr><td>XAVIER</td><td>JIMENO</td><td>2.0164</td></tr><tr><td>FERNANDA</td><td>RUIZ</td><td>1.4986</td></tr><tr><td>LUIS</td><td>TOVAR</td><td>1.2521</td></tr><tr><td>FERNANDO</td><td>ALONSO</td><td>1.2110</td></tr></table>	name	surname	Years	BRAD	PITT	15.9479	MARTA	ARROYO	9.8055	JOSÉ	CEREZO	9.5068	JAVIER	GIL	9.0877	SERGIO	SÁNCHEZ	8.9836	RAUL	GONZÁLEZ	8.8000	ANTONIA	MUÑOZ	3.8795	ANA	FERNÁNDEZ	3.0164	ANTONIO	BANDERAS	2.9151	JUAN JOSÉ	JIMÉNEZ	2.6877	BARTOLOME	GUASP	2.6082	MONICA	MARTÍN	2.1945	XAVIER	JIMENO	2.0164	FERNANDA	RUIZ	1.4986	LUIS	TOVAR	1.2521	FERNANDO	ALONSO	1.2110	<table><tr><th>name</th><th>surname</th><th>Years</th></tr><tr><td>BRAD</td><td>PITT</td><td>15 years 12 months 09 days</td></tr><tr><td>MARTA</td><td>ARROYO</td><td>09 years 10 months 19 days</td></tr><tr><td>JOSÉ</td><td>CEREZO</td><td>09 years 07 months 02 days</td></tr><tr><td>JAVIER</td><td>GIL</td><td>09 years 01 months 30 days</td></tr><tr><td>SERGIO</td><td>SÁNCHEZ</td><td>08 years 12 months 23 days</td></tr><tr><td>RAUL</td><td>GONZÁLEZ</td><td>08 years 10 months 17 days</td></tr><tr><td>ANTONIA</td><td>MUÑOZ</td><td>03 years 11 months 17 days</td></tr><tr><td>ANA</td><td>FERNÁNDEZ</td><td>03 years 01 months 06 days</td></tr><tr><td>ANTONIO</td><td>BANDERAS</td><td>02 years 11 months 30 days</td></tr><tr><td>JUAN JOSÉ</td><td>JIMÉNEZ</td><td>02 years 09 months 08 days</td></tr><tr><td>BARTOLOME</td><td>GUASP</td><td>02 years 08 months 10 days</td></tr><tr><td>MONICA</td><td>MARTÍN</td><td>02 years 03 months 12 days</td></tr><tr><td>XAVIER</td><td>JIMENO</td><td>02 years 01 months 06 days</td></tr><tr><td>FERNANDA</td><td>RUIZ</td><td>01 years 07 months 01 days</td></tr><tr><td>LUIS</td><td>TOVAR</td><td>01 years 04 months 02 days</td></tr><tr><td>FERNANDO</td><td>ALONSO</td><td>01 years 03 months 18 days</td></tr></table>	name	surname	Years	BRAD	PITT	15 years 12 months 09 days	MARTA	ARROYO	09 years 10 months 19 days	JOSÉ	CEREZO	09 years 07 months 02 days	JAVIER	GIL	09 years 01 months 30 days	SERGIO	SÁNCHEZ	08 years 12 months 23 days	RAUL	GONZÁLEZ	08 years 10 months 17 days	ANTONIA	MUÑOZ	03 years 11 months 17 days	ANA	FERNÁNDEZ	03 years 01 months 06 days	ANTONIO	BANDERAS	02 years 11 months 30 days	JUAN JOSÉ	JIMÉNEZ	02 years 09 months 08 days	BARTOLOME	GUASP	02 years 08 months 10 days	MONICA	MARTÍN	02 years 03 months 12 days	XAVIER	JIMENO	02 years 01 months 06 days	FERNANDA	RUIZ	01 years 07 months 01 days	LUIS	TOVAR	01 years 04 months 02 days	FERNANDO	ALONSO	01 years 03 months 18 days
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16. Write a query to show EMPLOYEES.start\_date in three columns: year, month and day.

Year	Month	Day
2004	1	1
2010	12	17
2010	2	20
2011	2	22
2017	4	2
2017	9	29
2017	5	1
2010	6	9
2010	11	9
2018	9	8
2018	9	23
2017	12	3
2016	12	3
2016	1	23
2017	1	9
2018	6	10

17. Write a query to show the employees that joined the enterprise in June.

surname	name	start_date
CEREZO	JOSÉ	2010-06-09
RUIZ	FERNANDA	2018-06-10

18. Write the date of exercise 17 in the next format:

surname	name	start_date
CEREZO	JOSÉ	Wednesday 9th June 2010 00:00:00
RUIZ	FERNANDA	Sunday 10th June 2018 00:00:00

19. Write a query to get the year and number of employees who began working that year.

year	num
2004	1
2010	4
2011	1
2016	2
2017	5
2018	3

20. Write a query to get the maximum number of employees who started working in our enterprise in a year.

max_num
5

21. Write a query to get the year in which more employees joined our enterprise.

year
2017

22. Show employees who are manager of other employees and the time in years that they are working in the enterprise.

num	name	surname	Years
1000	BRAD	PITT	15.9479
7698	BARTOLOME	GUASP	2.6082
7782	JOSÉ	CEREZO	9.5068
7788	JAVIER	GIL	9.0877
8000	ANTONIO	BANDERAS	2.9151
8001	FERNANDA	RUIZ	1.4986

23. Show employees who are manager of other employees working in the enterprise for more than 5 years.

num	name	surname
1000	BRAD	PITT
7782	JOSÉ	CEREZO
7788	JAVIER	GIL

24. Can you use BETWEEN keyword with dates. Write an example.

