

# Natural Joins In PROC SQL

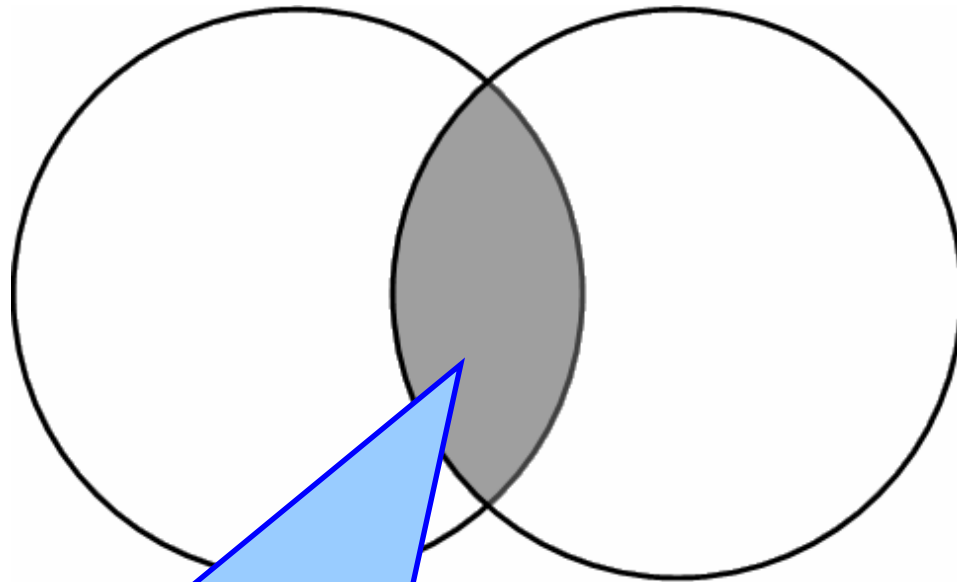
*Presented By* John Fleming



# WARNING

Some of the code you are about to see is not ANSI standard SQL. It contains features that are specific to the SAS implementation of SQL and may not produce the expected results when used with other database management systems.

# The Inner Join



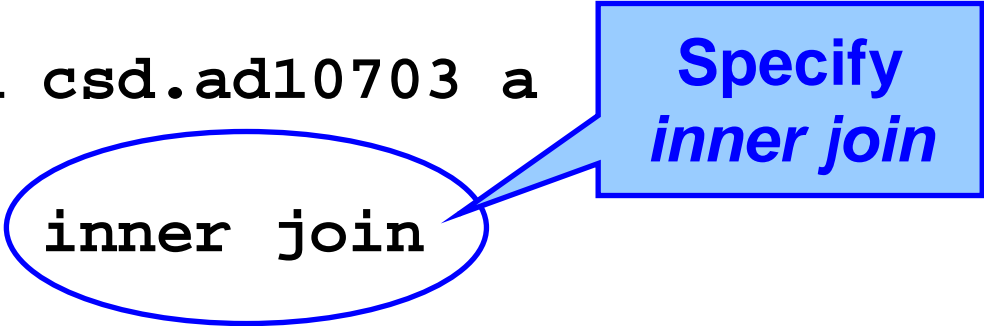
**Select those records where both tables have identical values in common columns**

# The Standard Inner Join

```
select a.offnnumb, offnsex, casenumb,  
       caseseqn, admtdate  
  
from csd.ad10703 a  
  
     inner join  
  
     csd.ad30703 b  
  
     on a.offnnumb=b.offnnumb;
```

# The Standard Inner Join

```
select a.offnnumb, offnsex, casenumb,  
       caseseqn, admtdate  
from   csd.ad10703 a  
       inner join  
       csd.ad30703 b  
on     a.offnnumb=b.offnnumb;
```



Specify  
*inner join*

# The Standard Inner Join

```
select a.offnnumb, offnsex, casenumb,  
       caseseqn, admtdate  
  
from csd.ad10703 a  
  
inner join  
  
csd.ad30703 b  
  
on a.offnnumb=b.offnnumb;
```

The clause  
*“on a.offnnumb=b.offnnumb”*  
is needed

# The Standard Inner Join

```
select a.offnnumb, offnsex, casenumb,  
       caseseqn, admtdate  
from   csd.ad10703 a  
       inner join  
       csd.ad30703 b  
on     a.offnnumb=b.offnnumb;
```

Aliasing  
required

# Natural Inner Join (1)

```
select offnnumb, offnsex, casenumb,  
       caseseqn, admtdate  
  
from   csd.ad10703  
  
       natural join  
  
       csd.ad30703;
```

# Natural Inner Join (1)

```
select offnnumb, offnsex, casenumb,  
       caseseqn, admtdate  
  
from   csd.ad10703  
  
       natural join  
  
       csd.ad30703;
```

*“natural join”*  
(or *“natural inner join”*)  
instead of  
*“inner join”*

# Natural Inner Join (1)

```
select offnnumb, offnsex, casenumb,  
       caseseqn, admtdate  
  
from   csd.ad10703  
  
       natural join  
  
       csd.ad30703;
```



The clause  
“*on a.offnnumb=b.offnnumb*”  
is missing

# Natural Inner Join (1)

```
select offnnumb, offnsex, casenumb,  
       caseseqn, admtdate  
from   csd.ad10703  
       natural join  
       csd.ad30703;
```

**Aliasing not  
needed**

# Word To The Wary (1)

- ✘ A natural join assumes that we want to base the join on equal values of all pairs of common columns—not just those on which we want to base the join.
- ✓ We need to drop those common columns that are not part of the join before we do the join.

# Word To The Wary (2)

- ✘ If we specify a natural join on tables that do not have at least one column in common, the result is a Cartesian product.
- ✓ We can use a `WHERE` clause to limit the output

# Natural Inner Join (2)

```
select *  
  
from csd.ad10703 (keep=offnnumb offnsex)  
  
    natural join  
  
    csd.ad30703 (keep=offnnumb casenumb  
                caseseqn admtdate);
```

# Natural Inner Join (2)

```
select *
```

```
from csd.ad10703 (keep=offnnumb offnsex)
```

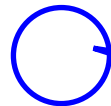
```
natural join
```

```
csd.ad30703 (keep=offnnumb casenumb  
            caseseqn admtdate);
```

*“natural join”  
instead of  
“inner join”*

# Natural Inner Join (2)

```
select *  
  
from csd.ad10703 (keep=offnnumb offnsex)  
  
natural join  
  
csd.ad30703 (keep=offnnumb casenumb  
             caseseqn admtdate;
```



The clause  
“*on a.offnnumb=b.offnnumb*”  
is missing

# Natural Inner Join (2)

Aliasing not  
needed

```
select *  
  
from csd.ad10703 (keep=offnnumb offnsex)  
  
natural join  
  
csd.ad30703 (keep=offnnumb casenumb  
            caseseqn admtdate);
```

# Natural Inner Join (2)

select

\*

Use the wildcard character (\*) to select all variables

from csd.ad10703 (keep=offnnumb offnsex)

natural join

csd.ad30703 (keep=offnnumb casenumb  
caseseqn admtdate);

# Natural Inner Join (2)

Optional “*keep*”  
statements

```
select *
```

```
from csd.ad10703 (keep=offnnumb offnsex)
```

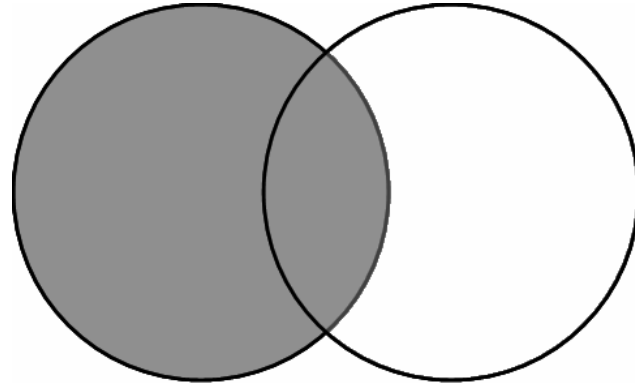
```
natural join
```

```
csd.ad30703 (keep=offnnumb casenumb  
             caseseqn admtdate);
```

“Using Data Set Options in PROC  
SQL” (SUGI Paper 131-31 )

# Outer Joins

✓ Natural left join

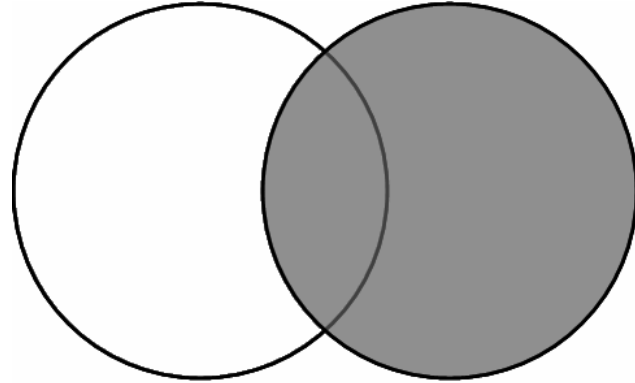


```
select offnnumb, offnsex,  
       caseseqn, admdate  
  
from csd.ad10703  
  
       natural left join  
  
       csd.ad30703;
```

*“natural left join”  
instead of  
“left join”*

# Outer Joins

- ✓ Natural left join
- ✓ Natural right join

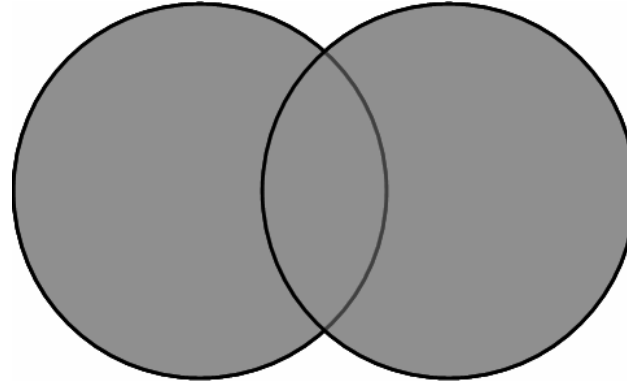


```
select offnnumb, offnsex,
       caseseqn, admdate
from csd.ad10703
       natural right join
       csd.ad30703;
```

*“natural right join”  
instead of  
“right join”*

# Outer Joins

- ✓ Natural left join
- ✓ Natural right join
- ✓ Natural full join



```
select offnnumb, offnsex,
       caseseqn, admtdate
from csd.ad10703
       natural full join
       csd.ad30703;
```

*“natural full join”  
instead of  
“full join”*

# Word To The Wary (3)

- ✓ With the inner join, aliasing is redundant. We get the same results when we alias as we do when we don't alias.
- ✗ With the outer join, aliasing will affect the results. We can get a different output table when we alias than we do when we don't alias.

# Advantages Of Natural Joins

- ✓ Coding is streamlined.
- ✓ The ON clause is implied,
- ✓ We do not need to use table aliases to qualify column names that are common to both tables.
- ✓ We can use the wildcard character (\*) to select columns.

# Disadvantages

- ✘ We cannot base a join on columns with different names.
- ✘ We cannot base our join on inequalities or other comparison operators.
- ✓ To do these joins we must use standard inner or outer join syntax instead.

# Questions?

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