

Mengdeoperatorer

SQLs operatorer for union, snitt og differanse av tabeller

- I SQL utgjør ikke tuplene i svaret fra en select-setning en mengde
- En multimengde (multiset) eller *bag*

```
fdb=> select C.country
from Filmcountry C
where C.filmid < 50
order by C.country;
      country
```

```
Belgium
Colombia
Denmark
Denmark
Netherlands
Spain
Sweden
Sweden
USA
USA
USA
USA
USA
USA
USA
USA
USA
```

(16 rows)

```
fdb=> select C.country
from Filmcountry C
where C.filmid < 30
order by C.country;
country
```

```
Belgium
Denmark
Spain
Sweden
Sweden
USA
USA
(7 rows)
```

()
union all
()

```
( )  
union all  
( )
```

```
( select C.country  
  from Filmcountry C  
  where C.filmid < 50  
  order by C.country )
```

```
union all
```

```
( select C.country  
  from Filmcountry C  
  where C.filmid < 30  
  order by C.country );
```

```
( select C.country
  from Filmcountry C
 where C.filmid < 50
 order by C.country )

union all

( select C.country
  from Filmcountry C
 where C.filmid < 30
 order by C.country );
```

```
country
-----
Belgium
Colombia
Denmark
Denmark
Netherlands
Spain
Sweden
Sweden
USA
USA
USA
USA
USA
USA
USA
USA
USA
Belgium
Denmark
Spain
Sweden
Sweden
USA
USA
(23 rows)
```

```
( select C.country
  from Filmcountry C
 where C.filmid < 50
 order by C.country )

union all

( select C.country
  from Filmcountry C
 where C.filmid < 30
 order by C.country );
```

unionen

	country -----	country -----
	Belgium	Belgium
	Colombia	Colombia
	Denmark	Denmark
	Denmark	Denmark
	Netherlands	Netherlands
	Spain	Spain
	Sweden	Sweden
	Sweden	Sweden
	USA	USA
	USA	USA
	USA	USA
	USA	USA
	USA	USA
	USA	USA
	USA	USA
	USA	USA
	USA	(16 rows)
	Belgium	
	Denmark	
	Spain	country -----
	Sweden	Belgium
	Sweden	Denmark
	USA	Spain
	USA	Sweden
	(23 rows)	Sweden
		USA
		USA
		(7 rows)


```
( select C.country
  from Filmcountry C
 where C.filmid < 50
 order by C.country )
```

intersect all

```
( select C.country
  from Filmcountry C
 where C.filmid < 30
 order by C.country );
```

```
country
-----
Belgium
Colombia
Denmark
Denmark
Netherlands
Spain
Sweden
Sweden
USA
USA
USA
USA
USA
USA
USA
USA
(16 rows)
```

```
country
-----
Belgium
Denmark
Spain
Sweden
Sweden
USA
USA
(7 rows)
```

```
( select C.country
  from Filmcountry C
 where C.filmid < 50
 order by C.country )
```

intersect all

```
( select C.country
  from Filmcountry C
 where C.filmid < 30
 order by C.country );
```

```
country
-----
Denmark
Sweden
Sweden
Spain
Belgium
USA
USA
(7 rows)

country
-----
Belgium
Colombia
Denmark
Denmark
Netherlands
Spain
Sweden
Sweden
USA
USA
USA
USA
USA
USA
USA
USA
USA
(16 rows)
```

snittet

```
country
-----
Belgium
Denmark
Spain
Sweden
Sweden
USA
USA
(7 rows)
```

```
( select C.country
  from Filmcountry C
 where C.filmid < 50
 order by C.country )
```

except all

```
( select C.country
  from Filmcountry C
 where C.filmid < 30
 order by C.country );
```

```
country
-----
Belgium
Colombia
Denmark
Denmark
Netherlands
Spain
Sweden
Sweden
USA
USA
USA
USA
USA
USA
USA
USA
(16 rows)
```

```
country
-----
Belgium
Denmark
Spain
Sweden
Sweden
USA
USA
(7 rows)
```

```
( select C.country
  from Filmcountry C
 where C.filmid < 50
 order by C.country )
```

except all

```
( select C.country
  from Filmcountry C
 where C.filmid < 30
 order by C.country );
```

```
country
-----
Colombia
Netherlands
Denmark
USA
USA
USA
USA
USA
USA
(9 rows)

country
-----
Belgium
Colombia
Denmark
Denmark
Netherlands
Spain
Sweden
Sweden
USA
USA
USA
USA
USA
USA
USA
(16 rows)
```

different

```
country
-----
Belgium
Denmark
Spain
Sweden
Sweden
USA
USA
(7 rows)
```

```
( select C.country, C.filmid
  from Filmcountry C
 where C.filmid < 50
 order by C.country )
```

union all

```
( select C.filmid, C.country
  from Filmcountry C
 where C.filmid < 30
 order by C.country );
```

country	filmid
Belgium	21
Colombia	34
Denmark	20
Denmark	36
Netherlands	40
Spain	18
Sweden	20
Sweden	24
USA	35
USA	23
USA	37
USA	42
USA	43
USA	26
USA	49
USA	33

(16 rows)

filmid	country
21	Belgium
20	Denmark
18	Spain
20	Sweden
24	Sweden
23	USA
26	USA

(7 rows)

```
( select C.country, C.filmid
  from Filmcountry C
 where C.filmid < 50
 order by C.country )
```

union all

```
( select C.filmid, C.country
  from Filmcountry C
 where C.filmid < 30
 order by C.country );
```

```
( select C.country, C.filmid
  from Filmcountry C
 where C.filmid < 50
 order by C.country )
```

union all

```
( select C.filmid, C.country
  from Filmcountry C
 where C.filmid < 30
 order by C.country );
```

ERROR: UNION types text and integer cannot be matched
 LINE 6: (select C.filmid, C.country

country	filmid
Belgium	21
Colombia	34
Denmark	20
Denmark	36
Netherlands	40
Spain	18
Sweden	20
Sweden	24
USA	35
USA	23
USA	37
USA	42
USA	43
USA	26
USA	49
USA	33

(16 rows)

filmid	country
21	Belgium
20	Denmark
18	Spain
20	Sweden
24	Sweden
23	USA
26	USA

(7 rows)

```
( select C.country, C.filmid
  from Filmcountry C
 where C.filmid < 50
 order by C.country )
```

union all

```
( select C.filmid, C.country
  from Filmcountry C
 where C.filmid < 30
 order by C.country );
```

country	filmid
Belgium	21
Colombia	34
Denmark	20
Denmark	36
Netherlands	40
Spain	18
Sweden	20
Sweden	24
USA	35
USA	23
USA	37
USA	42
USA	43
USA	26
USA	49
USA	33

(16 rows)

De to multimengdene er ikke
unionkompatible !

filmid	country
21	Belgium
20	Denmark
18	Spain
20	Sweden
24	Sweden
23	USA
26	USA

(7 rows)

```
( select C.country, C.filmid
  from Filmcountry C
 where C.filmid < 50
 order by C.country )
```

union all

```
( select C.country, C.filmid
  from Filmcountry C
 where C.filmid < 30
 order by C.country );
```

country	filmid
Belgium	21
Colombia	34
Denmark	20
Denmark	36
Netherlands	40
Spain	18
Sweden	20
Sweden	24
USA	35
USA	23
USA	37
USA	42
USA	43
USA	26
USA	49
USA	33

(16 rows)

De to multimengdene er
unionkompatible !

country	filmid
Belgium	21
Denmark	20
Spain	18
Sweden	20
Sweden	24
USA	23
USA	26

(7 rows)


```
( select C.country, C.filmid
  from Filmcountry C
 where C.filmid < 50
 order by C.country )
```

union all

```
( select C.country, C.filmid
  from Filmcountry C
 where C.filmid < 30
 order by C.country );
```

country	filmid
Belgium	21
Colombia	34
Denmark	20
Denmark	36
Netherlands	40
Spain	18
Sweden	20
Sweden	24
USA	35
USA	23
USA	37
USA	42
USA	43
USA	26
USA	49
USA	33
Belgium	21
Denmark	20
Spain	18
Sweden	20
Sweden	24
USA	23
USA	26

(23 rows)

De to multimengdene er
unionkompatible !

```
( select C.country, C.filmid  
  from Filmcountry C  
  where C.filmid < 50  
  order by C.country )
```

union all

```
( select  F.title, F.filmid  
  from Film F  
  where F.filmid < 30  
  order by F.title );
```

```
( select C.country, C.filmid
  from Filmcountry C
 where C.filmid < 50
 order by C.country )
```

union all

```
( select F.title, F.filmid
  from Film F
 where F.filmid < 30
 order by F.title );
```

country	filmid
Belgium	21
Colombia	34
Denmark	20
Denmark	36
Netherlands	40
Spain	18
Sweden	20
Sweden	24
USA	35
USA	23
USA	37
USA	42
USA	43
USA	26
USA	49
USA	33
!Huff	26
Brooklyn Connection, The	23
E.R. Sluts	17
Huff	28
Jack l'éventreur	21
Jag en kvinna, II - äktenskapet	20
Kronvittnet	24
Privilege	19
Tarantos, Los	18

(25 rows)

De to multimengdene *er*
unionkompatible !

```
( select C.country  
  from Filmcountry C  
)
```

intersect all

```
( select F.title  
  from Film F  
);
```

```
( select C.country
  from Filmcountry C
)
```

intersect all

```
( select F.title
  from Film F
);
```

.....

```
China
China
Kenya
Mauritius
Mauritius
Armenia
Armenia
Greece
Yemen
Andorra
Andorra
Andorra
Andorra
Switzerland
Switzerland
Switzerland
Indonesia
Belgium
Belgium
Bolivia
Mali
(152 rows)
```

```
( select C.country  
  from Filmcountry C  
)
```

intersect

```
( select F.title  
  from Film F  
) ;
```

```
( select C.country
  from Filmcountry C
)
```

intersect

```
( select F.title
  from Film F
);
```

.....

Thailand
Venezuela
Aruba
Hong Kong
Portugal
Romania
Canada
China
Kenya
Mauritius
Armenia
Greece
Yemen
Andorra
Switzerland
Indonesia
Belgium
Bolivia
Mali
(71 rows)

```
( select C.country, C.filmid  
  from Filmcountry C  
)
```

intersect all

```
( select F.title, F.filmid  
  from Film F  
);
```



```
( select C.country, C.filmid
  from Filmcountry C
)
```

intersect all

```
( select F.title, F.filmid
  from Film F
);
```

country		filmid
Australia		113619
France		503461
Hong Kong		851611
Mexico		1116904
Portugal		2207717
Puerto Rico		5563914

(6 rows)