Part 3 日期处理

- 3.1 年月日加减法

- 3.2 计算两个日期之间的天数

- 3.3 计算两个日期之间的工作日天数

- 3.4 计算当前记录和下一条记录之间的日期差

- 3.5 判断闰年

- 3.6 计算一年有多少天

- 3.7 找到当前月份的第一个和最后一个星期一

- 3.8 依据特定时间单位检索数据

- 3.9 识别重叠的日期区间

3.1 年月日加减法

- 问题，以员工CLARK的hiredate为例，计算入职的前后五天，入职的前后五个月，以及入职前后5年的日期，hiredate='09-JUN-1981'

Oracle

```
1 select   hiredate-5                        as hd_minus_5D,
2          hiredate+5                        as hd_plus_5D,
3          add_months(hiredate,-5)           as hd_minus_5M,
4          add_months(hiredate,5)            as hd_plus_5M,
5          add_months(hiredate,-5*12)        as hd_minus_5Y,
6          add_months(hiredate,5*12)         as hd_plus_5Y
7   from emp
8  where deptno = 10
```

3.1 年月日加減法 (MySQL)

```
1 select   hiredate - interval 5 day   as hd_minus_5D,
2           hiredate + interval 5 day   as hd_plus_5D,
3           hiredate - interval 5 month as hd_minus_5M,
4           hiredate + interval 5 month as hd_plus_5M,
5           hiredate - interval 5 year  as hd_minus_5Y,
6           hiredate + interval 5 year  as hd_plus_5Y
7   from emp
8  where deptno=10
```

```
1 select   date_add(hiredate,interval -5 day)   as hd_minus_5D,
2           date_add(hiredate,interval  5 day)   as hd_plus_5D,
3           date_add(hiredate,interval -5 month) as hd_minus_5M,
4           date_add(hiredate,interval  5 month) as hd_plus_5M,
5           date_add(hiredate,interval -5 year)  as hd_minus_5Y,
6           date_add(hiredate,interval  5 year)  as hd_plus_5DY
7   from emp
8  where deptno=10
```

3.2 计算两个日期之间的天数

Oracle and PostgreSQL

  1 select **ward_hd - allen_hd**
  2 from (
  3 select hiredate as ward_hd
  4 from emp
  5 where ename = 'WARD'
  6   ) x,
  7   (
  8 select hiredate as allen_hd
  9 from emp
10 where ename = 'ALLEN'
11   ) y

MySQL and SQL Server

  1 select **datediff**(ward_hd,allen_hd)
  2 from (
  3 select hiredate as ward_hd
  4 from emp
  5 where ename = 'WARD'
  6   ) x,
  7   (
  8 select hiredate as allen_hd
  9 from emp
10 where ename = 'ALLEN'
11   ) y

3.3 计算两个日期之间的工作日天数

MySQL

```
 1 select sum(case when date_format(
 2              date_add(jones_hd,
 3                   interval t500.id-1 DAY),'%a')
 4           in ( 'Sat','Sun' )
 5          then 0 else 1
 6       end) as days
 7  from (
 8 select max(case when ename = 'BLAKE'
 9          then hiredate
10       end) as blake_hd,
11      max(case when ename = 'JONES'
12          then hiredate
13       end) as jones_hd
14  from emp
15  where ename in ( 'BLAKE','JONES' )
16    ) x,
17    t500
18 where t500.id <= datediff(blake_hd,jones_hd)+1
```

Oracle

```
 1 select sum(case when to_char(jones_hd+t500.id-1,'DY')
 2           in ( 'SAT','SUN' )
 3          then 0 else 1
 4       end) as days
 5  from (
 6 select max(case when ename = 'BLAKE'
 7          then hiredate
 8       end) as blake_hd,
 9      max(case when ename = 'JONES'
10          then hiredate
11       end) as jones_hd
12  from emp
13  where ename in ( 'BLAKE','JONES' )
14    ) x,
15    t500
16  where t500.id <= blake_hd-jones_hd+1
```

3.4 计算当前记录和下一条记录之间的日期差

- 比如，计算deptno=10的部门每一个员工入职时间相差多少天

MySQL

```
1 select x.*,
2   datediff(x.next_hd, x.hiredate) diff
3   from (
4         select e.deptno, e.ename, e.hiredate,
5                 (select min(d.hiredate) from emp d
6                 where d.hiredate > e.hiredate) next_hd
7         from emp e
8         where e.deptno = 10
9     ) x
```

3.5 判断闰年

Oracle

```
1 select to_char(
2      last_day(add_months(trunc(sysdate,'y'),1)),
3      'DD')
4  from t1
```

```
select trunc(sysdate,'y')
  from t1
----------
01-JAN-2020
```

```
select add_months(trunc(sysdate,'y'),1) dy
  from t1
----------
01-FEB-2020
```

```
select last_day(add_months(trunc(sysdate,'y'),1)) dy
  from t1
----------
29-FEB-2020
```

3.5 判断闰年

MySQL

```
1 select day(
2     last_day(
3     date_add(
4     date_add(
5     date_add(current_date,
6         interval -dayofyear(current_date) day),
7         interval 1 day),
8         interval 1 month))) dy
9  from t1
```

CURRENT_DATE和CURRENT_DATE（）是CURDATE（）的同义词。

3.6 计算一年有多少天

Oracle

```
1 select add_months(trunc(sysdate,'y'),12) - trunc(sysdate,'y')
2   from dual
```

MySQL

```
1 select datediff((curr_year + interval 1 year),curr_year)
2   from (
3 select adddate(current_date,-dayofyear(current_date)+1) curr_year
4   from t1
5      ) x
```

3.7 找到当前月份的第一个和最后一个星期一

Oracle

1 select next_day(trunc(sysdate,'mm')-1,'MONDAY') first_monday,

2   next_day(last_day(trunc(sysdate,'mm'))-7,'MONDAY') last_monday

3 from dual

MySQL

```
1 select first_monday,
2      case month(adddate(first_monday,28))
3          when mth then adddate(first_monday,28)
4              else adddate(first_monday,21)
5      end last_monday
6  from (
7 select case sign(dayofweek(dy)-2)
8          when 0 then dy
9          when -1 then adddate(dy,abs(dayofweek(dy)-2))
10          when 1 then adddate(dy,(7-(dayofweek(dy)-2)))
11      end first_monday,
12      mth
13  from (
14 select adddate(adddate(current_date,-day(current_date)),1) dy,
15      month(current_date) mth
16  from t1
17      ) x
18      ) y
```

3.8 依据特定时间单位检索数据

- 指定月份、星期或者其它时间单位来筛选记录行。
- 比如：找到入职月份是February或者December，而且入职当天是星期二的所有员工

MySQL

```
1 select ename
2   from emp
3 where monthname(hiredate) in ('February','December')
4    or dayname(hiredate) = 'Tuesday'
```

Oracle

```
1 select ename
2   from emp
3 where rtrim(to_char(hiredate,'month')) in ('february','december')
4    or rtrim(to_char(hiredate,'day')) = 'tuesday'
```

3.9 识别重叠的日期区间

select * from emp_project

```
EMPNO ENAME    PROJ_ID    PROJ_START    PROJ_END
------ -------------  -------  ----------------  -----------------
7782    CLARK    1        16-JUN-2005 18-JUN-2005
7782    CLARK    4        19-JUN-2005 24-JUN-2005
7782    CLARK    7        22-JUN-2005 25-JUN-2005
7782    CLARK    10       25-JUN-2005 28-JUN-2005
7782    CLARK    13       28-JUN-2005 02-JUL-2005
7839    KING     2        17-JUN-2005 21-JUN-2005
7839    KING     8        23-JUN-2005 25-JUN-2005
7839    KING     14       29-JUN-2005 30-JUN-2005
7839    KING     11       26-JUN-2005 27-JUN-2005
7839    KING     5        20-JUN-2005 24-JUN-2005
7934    MILLER   3        18-JUN-2005 22-JUN-2005
7934    MILLER   12       27-JUN-2005 28-JUN-2005
7934    MILLER   15       30-JUN-2005 03-JUL-2005
7934    MILLER   9        24-JUN-2005 27-JUN-2005
7934    MILLER   6        21-JUN-2005 23-JUN-2005
```

筛选手头项目尚未结束，又开始另一个项目

```
EMPNO ENAME      MSG
------- ---------  -------------------------------------
7782  CLARK        project 7 overlaps project 4
7782  CLARK        project 10 overlaps project 7
7782  CLARK        project 13 overlaps project 10
7839  KING         project 8 overlaps project 5
7839  KING         project 5 overlaps project 2
7934  MILLER       project 12 overlaps project 9
7934  MILLER       project 6 overlaps project 3
```

MySQL

```
1 select a.empno,a.ename,
2      concat('project ',b.proj_id,
3       ' overlaps project ',a.proj_id) as msg
4   from emp_project a,
5       emp_project b
6  where a.empno = b.empno
7    and b.proj_start >= a.proj_start
8    and b.proj_start <= a.proj_end
9    and a.proj_id != b.proj_id
```

Oracle, PostgreSQL, and DB2

```
1 select a.empno,a.ename,
2      'project '||b.proj_id||
3       ' overlaps project '||a.proj_id as msg
4   from emp_project a,
5       emp_project b
6  where a.empno = b.empno
7    and b.proj_start >= a.proj_start
8    and b.proj_start <= a.proj_end
9    and a.proj_id != b.proj_id
```

思考题

- SQL题目

  - 1）找出当前季度的第一个星期天和最后一个星期三

  - 2）计算两个日期差几个月，几年，比如17-dec-2017，和12-JAN-2020，不能直接2020-2017，因为实际他们只差了25个月，两年多一点点

  - 3）找到同月同日的人

  - 2，3两题，日期都是从数据库不同记录中读出的，是一个通用的SQL，比如这组例子，2是员工入职的最大值和最小值之间差多少，3比如找到入职的同月和同日的人

End

好的，疫情应该结束了把……