

Temporal join Example

Thursday, October 18, 2018 9:24 AM

EmployeeSal S

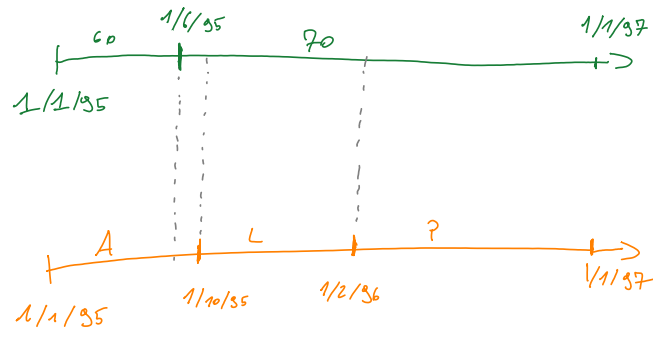
Name	Salary	FromDate	ToDate
John	60.000	1/1/95	1/6/95
John	70.000	1/6/95	1/1/97

EmployeeTitle T

Name	Title	FromDate	ToDate
John	Assistant	1/1/95	1/10/95
John	Lecturer	1/10/95	1/2/96
John	Professor	1/2/96	1/1/97

EmployeeSal ⋈ **EmployeeTitle**

Name	Salary	Title	FromDate	ToDate
John	60.000	Assistant	1/1/95	1/6/95
John	70.000	Assistant	1/6/95	1/10/95
John	70.000	Lecturer	1/10/95	1/2/96
John	70.000	Professor	1/2/96	1/1/97



For each couple $t \in T$ $s \in S$
find the period where they are both valid

A. Extensive Method

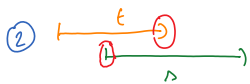
4 cases



```
SELECT s.SSN, s.salary, t.title, t.FromDate, t.ToDate
FROM S s, T t
WHERE t.SSN = s.SSN
AND s.FromDate <= t.FromDate
AND t.ToDate <= s.ToDate
```

be sure all the
reled have the same
columns

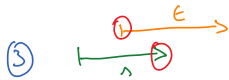
```
SELECT s.SSN, s.salary, t.title, t.FromDate as START, t.ToDate as END
FROM S s, T t
WHERE t.SSN = s.SSN
AND s.FromDate <= t.FromDate
AND t.ToDate <= s.ToDate
```



```
SELECT s.SSN, s.salary, t.title, s.FromDate, t.ToDate
FROM S s, T t
WHERE t.SSN = s.SSN
AND s.FromDate > t.FromDate 1
AND t.ToDate > s.FromDate 2
AND t.ToDate <= s.ToDate 3
```

UNION ALL

```
SELECT s.SSN, s.salary, t.title, s.FromDate as START, t.ToDate as END
FROM S s, T t
WHERE t.SSN = s.SSN
AND s.FromDate > t.FromDate
AND t.ToDate > s.FromDate
AND t.ToDate <= s.ToDate
```



```
SELECT s.SSN, s.salary, t.title, t.FromDate, s.ToDate
FROM S s, T t
WHERE t.SSN = s.SSN
AND t.FromDate > s.FromDate 1
AND t.FromDate < s.ToDate 2
AND s.ToDate <= t.ToDate 3
```

UNION ALL

```
SELECT s.SSN, s.salary, t.title, t.FromDate as START, s.ToDate as END
FROM S s, T t
WHERE t.SSN = s.SSN
AND t.FromDate > s.FromDate
AND t.FromDate < s.ToDate
AND s.ToDate <= t.ToDate
```

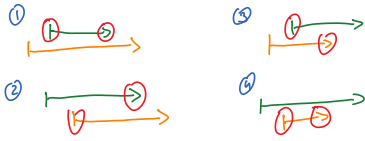


```
SELECT s.SSN, s.salary, t.title, s.FromDate, s.ToDate
FROM S s, T t
WHERE t.SSN = s.SSN
AND t.FromDate < s.FromDate
AND s.ToDate < t.ToDate
```

UNION ALL

```
SELECT s.SSN, s.salary, t.title, s.FromDate as START, s.ToDate as END
FROM S s, T t
WHERE t.SSN = s.SSN
AND t.FromDate < s.FromDate
AND s.ToDate < t.ToDate
```

B. Short method



Always $[\max(\text{Start}), \min(\text{End})]$
But check that they intersect!

```
SELECT s.SSN, s.salary, t.title, maxDate(s.FromDate, t.FromDate) AS StartDate,
      minDate(s.ToDate, t.ToDate) AS EndDate
FROM S s, T t
WHERE s.SSN = t.SSN
AND maxDate(s.FromDate, t.FromDate) < minDate(s.ToDate, t.ToDate)
```

↳ We can write it this because:

- no intersection means
 - $s.end < t.start$
 - or
 - $t.end < s.start$
 - Therefore intersection if;
 - $s.end > t.start$
 - and
 - $t.end > s.start$
 - by nature we know that
 - $t.end > t.start$
 - $s.end > s.start$
- in particular (worst case)
 $\min(s.end, t.end) > \max(t.start, s.start)$