

```
fdb=> \d film
```

```
Table "public.film"
```

Column	Type	Modifiers
filmid	integer	
title	text	not null
prodyear	integer	

Indexes:

```
"filmpkey" UNIQUE CONSTRAINT, btree (filmid)
```

```
"filmtitleindex" btree (title)
```

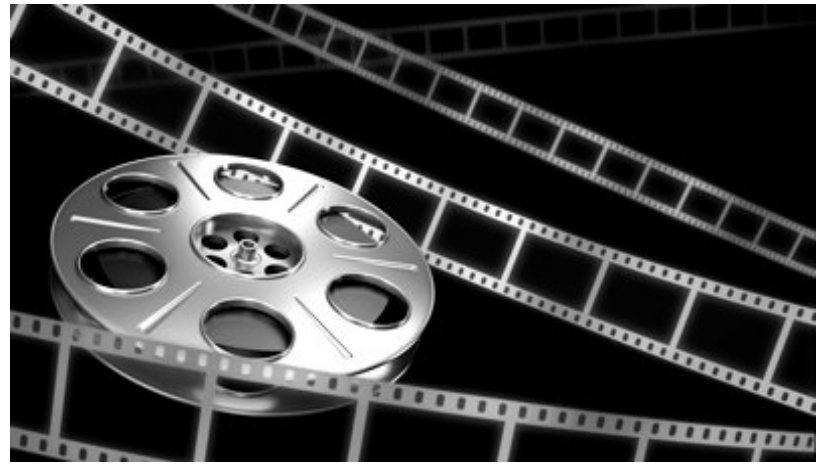
```
"filmyearindex" btree (prodyear)
```

Foreign-key constraints:

```
"filmfkey" FOREIGN KEY (filmid) REFERENCES filmitem(filmid)
```

```
select count (filmid)
```

```
from film; -- hvorfor er det unødvendig med distinct filmid ?
```



```
fdb=> \d filmcountry
Table "public.filmcountry"
Column | Type | Modifiers
-----+-----+-----
filmid | integer |
country | text |
```

Indexes:

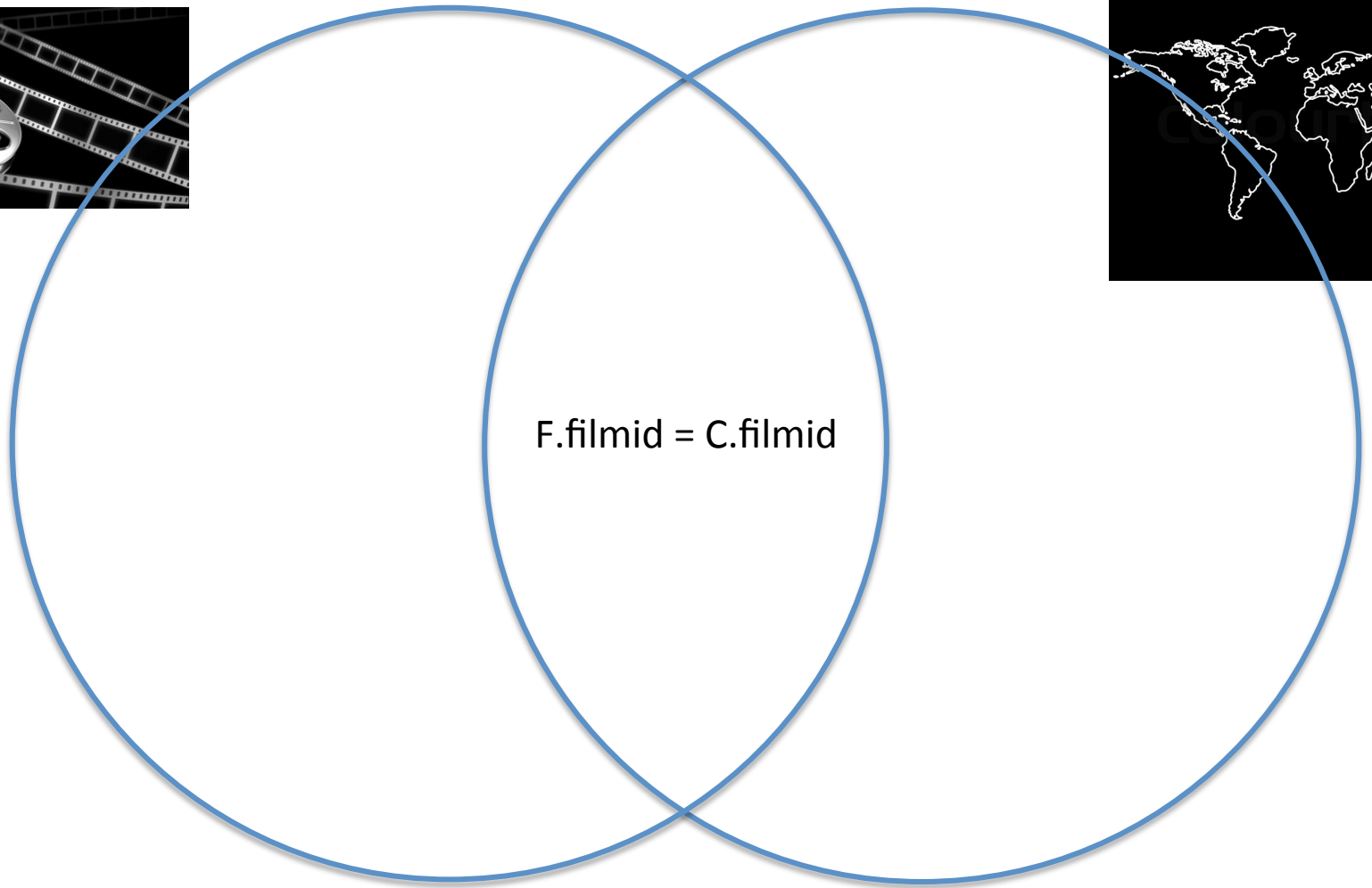
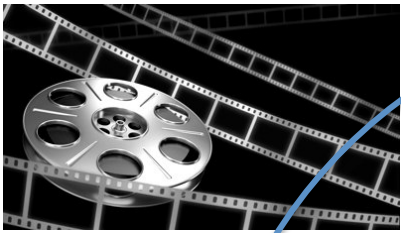
```
"filmcountrykey" UNIQUE CONSTRAINT, btree (filmid, country)
"filmcountryfilmidindex" btree (filmid)
```

Foreign-key constraints:

```
"filmcountryfkey" FOREIGN KEY
(filmid) REFERENCES filmitem(filmid)
```



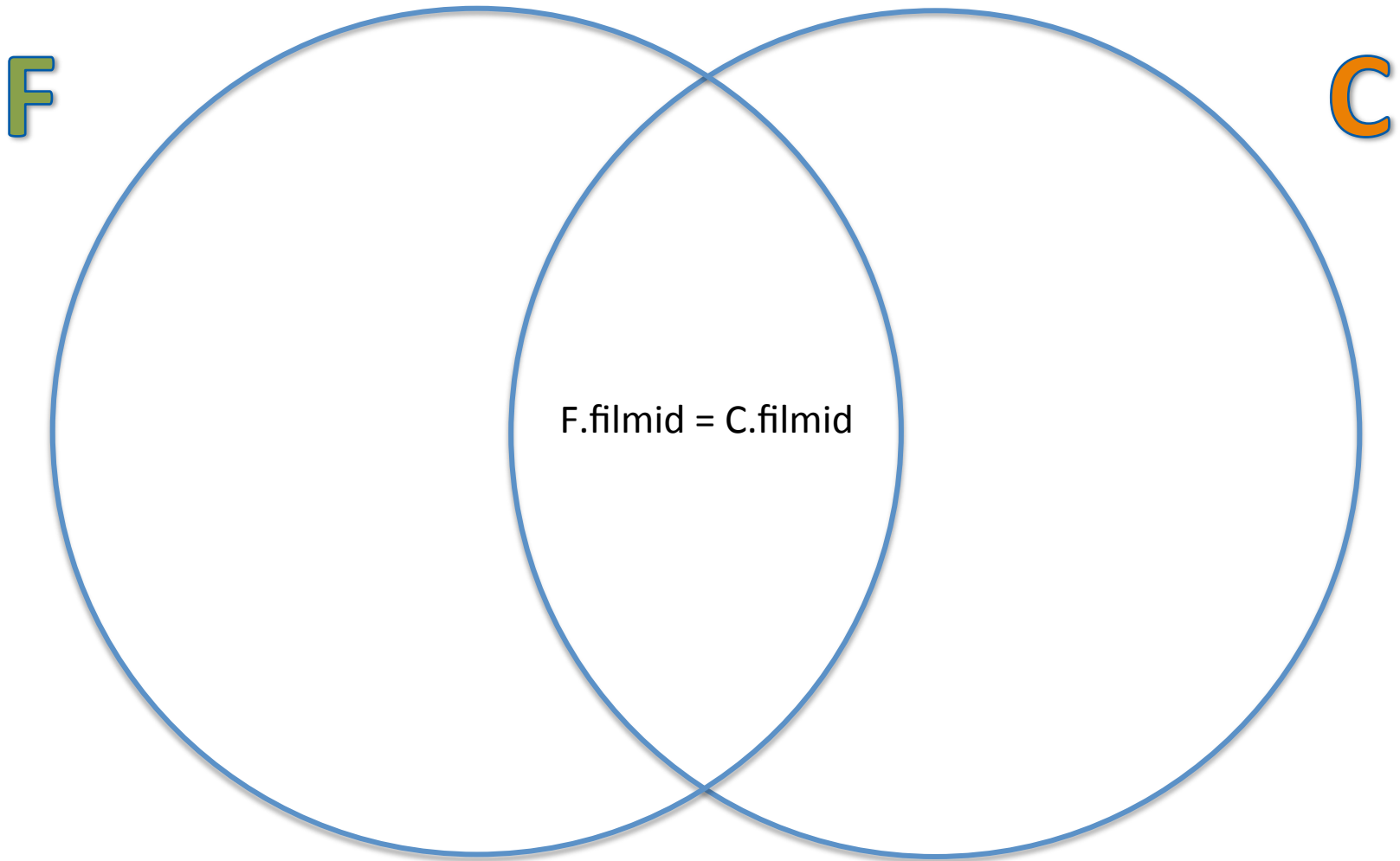
```
select count (distinct filmid)
from filmcountry; -- hvorfor er distinct nødvendig her?
```



F.filmid = C.filmid

```
select *  
from Film F natural join Filmcountry C
```

(filmid, title, prodyear, country)

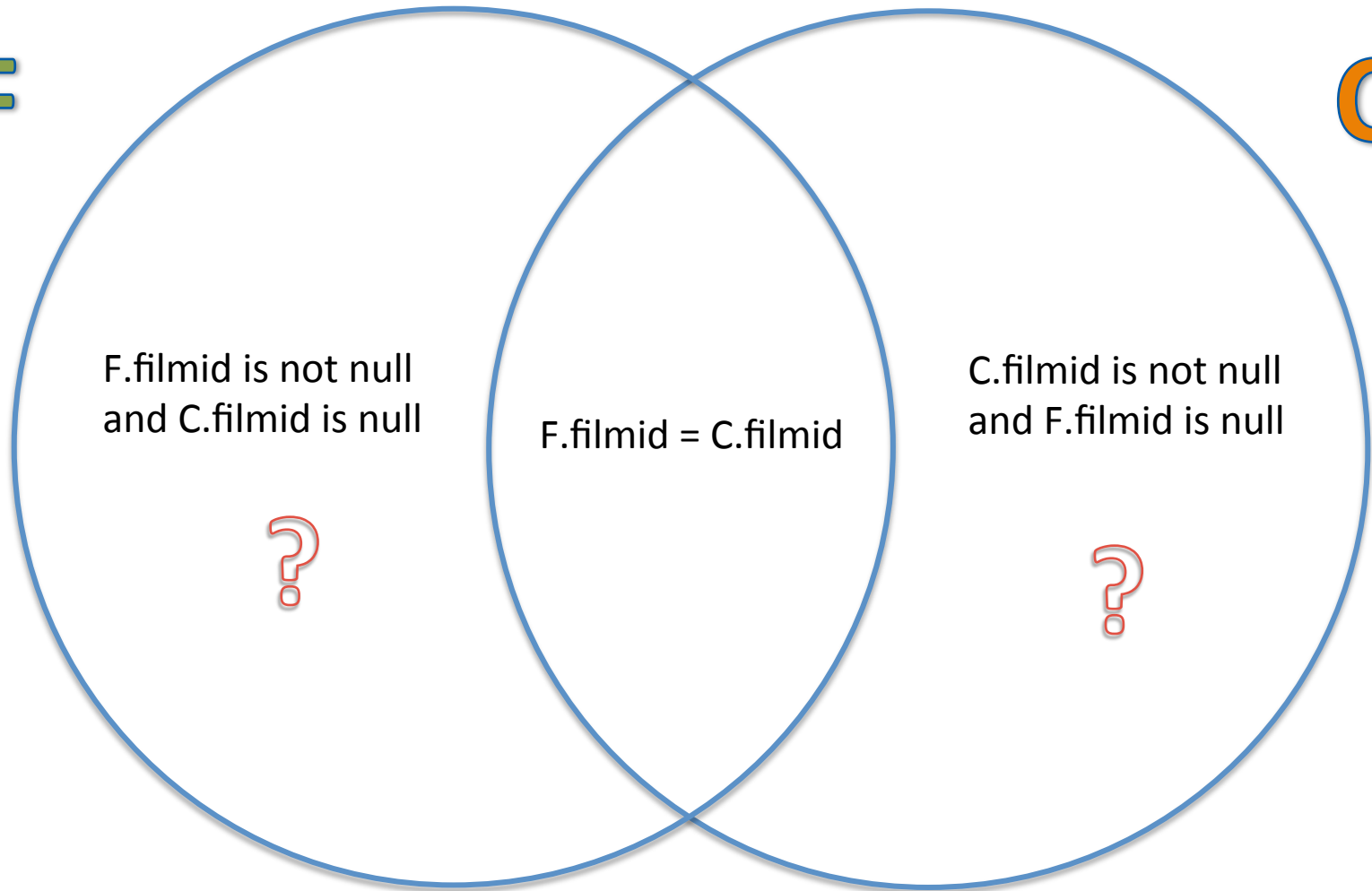


Et tuppel fra $F \times C$ (kartesisk produkt) har disse attributtene:

(F.filmid, title, prodyear, C.filmid, country)

F

C

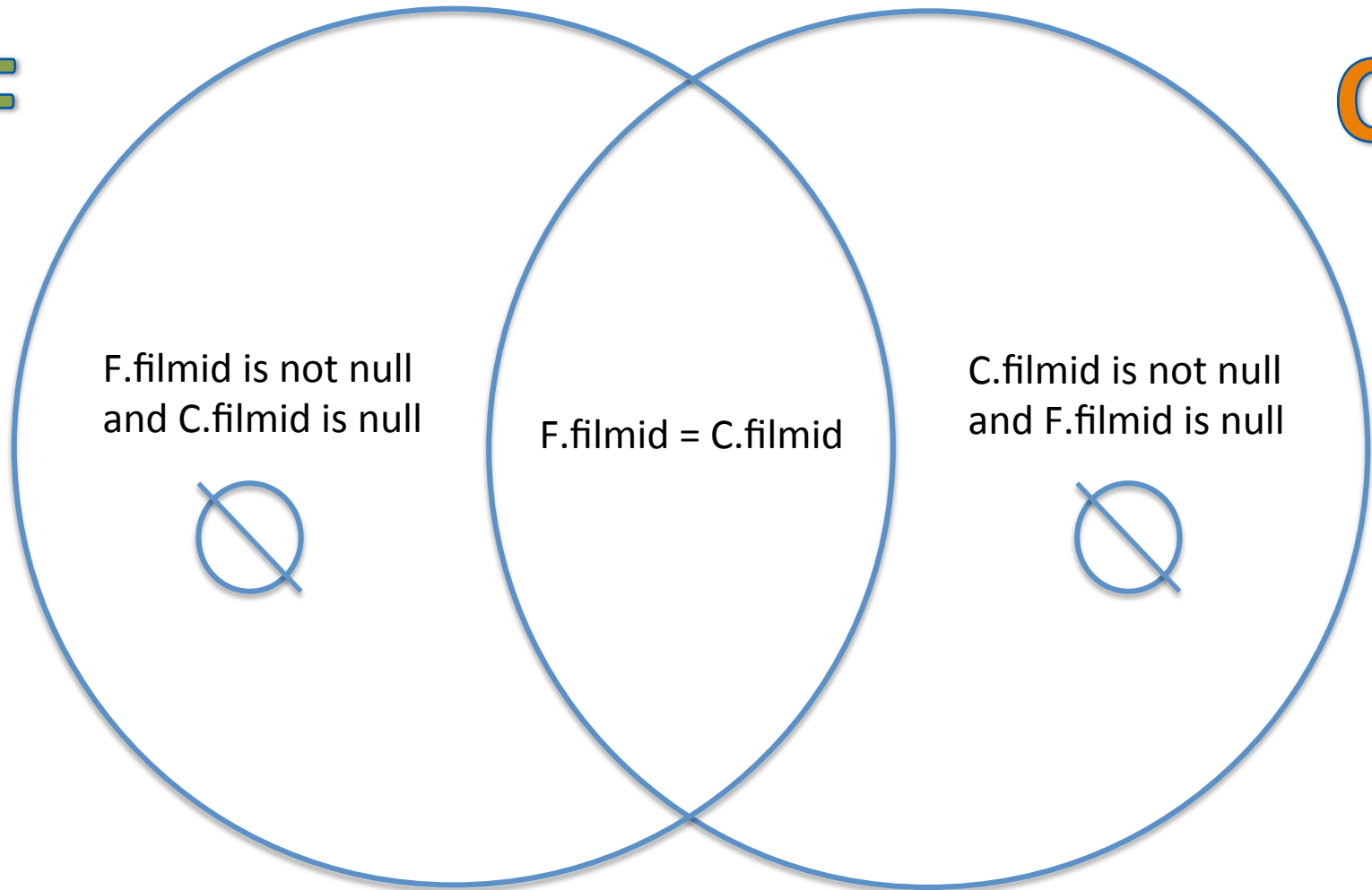


Et tuppel fra $F \times C$ (kartesisk produkt) har disse attributtene:

(F.filmid, title, prodyear, C.filmid, country)

F

C



Et tuppel fra $F \times C$ (kartesisk produkt) har disse attributtene:

(F.filmid, title, prodyear, C.filmid, country)

F

C

F.filmid is not null
and C.filmid is not null
and F.filmid <> C.filmid

F.filmid = C.filmid

F.filmid is not null
and C.filmid is not null
and F.filmid <> C.filmid

Et tuppel fra $F \times C$ (kartesisk produkt) har disse attributtene:

(F.filmid, title, prodyear, C.filmid, country)

F

C

filmid	title	prodyear
29000	Armageddon	1998
217739	Armageddon	1999
271692	Armageddon	1994
334412	Armageddon	1977
432538	Armageddon	1923
432554	Armageddon	1962
432570	Armageddon	1969
831068	Armageddon	1997
1969660	Armageddon	1998
2728636	Armageddon	1989
2984924	Armageddon	1997

filmid	country
43329	Kosovo
79787	Kosovo
123751	Kosovo
175640	Kosovo
381154	Kosovo
629179	Kosovo
706983	Kosovo
3790202	Kosovo
4867338	Kosovo



filmid	title	prodyear	country
29000	Armageddon	1998	USA
175640	Migjeni	1990	Kosovo
217739	Armageddon	1999	USA
432538	Armageddon	1923	UK
432554	Armageddon	1962	Soviet Union
432570	Armageddon	1969	Canada
629179	Etjet e Kosovës	2006	Kosovo
706983	Kulla	1991	Kosovo
3790202	Kukumi	2005	Kosovo
4867338	Një lindje	1973	Kosovo

F



filmid	title	prodyear
29000	Armageddon	1998
217739	Armageddon	1999
271692	Armageddon	1994
334412	Armageddon	1977
432538	Armageddon	1923
432554	Armageddon	1962
432570	Armageddon	1969
831068	Armageddon	1997
1969660	Armageddon	1998
2728636	Armageddon	1989
2984924	Armageddon	1997

F



filmid	title	prodyear
29000	Armageddon	1998
217739	Armageddon	1999
271692	Armageddon	1994
334412	Armageddon	1977
432538	Armageddon	1923
432554	Armageddon	1962
432570	Armageddon	1969
831068	Armageddon	1997
1969660	Armageddon	1998
2728636	Armageddon	1989
2984924	Armageddon	1997

C



filmid	country
43329	Kosovo
79787	Kosovo
123751	Kosovo
175640	Kosovo
381154	Kosovo
629179	Kosovo
706983	Kosovo
3790202	Kosovo
4867338	Kosovo

natural join

F



C



natural join

filmid		
29000	Armageddon	1998
217739	Armageddon	1999
271692	Armageddon	1994
334412	Armageddon	1977
432538	Armageddon	1923
432554	Armageddon	1962
432570	Armageddon	1969
831068	Armageddon	1997
1969660	Armageddon	1998
2728636	Armageddon	1989
2984924	Armageddon	1997

filmid	country
43329	Kosovo
79787	Kosovo
123751	Kosovo
175640	Kosovo
381154	Kosovo
629179	Kosovo
706983	Kosovo
3790202	Kosovo
4867338	Kosovo

filmid	title	prodyear	country
29000	Armageddon	1998	USA
175640	Migjeni	1990	Kosovo
217739	Armageddon	1999	USA
432538	Armageddon	1923	UK
432554	Armageddon	1962	Soviet Union
432570	Armageddon	1969	Canada
629179	Etjet e Kosovës	2006	Kosovo
706983	Kulla	1991	Kosovo
3790202	Kukumi	2005	Kosovo
4867338	Një lindje	1973	Kosovo

F



C



filmid		
29000	Armageddon	1998
217739	Armageddon	1999
271692	Armageddon	1994
334412	Armageddon	1977
432538	Armageddon	1923
432554	Armageddon	1962
432570	Armageddon	1969
831068	Armageddon	1997
1969660	Armageddon	1998
2728636	Armageddon	1989
2984924	Armageddon	1997

filmid	country
43329	Kosovo
79787	Kosovo
123751	Kosovo
175640	Kosovo
381154	Kosovo
629179	Kosovo
706983	Kosovo
3790202	Kosovo
4867338	Kosovo

filmid	title	prodyear	country
29000	Armageddon	1998	USA
175640	Migjeni	1990	Kosovo
217739	Armageddon	1999	USA
432538	Armageddon	1923	UK
432554	Armageddon	1962	Soviet Union
432570	Armageddon	1969	Canada
629179	Etjet e Kosovës	2006	Kosovo
706983	Kulla	1991	Kosovo
3790202	Kukumi	2005	Kosovo
4867338	Një lindje	1973	Kosovo

F

filmid	title	prodyear
29000	Armageddon	1998
217739	Armageddon	1999
271692	Armageddon	1994
334412	Armageddon	1977
432538	Armageddon	1923
432554	Armageddon	1962
432570	Armageddon	1969
831068	Armageddon	1997
1969660	Armageddon	1998
2728636	Armageddon	1989
2984924	Armageddon	1997

C

filmid	country
43329	Kosovo
79787	Kosovo
123751	Kosovo
175640	Kosovo
381154	Kosovo
629179	Kosovo
706983	Kosovo
3790202	Kosovo
4867338	Kosovo

filmid	title	prodyear	country
29000	Armageddon	1998	USA
175640	Migjeni	1990	Kosovo
217739	Armageddon	1999	USA
432538	Armageddon	1923	UK
432554	Armageddon	1962	Soviet Union
432570	Armageddon	1969	Canada
629179	Etjet e Kosovës	2006	Kosovo
706983	Kulla	1991	Kosovo
3790202	Kukumi	2005	Kosovo
4867338	Një lindje	1973	Kosovo

F

filmid	title	prodyear
29000	Armageddon	1998
217739	Armageddon	1999
271692	Armageddon	1994
334412	Armageddon	1977
432538	Armageddon	1923
432554	Armageddon	1962
432570	Armageddon	1969
831068	Armageddon	1997
1969660	Armageddon	1998
2728636	Armageddon	1989
2984924	Armageddon	1997

C

filmid	country
43329	Kosovo
79787	Kosovo
123751	Kosovo
175640	Kosovo
381154	Kosovo
629179	Kosovo
706983	Kosovo
3790202	Kosovo
4867338	Kosovo

Hengetupler

filmid	title	prodyear	country
29000	Armageddon	1998	USA
175640	Migjeni	1990	Kosovo
217739	Armageddon	1999	USA
432538	Armageddon	1923	UK
432554	Armageddon	1962	Soviet Union
432570	Armageddon	1969	Canada
629179	Etjet e Kosovës	2006	Kosovo
706983	Kulla	1991	Kosovo
3790202	Kukumi	2005	Kosovo
4867338	Një lindje	1973	Kosovo

F**C**

filmid	title	prodyear
29000	Armageddon	1998
217739	Armageddon	1999
271692	Armageddon	1994
334412	Armageddon	1977
432538	Armageddon	1923
432554	Armageddon	1962
432570	Armageddon	1969
831068	Armageddon	1997
1969660	Armageddon	1998
2728636	Armageddon	1989
2984924	Armageddon	1997

filmid	country
43329	Kosovo
79787	Kosovo
123751	Kosovo
175640	Kosovo
381154	Kosovo
629179	Kosovo
706983	Kosovo
3790202	Kosovo
4867338	Kosovo

Hengetupler
har en verdi i
joinattributtet
som ikke finnes
i tabellen det
joines med

filmid	title	prodyear	country
29000	Armageddon	1998	USA
175640	Migjeni	1990	Kosovo
217739	Armageddon	1999	USA
432538	Armageddon	1923	UK
432554	Armageddon	1962	Soviet Union
432570	Armageddon	1969	Canada
629179	Etjet e Kosovës	2006	Kosovo
706983	Kulla	1991	Kosovo
3790202	Kukumi	2005	Kosovo
4867338	Një lindje	1973	Kosovo

De blir ikke med i
F natural join C

F

C

F.filmid is not null
and C.filmid is null

hengetupler

F.filmid = C.filmid

C.filmid is not null
and F.filmid is null

hengetupler

F

C

F.filmid is not null
and C.filmid is null

F.filmid = C.filmid

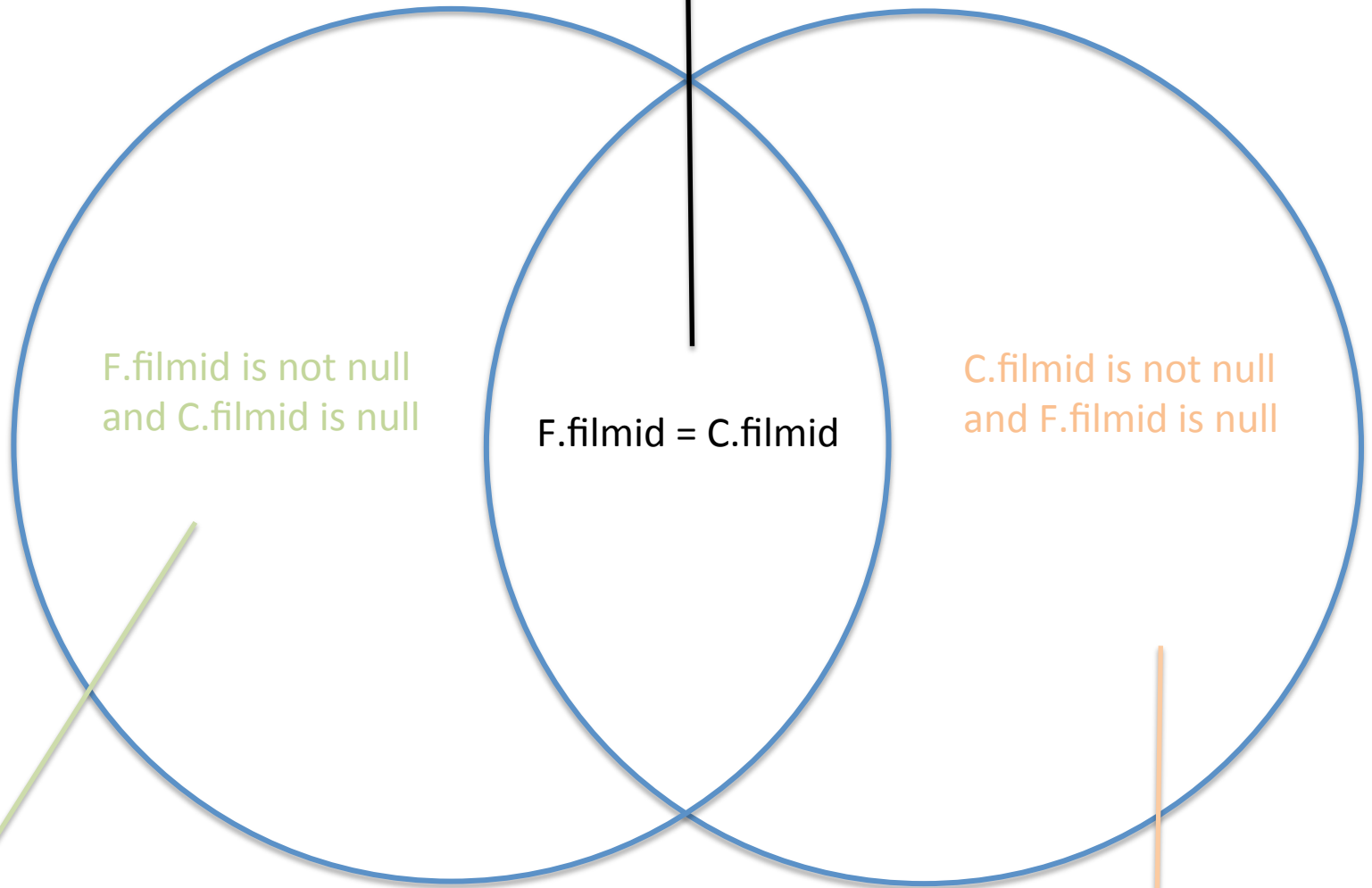
C.filmid is not null
and F.filmid is null

Select *

from Film F full outer join Filmcountry C
on F.filmid=C.filmid

(F.filmid, title, prodyear, C.filmid, country)

432570 | Armageddon | 1969 | 432570 | Canada



F.filmid is not null
and C.filmid is null

F.filmid = C.filmid

C.filmid is not null
and F.filmid is null

2984924 | Armageddon | 1997 | | |

filmid | title | prodyear | filmid | country
-----+-----+-----+-----+-----
| | | 43329 | Kosovo

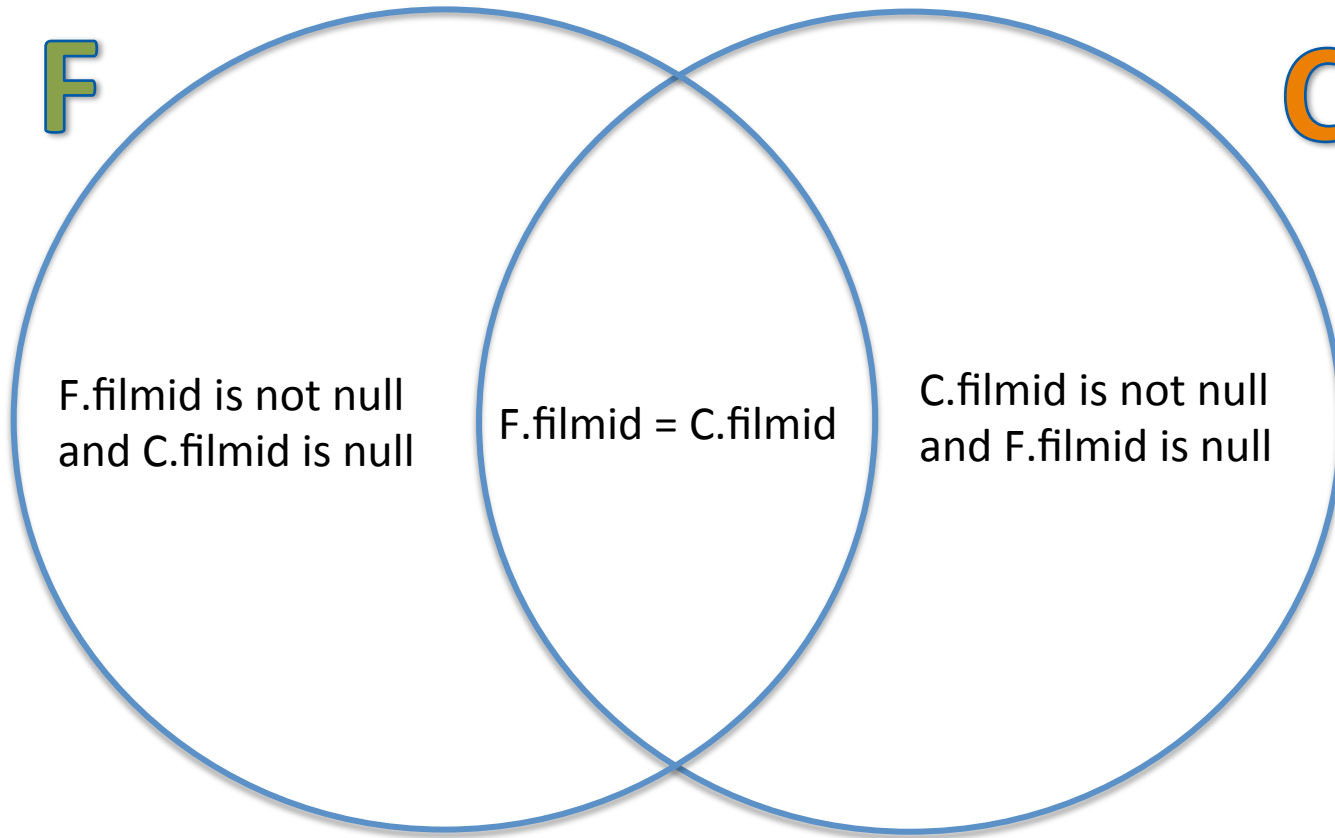
F

C

F.filmid is not null
and C.filmid is null

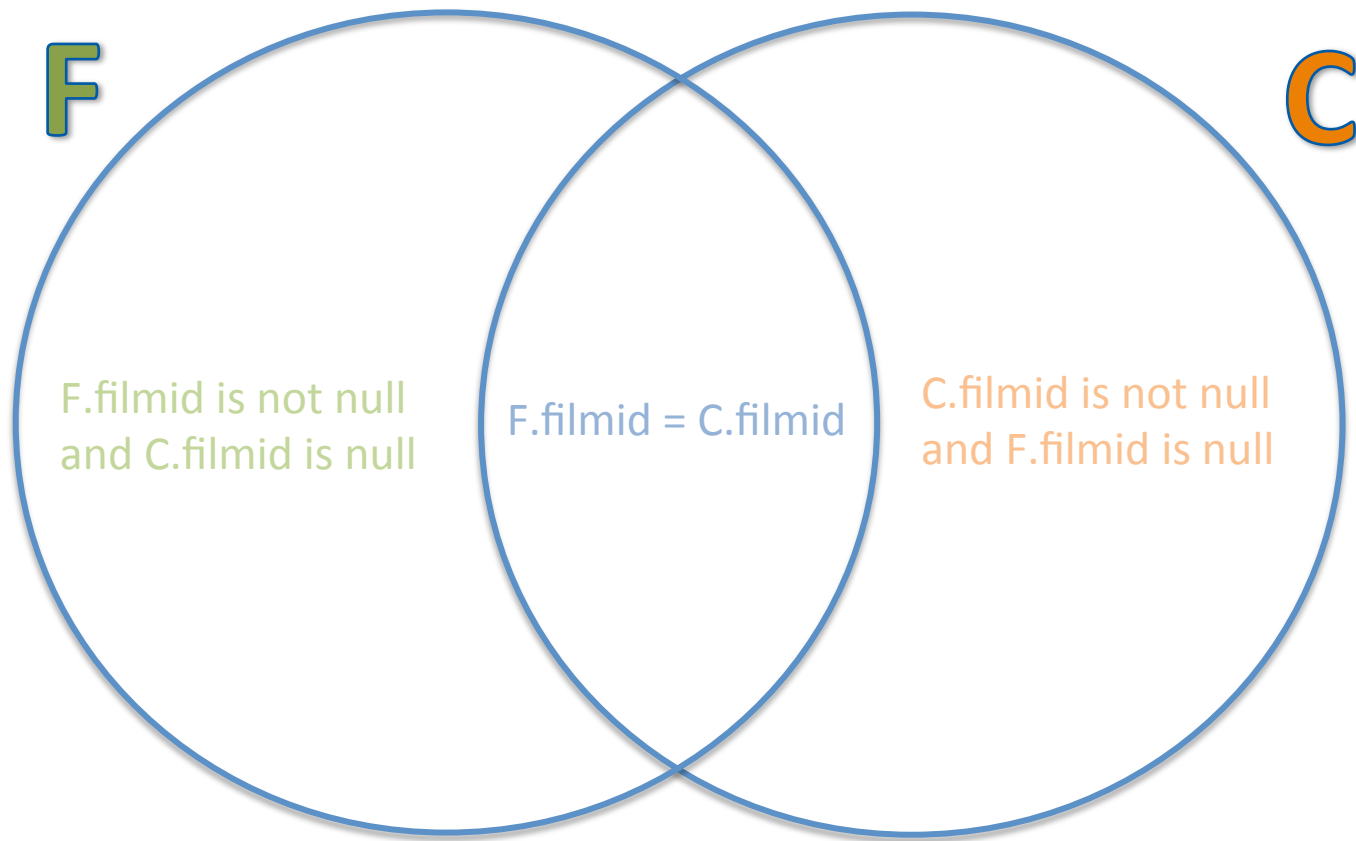
F.filmid = C.filmid

C.filmid is not null
and F.filmid is null



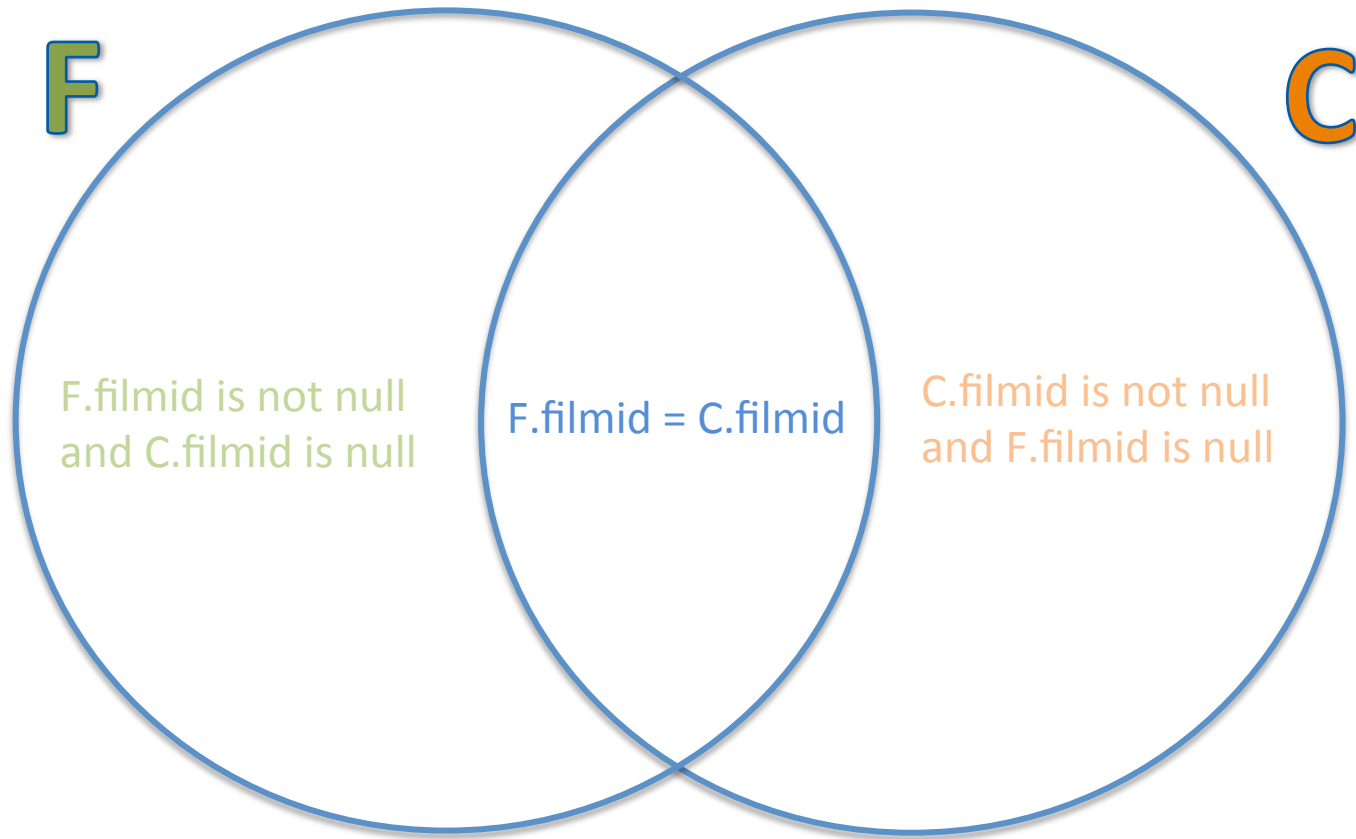
filmid	title	prodyear	filmid	country
29000	Armageddon	1998	29000	USA
			43329	Kosovo
			79787	Kosovo
			123751	Kosovo
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
271692	Armageddon	1994		
334412	Armageddon	1977		
			381154	Kosovo
432538	Armageddon	1923	432538	UK
432554	Armageddon	1962	432554	Soviet Union
432570	Armageddon	1969	432570	Canada
629179	Etjet e Kosovës	2006	629179	Kosovo
706983	Kulla	1991	706983	Kosovo
831068	Armageddon	1997		
1969660	Armageddon	1998		
2728636	Armageddon	1989		
2984924	Armageddon	1997		
3790202	Kukumi	2005	3790202	Kosovo
4867338	Një lindje	1973	4867338	Kosovo

F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
			43329	Kosovo
			79787	Kosovo
			123751	Kosovo
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
271692	Armageddon	1994		
334412	Armageddon	1977		
			381154	Kosovo



full outer join

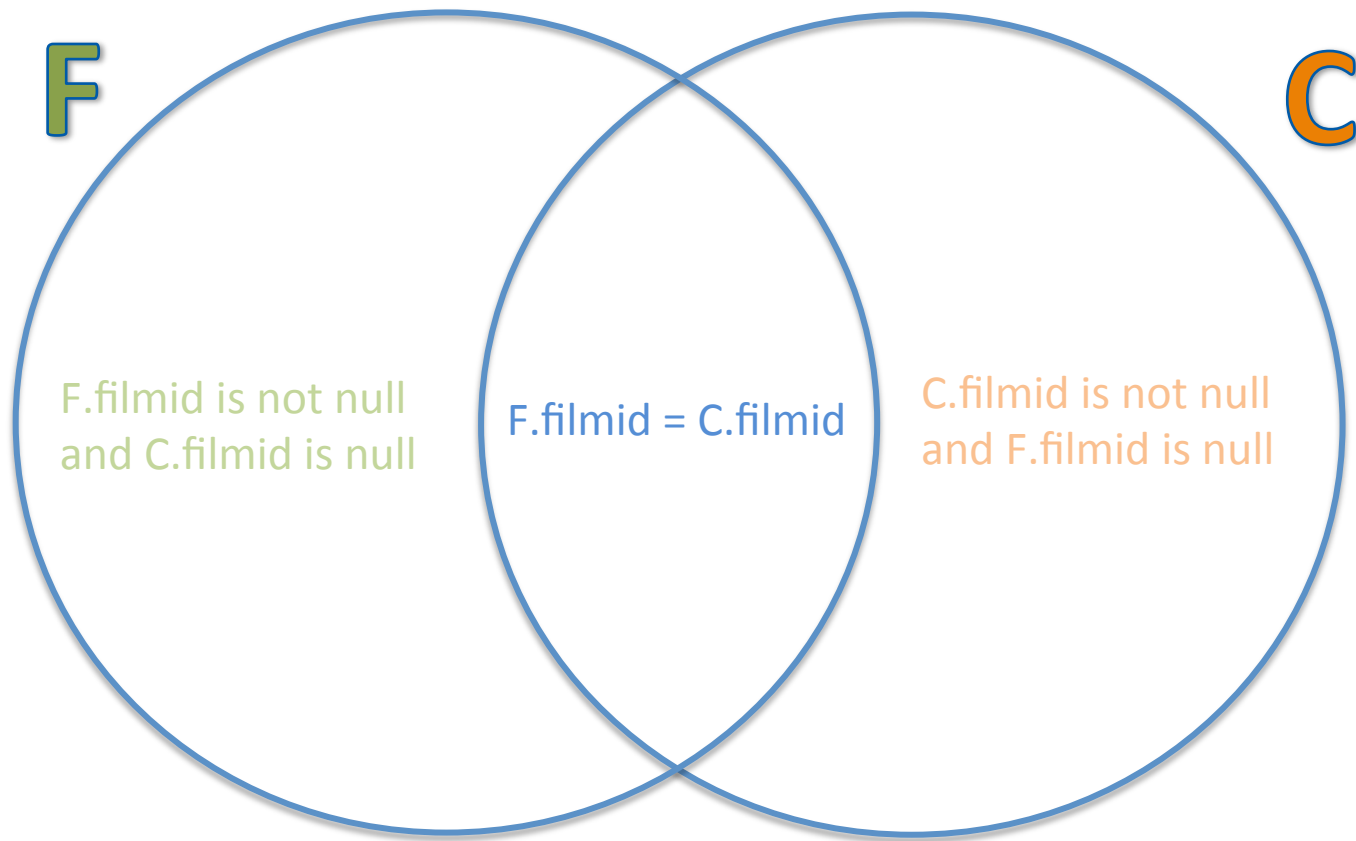
F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
			43329	Kosovo
			79787	Kosovo
			123751	Kosovo
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
271692	Armageddon	1994		
334412	Armageddon	1977		
			381154	Kosovo



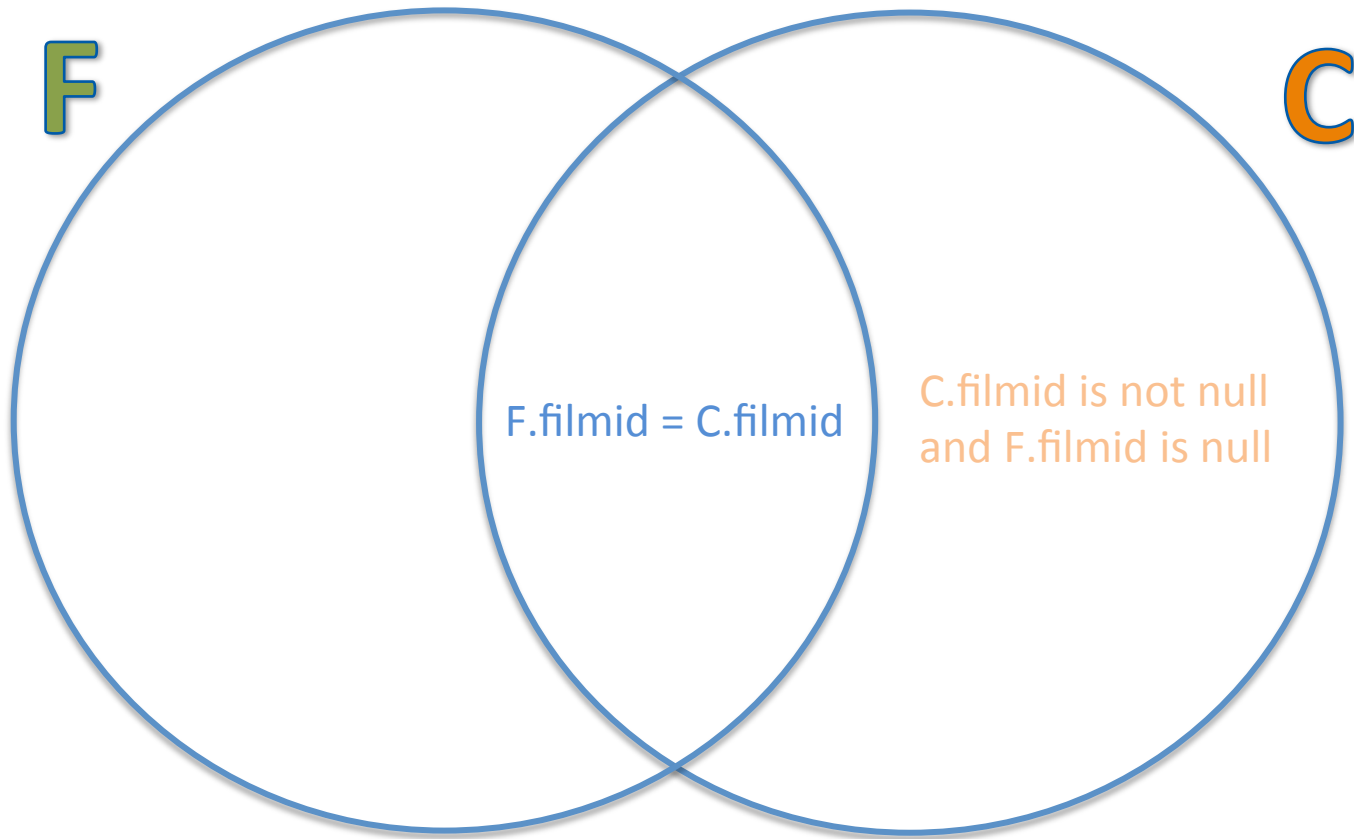
full outer join

```
select *
from Film F full outer join
Filmcountry C
on F.filmid=C.filmid
```

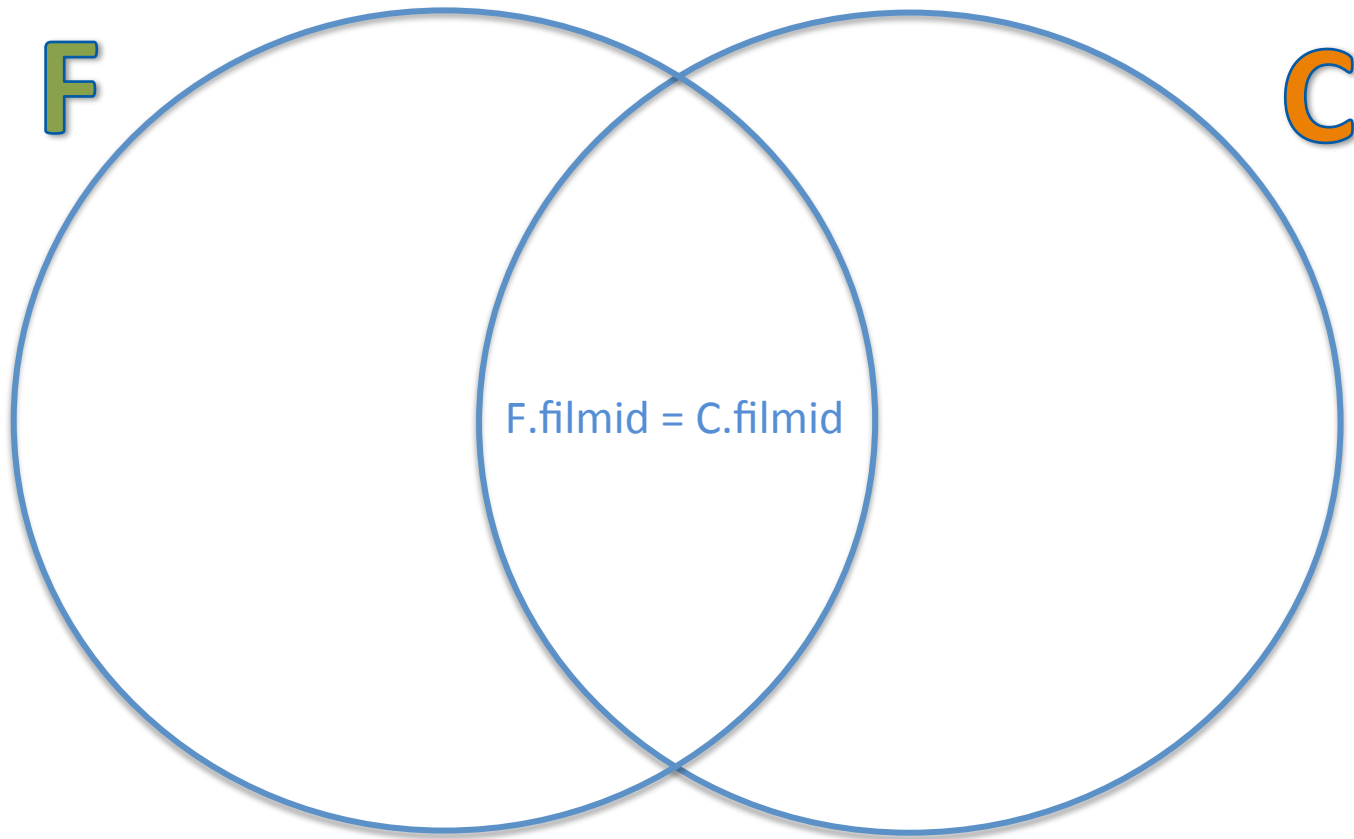
F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
			43329	Kosovo
			79787	Kosovo
			123751	Kosovo
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
271692	Armageddon	1994		
334412	Armageddon	1977		
			381154	Kosovo



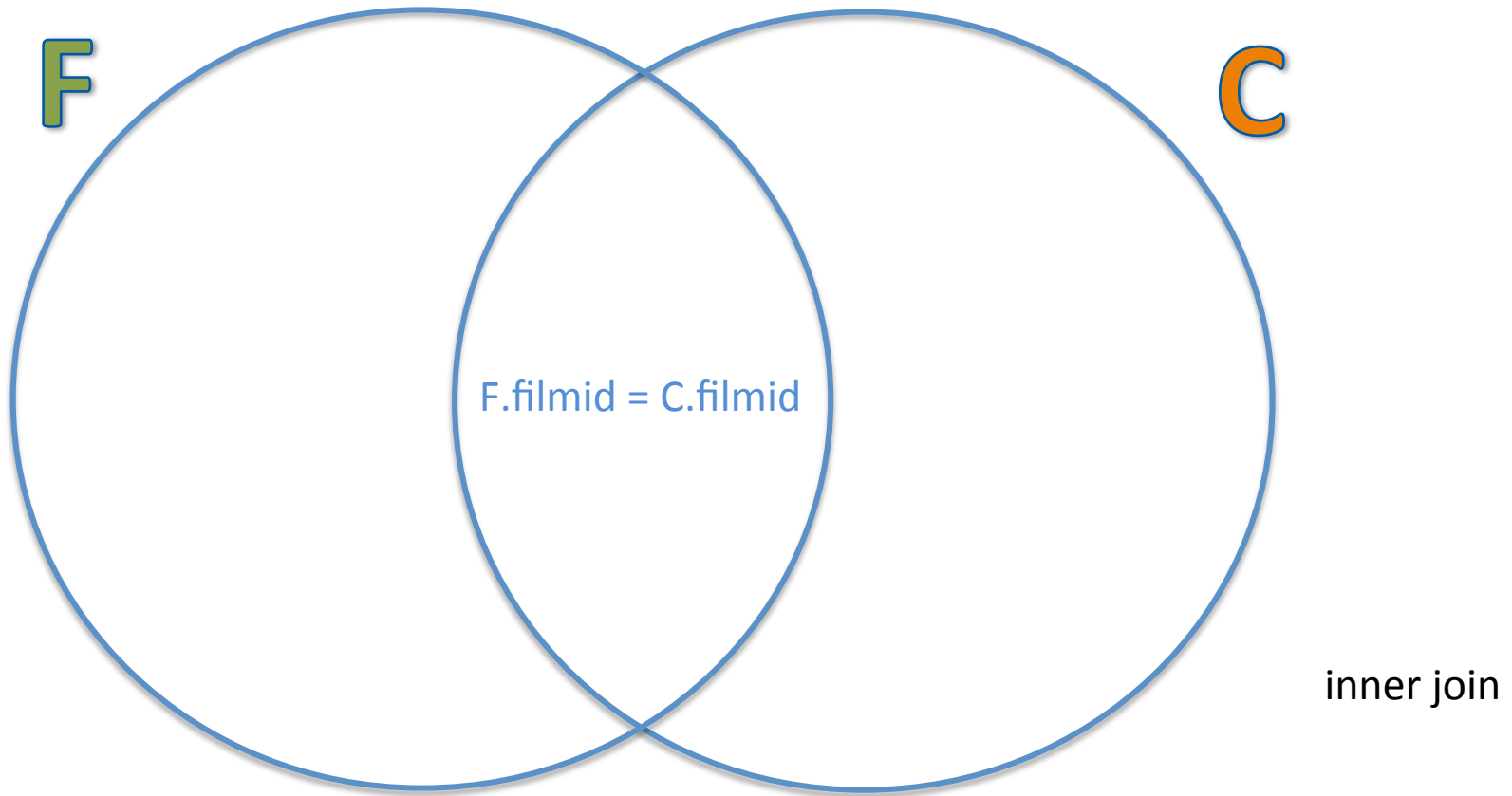
F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
			43329	Kosovo
			79787	Kosovo
			123751	Kosovo
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
271692	Armageddon	1994		
334412	Armageddon	1977		
			381154	Kosovo



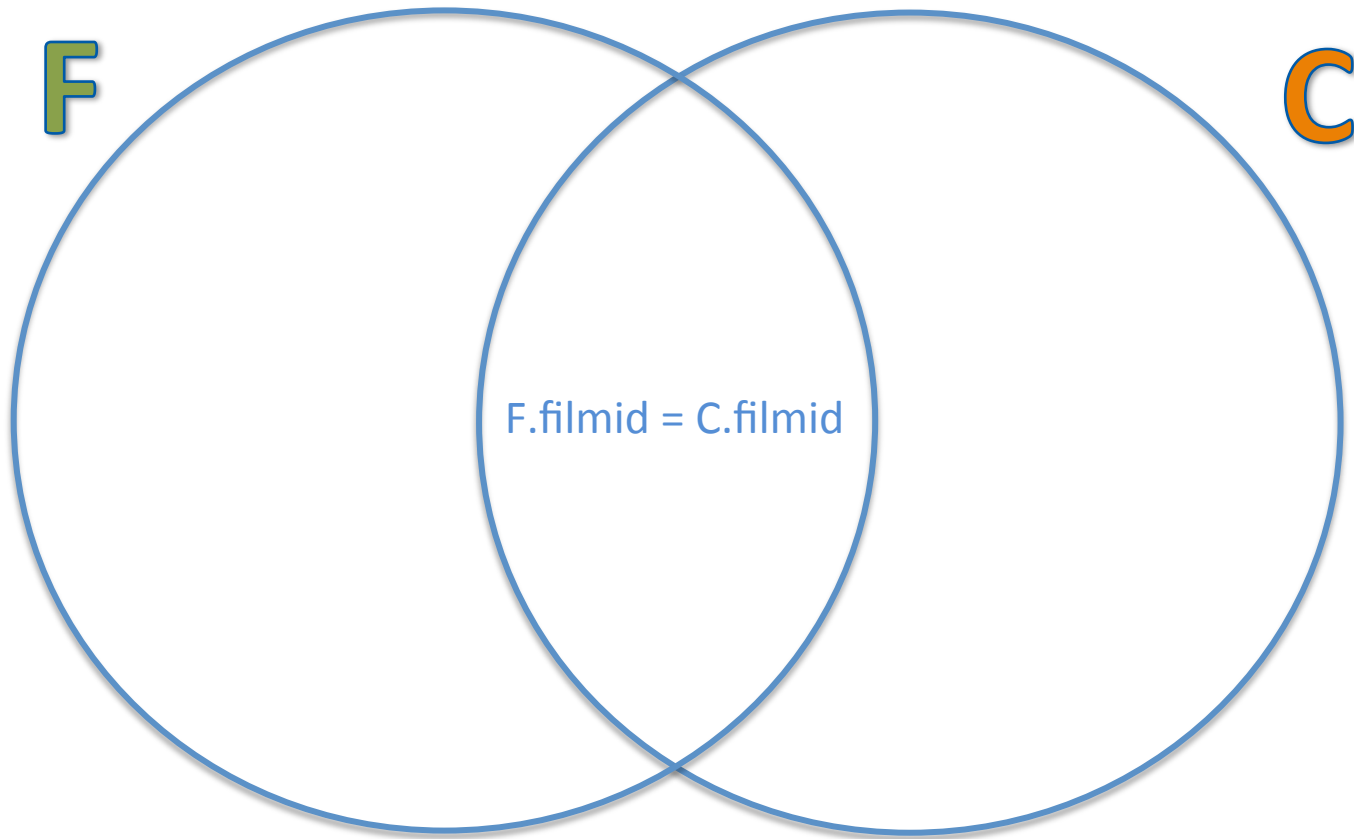
F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
			43329	Kosovo
			79787	Kosovo
			123751	Kosovo
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
			381154	Kosovo



F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA



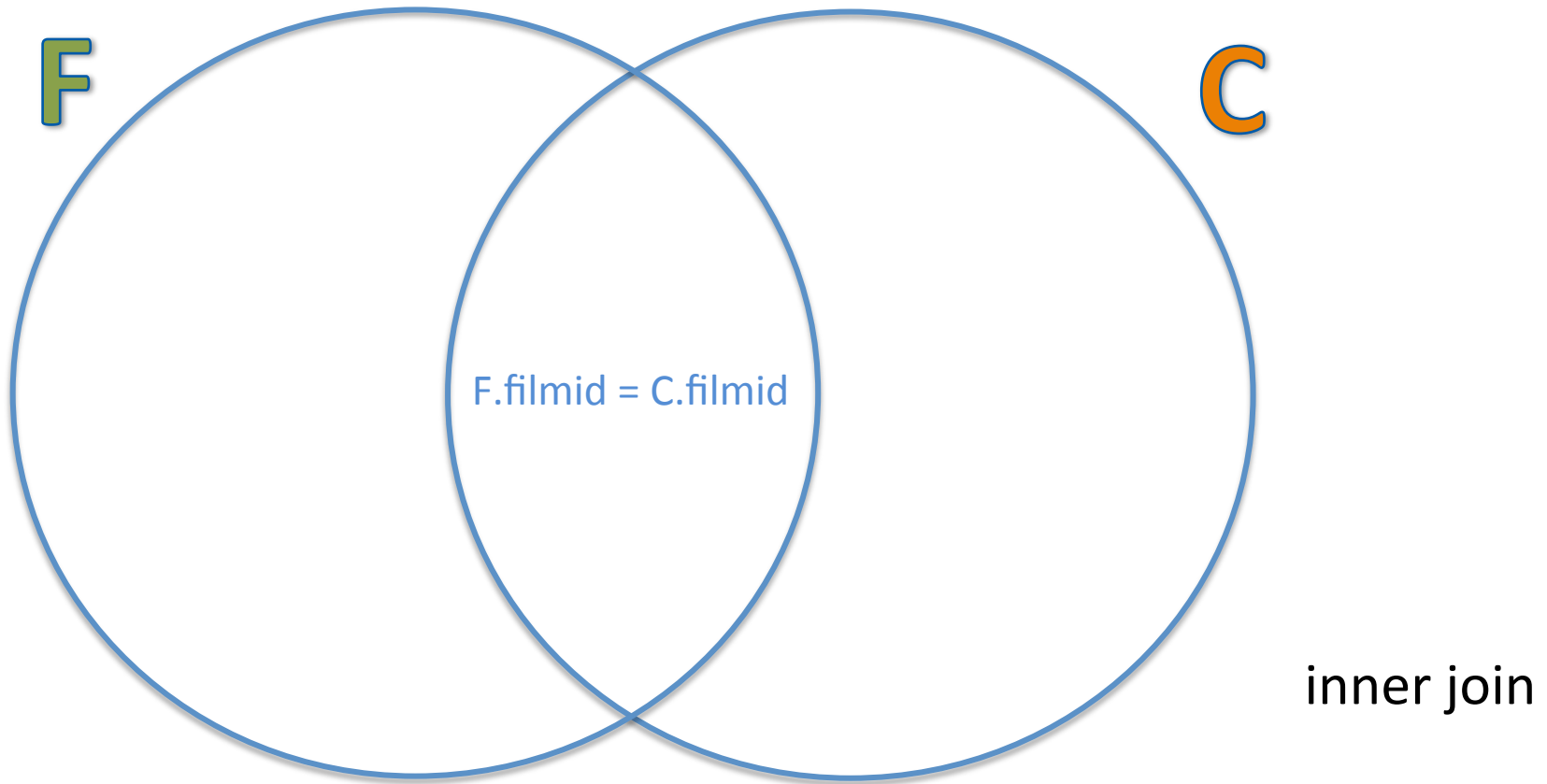
F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA



inner join

```
select *  
from Film F inner join  
  Filmcountry C  
on F.filmid=C.filmid
```

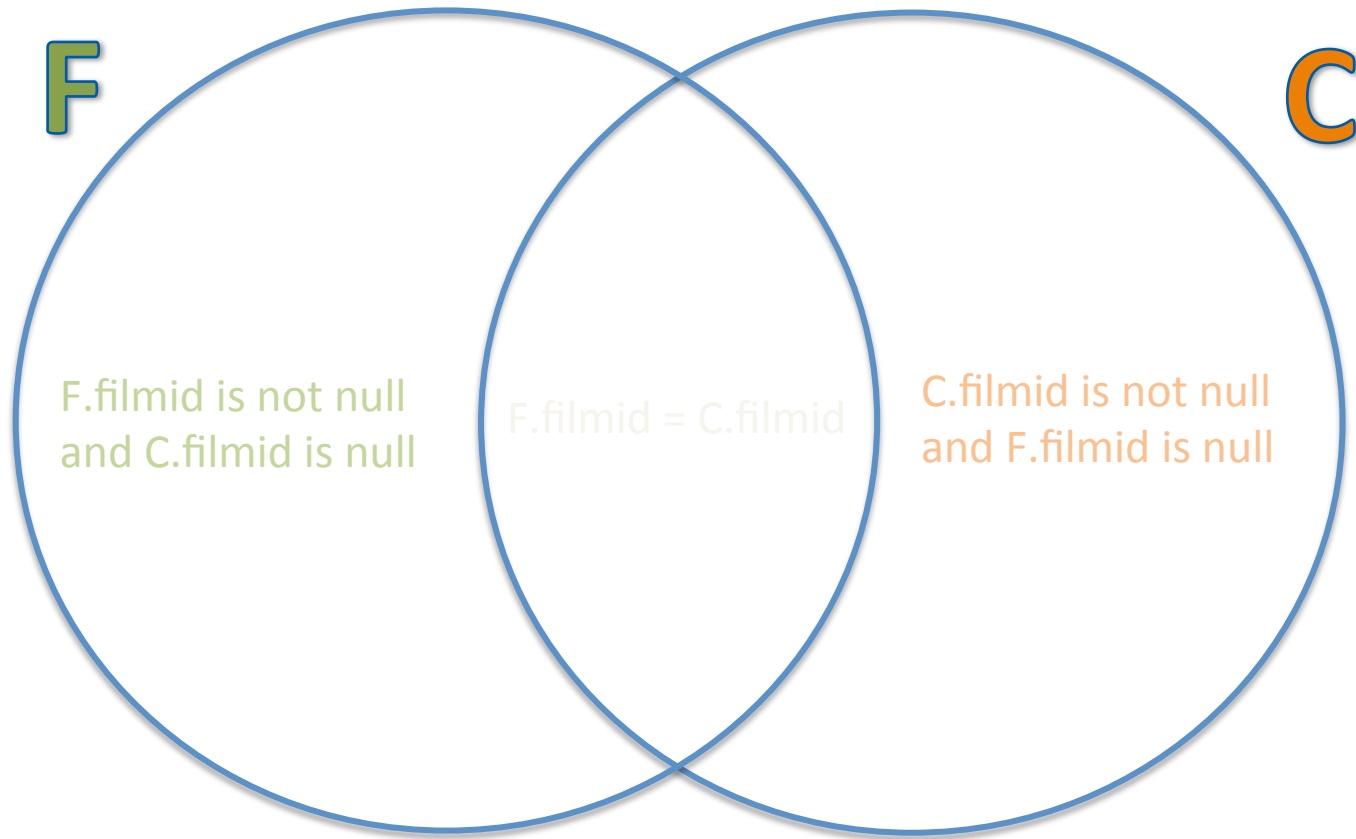
F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA



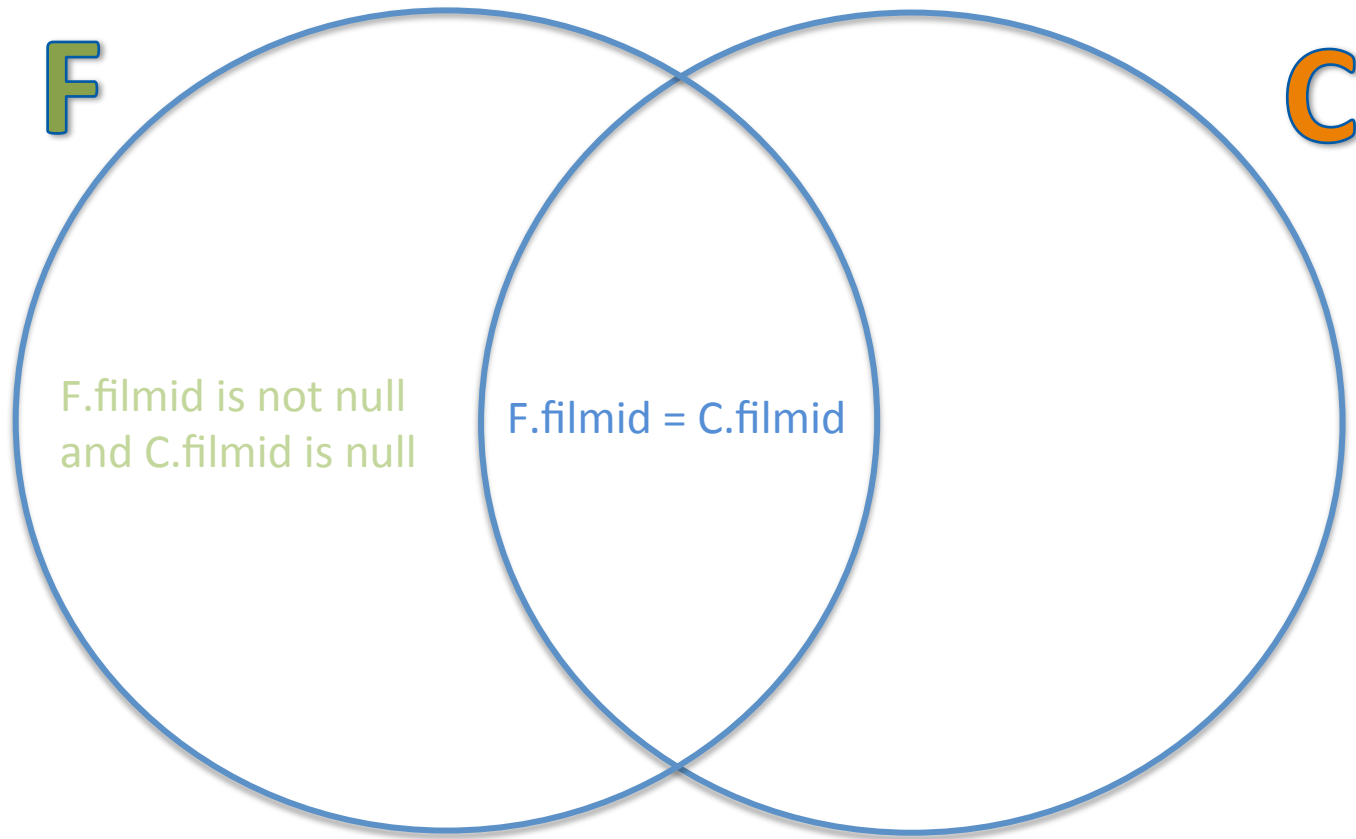
```
select *
from Film F inner join
Filmcountry C
on F.filmid=C.filmid
```

F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA

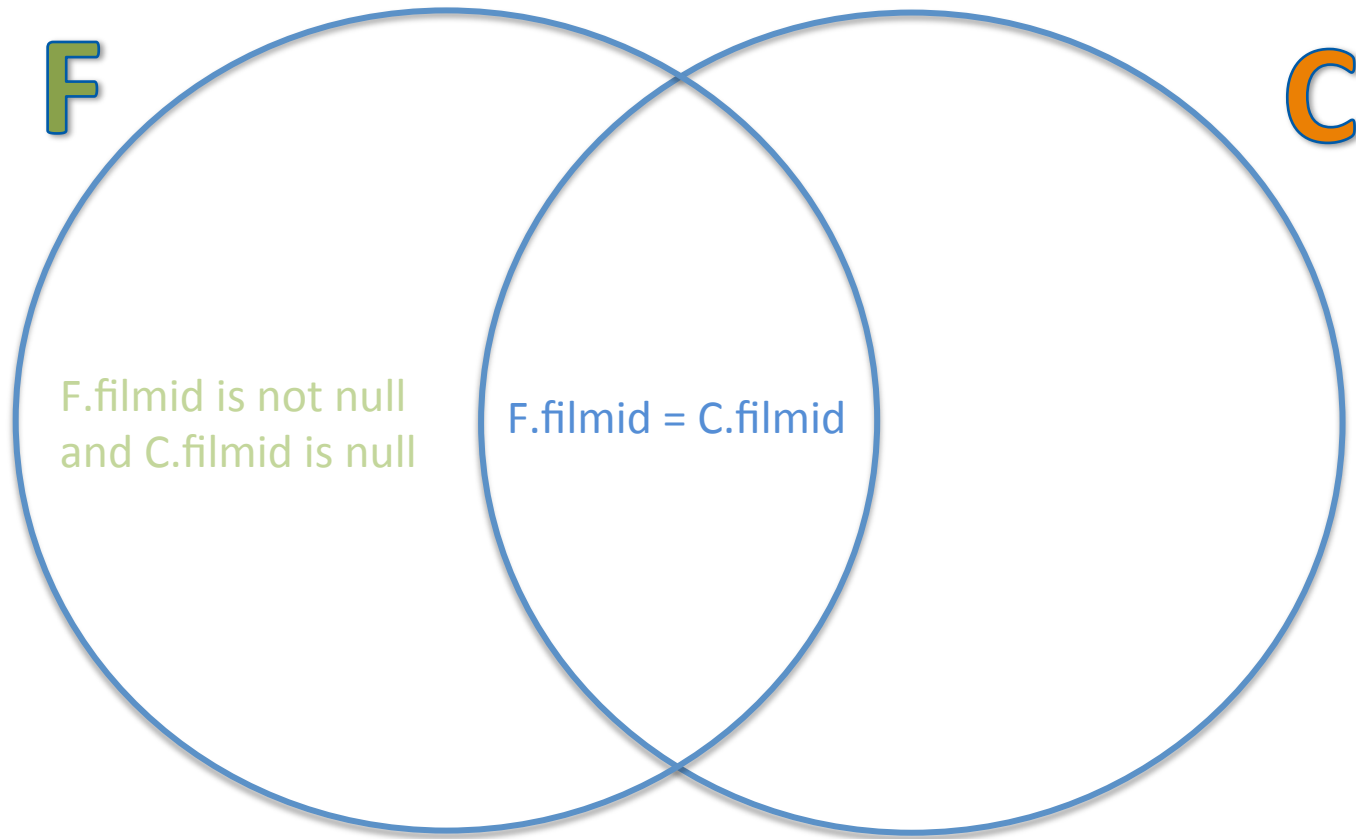
sammenlign med select * from Film natural join Filmcountry



F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
			43329	Kosovo
			79787	Kosovo
			123751	Kosovo
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
271692	Armageddon	1994		
334412	Armageddon	1977		
			381154	Kosovo

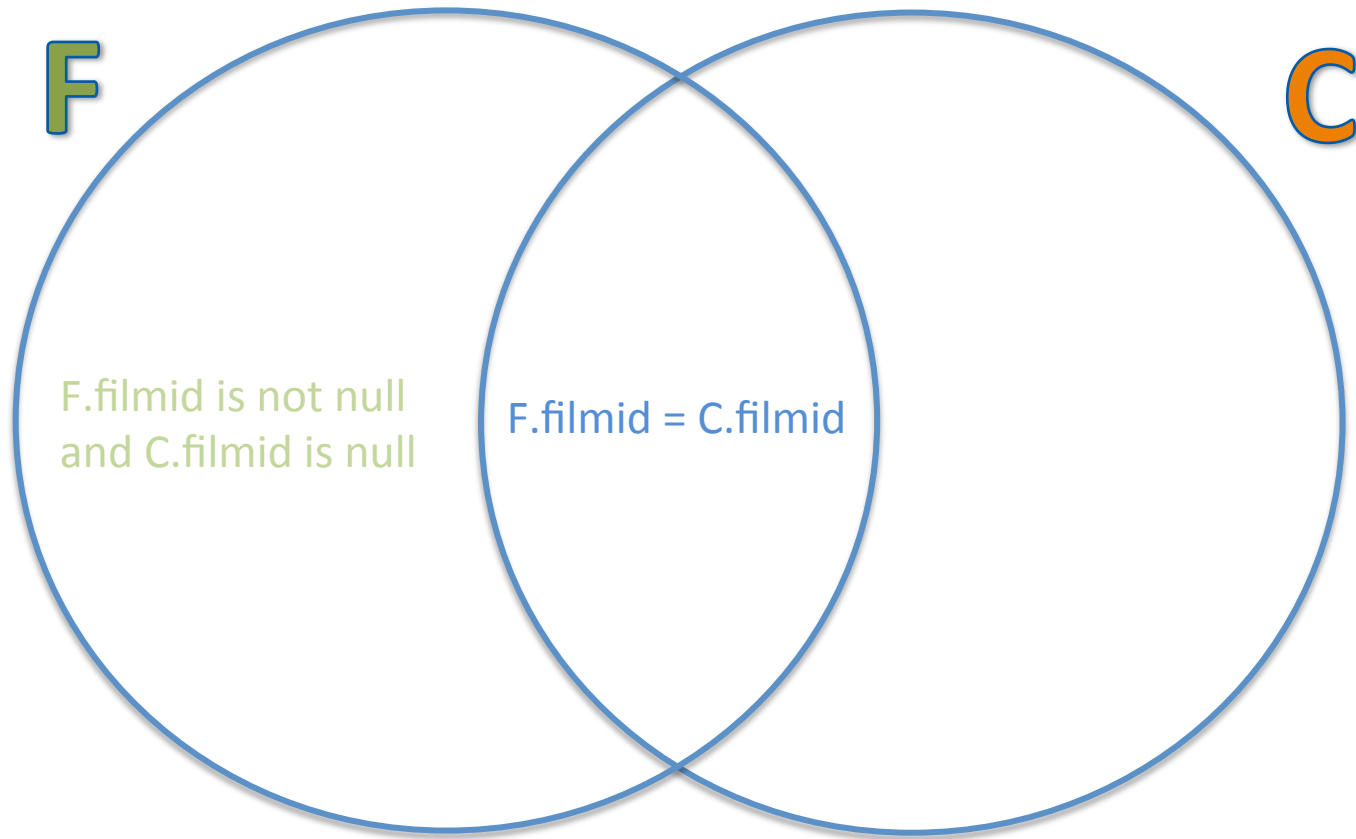


F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
271692	Armageddon	1994		
334412	Armageddon	1977		



left outer join

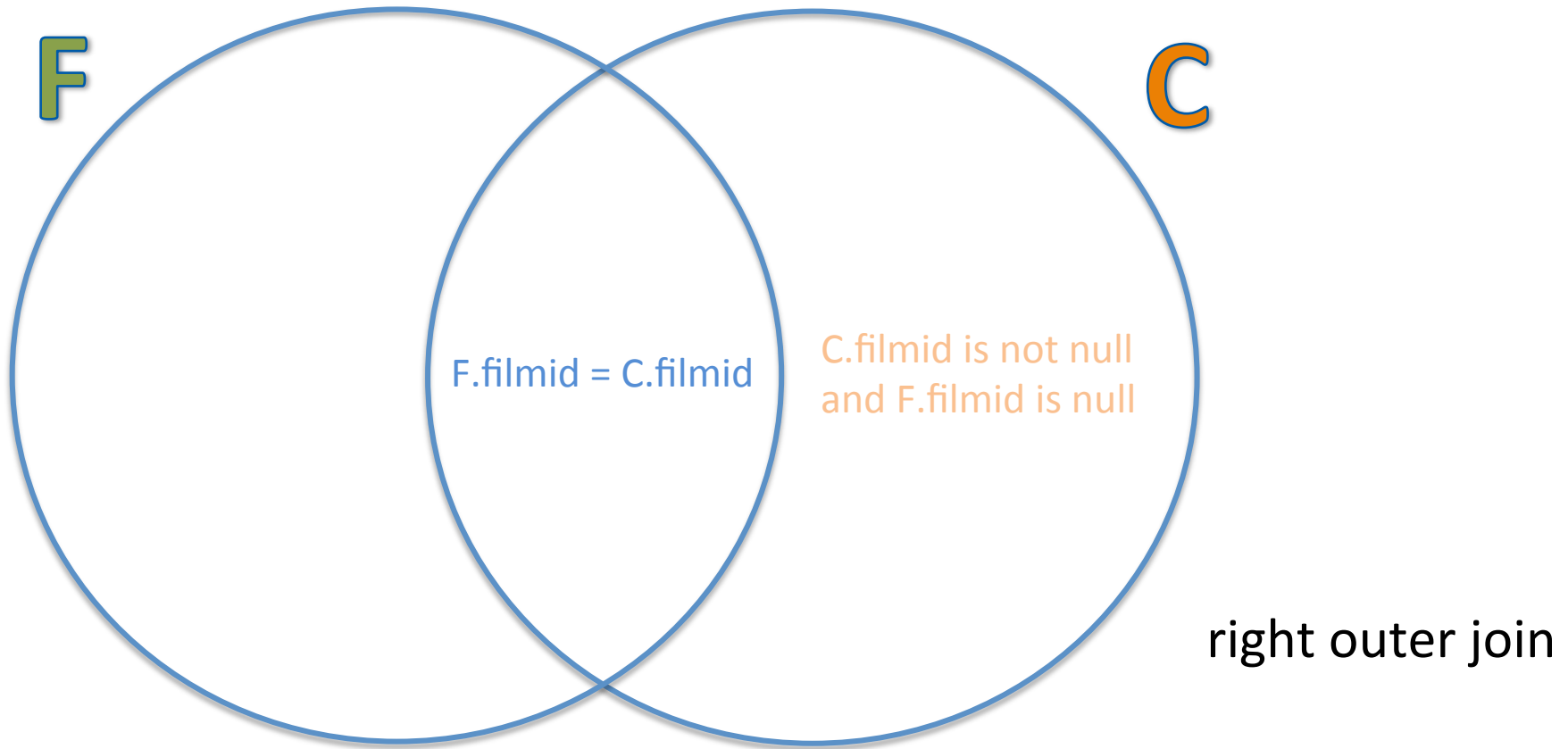
F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
271692	Armageddon	1994		
334412	Armageddon	1977		



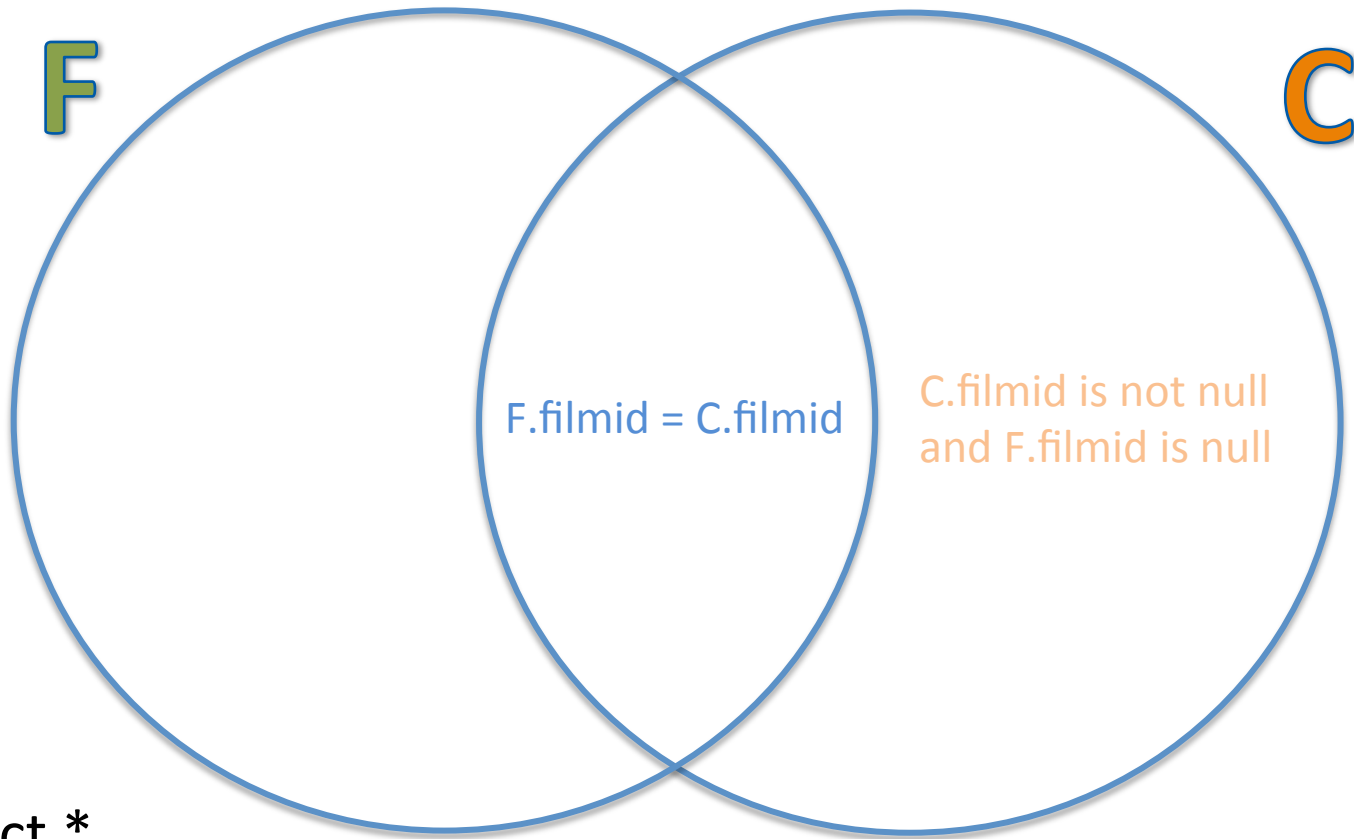
left outer join

```
select *
from Film F left outer join
Filmcountry C
on F.filmid=C.filmid
```

F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
271692	Armageddon	1994		
334412	Armageddon	1977		



F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
			43329	Kosovo
			79787	Kosovo
			123751	Kosovo
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
			381154	Kosovo



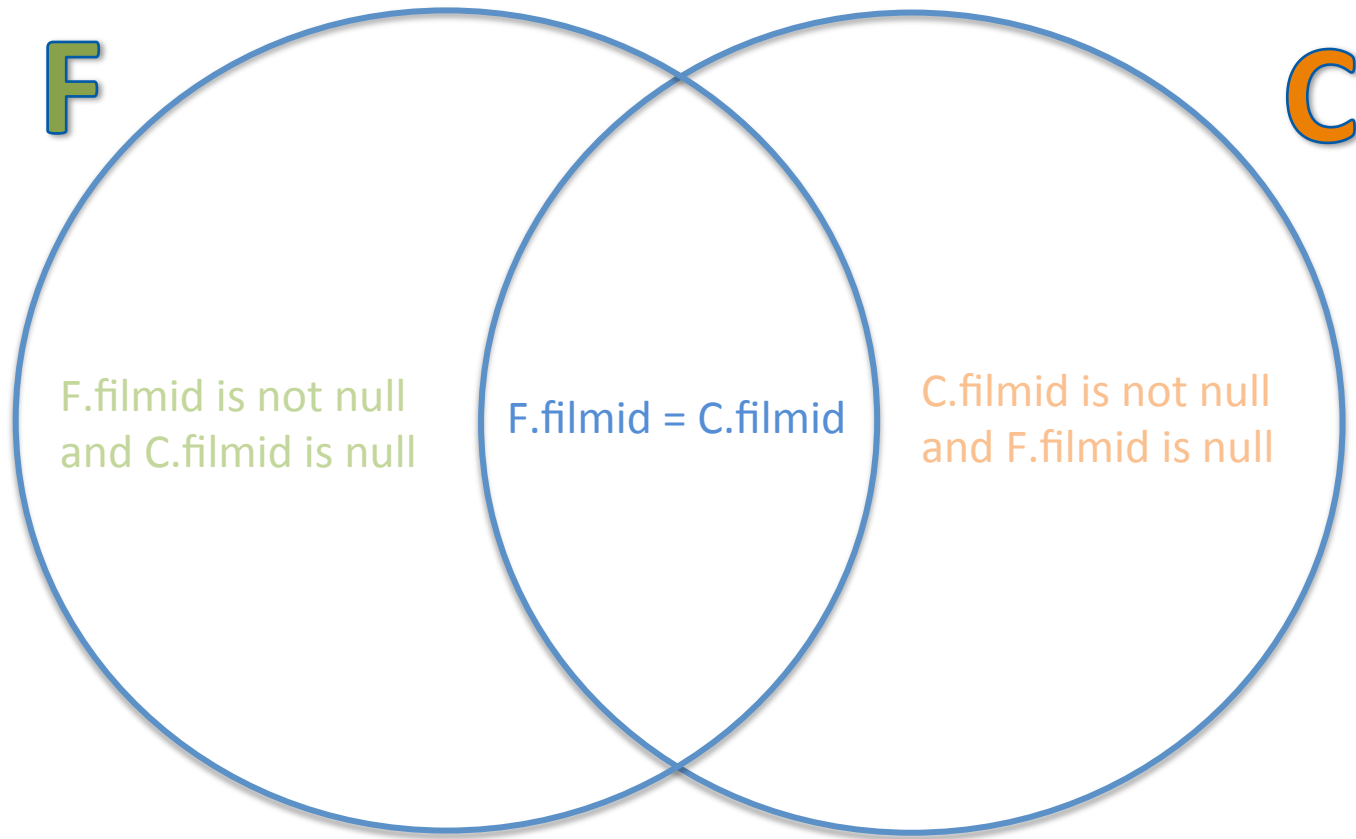
right outer join

```
select *
from Film F right outer join
```

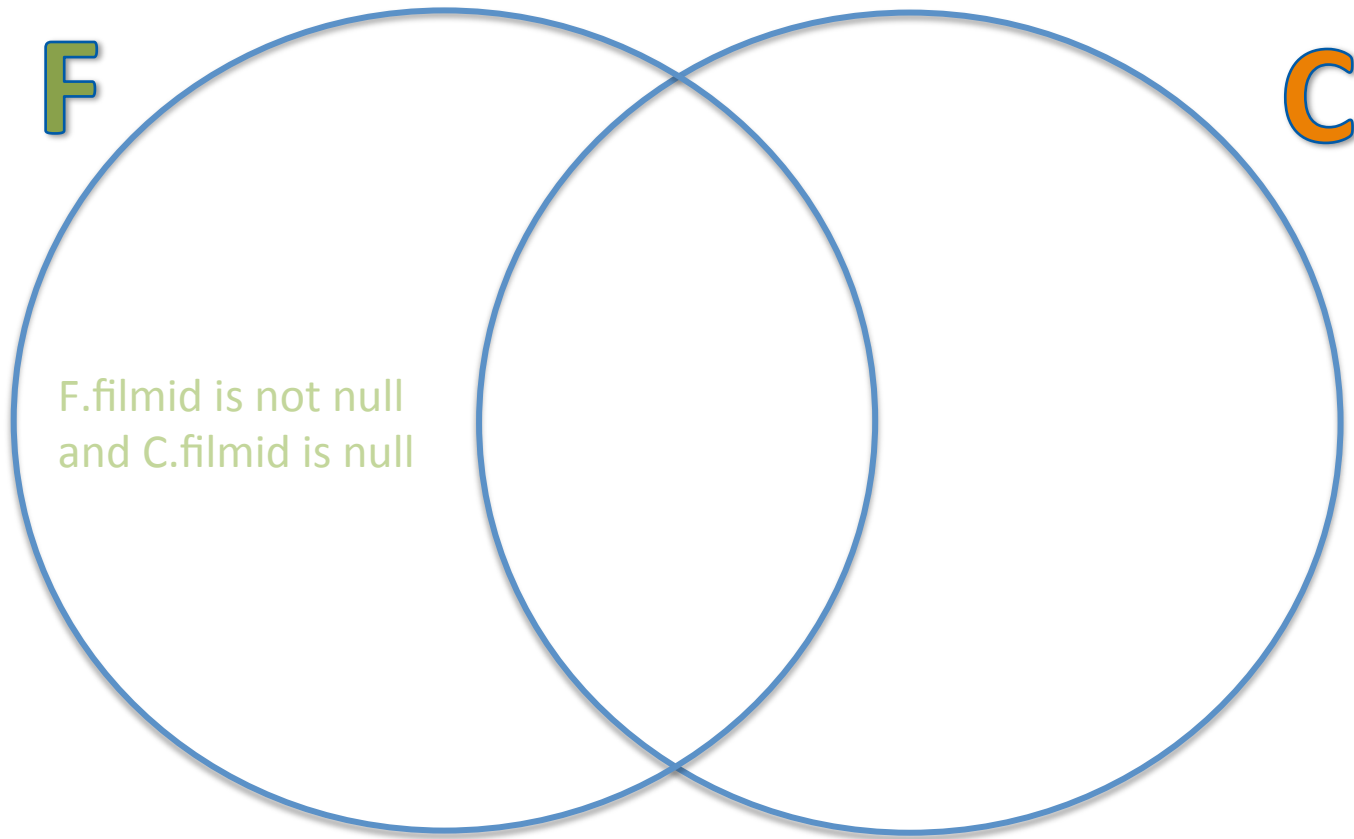
Filmcountry C

```
on F.filmid=C.filmid
```

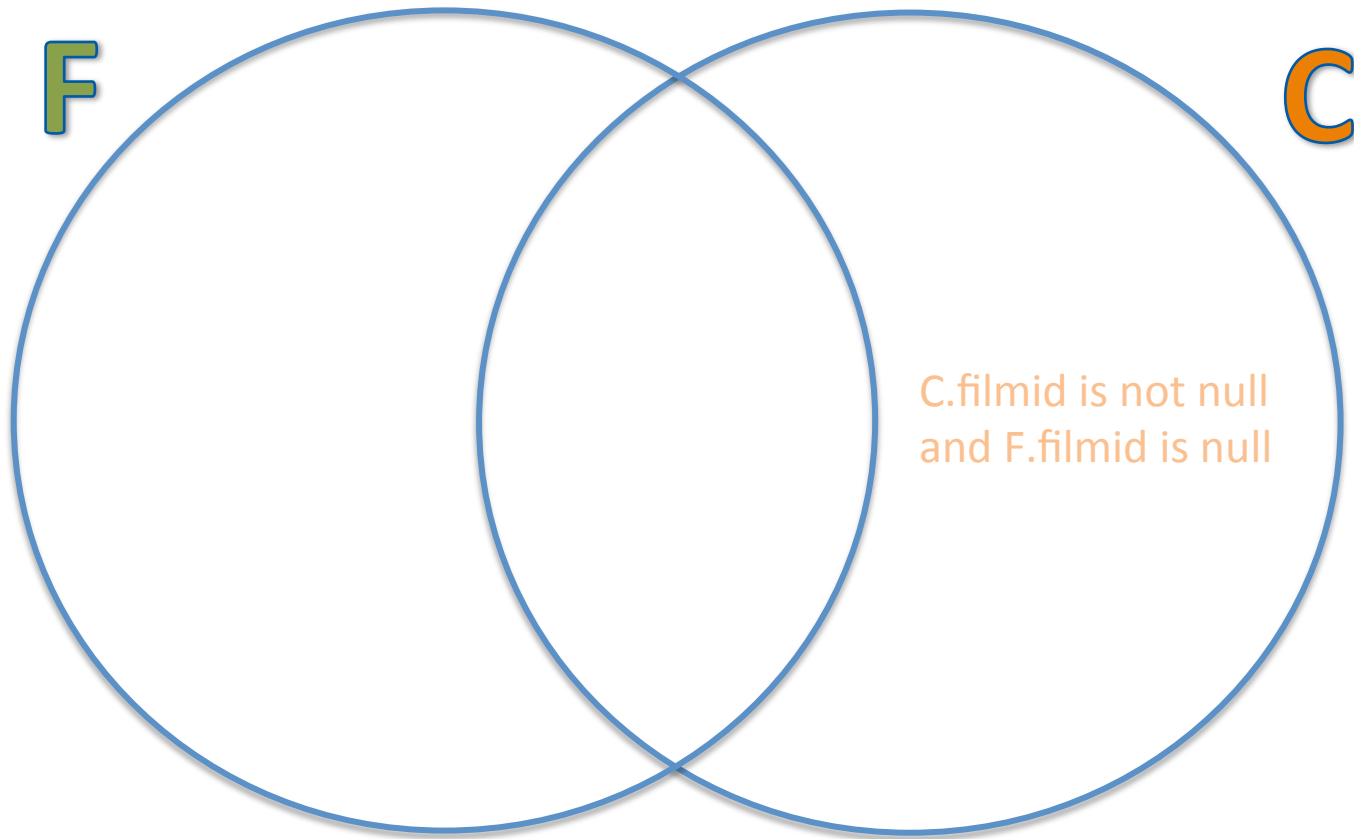
F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
			43329	Kosovo
			79787	Kosovo
			123751	Kosovo
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
			381154	Kosovo



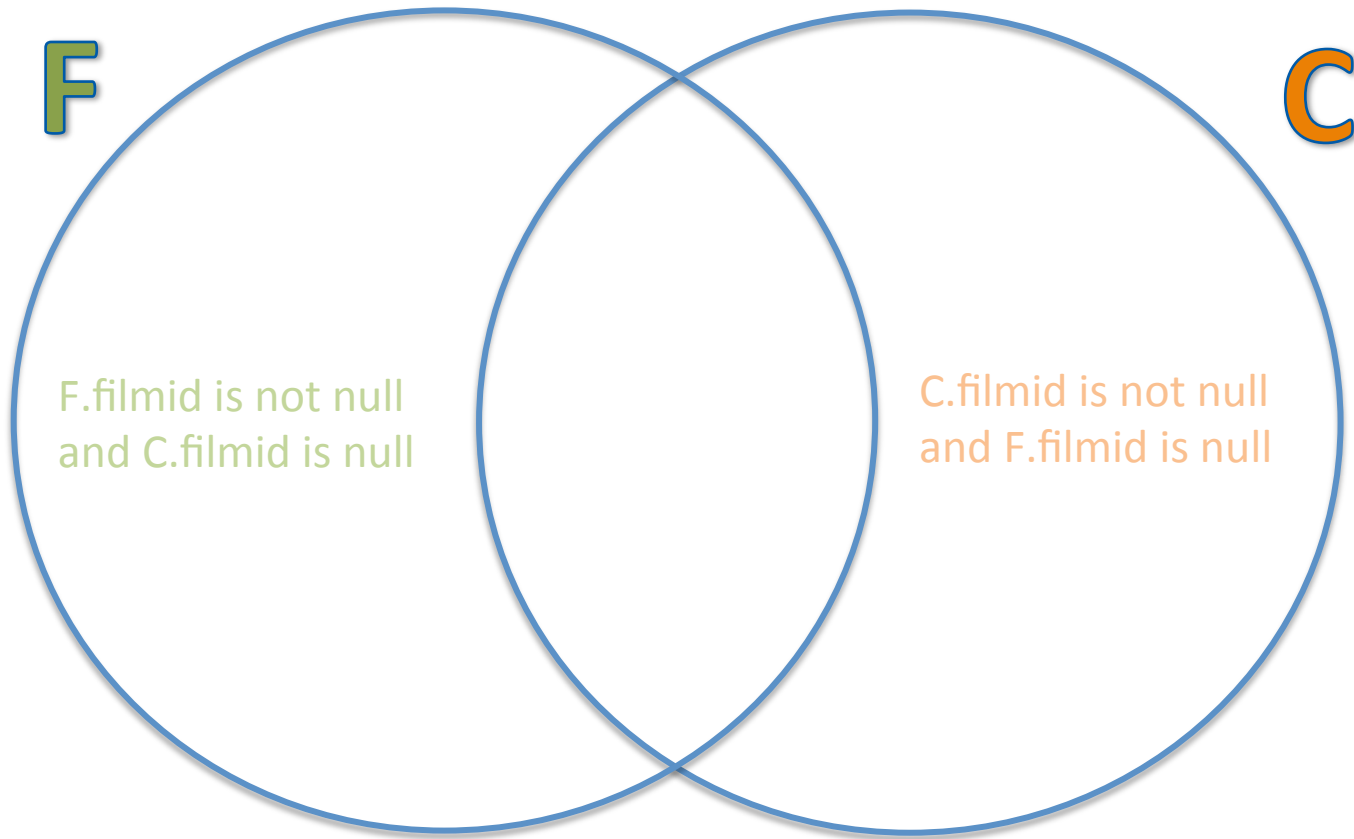
F.filmid	title	prodyear	C.filmid	country
29000	Armageddon	1998	29000	USA
			43329	Kosovo
			79787	Kosovo
			123751	Kosovo
175640	Migjeni	1990	175640	Kosovo
217739	Armageddon	1999	217739	USA
271692	Armageddon	1994		
334412	Armageddon	1977		
			381154	Kosovo



F.filmid	title	prodyear	C.filmid	country
271692	Armageddon	1994		
334412	Armageddon	1977		



F.filmid	title	prodyear	C.filmid	country
			43329	Kosovo
			79787	Kosovo
			123751	Kosovo
			381154	Kosovo



F.filmid	title	prodyear	C.filmid	country
			43329	Kosovo
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