

With Check Option

In this lesson we will learn how to use the WITH CHECK OPTION clause to ensure consistency of data.

WITH CHECK OPTION

Views usually contain a subset of rows from a base table. It is possible to insert or update rows which are not visible through the view. The **WITH CHECK OPTION** clause is used at the time of creation of the view and is used to maintain consistency when updating a table through an updatable view. This clause forbids the user to insert or update rows that are not visible through the view.

Syntax

```
CREATE [OR REPLACE] VIEW view_name AS
```

```
select_statement
```

```
WITH CHECK OPTION;
```

Connect to the terminal below by clicking in the widget. Once connected, the command line prompt will show up. Enter or copy and paste the command `./DataJek/Lessons/43lesson.sh` and wait for the MySQL prompt to start-up.

```
-- The lesson queries are reproduced below for convenient copy/paste into the terminal.
```



```
-- Query 1
```

```
CREATE VIEW SingleActors AS
```

```
SELECT FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillions
```

```
FROM Actors
```

```

FROM Actors
WHERE MaritalStatus = 'Single';

-- Query 2
INSERT INTO SingleActors (FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMilli
VALUES ('Tom', 'Hanks', '1956-07-09', 'Male', 'Married', 350);

-- Query 3
CREATE OR REPLACE VIEW SingleActors AS
SELECT FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillions
FROM Actors
WHERE MaritalStatus = 'Single'
WITH CHECK OPTION;

-- Query 4
INSERT INTO SingleActors (FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillio
VALUES ('Matt', 'Damon', '1970-10-08', 'Male', 'Married', 160);

-- Query 5
INSERT INTO SingleActors (FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillio
VALUES ('Charlize', 'Theron', '1975-08-07', 'Female', 'Single', 130);

```

Terminal

1. Suppose we want a view to show details of only those actors who are single, we can create it using the following statement:

```

CREATE VIEW SingleActors AS
SELECT FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillions
FROM Actors
WHERE MaritalStatus = 'Single';

```

This view contains four rows as shown:

```

mysql> CREATE VIEW SingleActors AS
-> SELECT FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillions
-> FROM Actors
-> WHERE MaritalStatus = 'Single';
Query OK, 0 rows affected (0.00 sec)

mysql> SELECT * FROM SingleActors;
+-----+-----+-----+-----+-----+-----+
| FirstName | SecondName | DoB      | Gender | MaritalStatus | NetWorthInMillions |
+-----+-----+-----+-----+-----+-----+
| Brad      | Pitt       | 1963-12-18 | Male   | Single        | 240                 |
| Jennifer  | Aniston    | 1969-11-02 | Female | Single        | 240                 |
| Angelina  | Jolie      | 1975-06-04 | Female | Single        | 100                 |
| Johnny    | Depp       | 1963-06-09 | Male   | Single        | 200                 |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

```

2. Since the **SingleActors** view is updatable, we can insert a row in the **Actors** table through it. To show the inconsistency that can arise, we

will insert a married actor in the table. Execute the following query to insert a new actor:

```
INSERT INTO SingleActors (FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillions)
VALUES ('Tom', 'Hanks', '1956-07-09', 'Male', 'Married', 350);
```

The insert operation is successful as the row appears in the table.

```
mysql> INSERT INTO SingleActors (FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillions)
-> VALUES ('Tom', 'Hanks', '1956-07-09', 'Male', 'Married', 350);
Query OK, 1 row affected (0.00 sec)

mysql> SELECT * FROM Actors;
```

Id	FirstName	SecondName	DoB	Gender	MaritalStatus	NetWorthInMillions
1	Brad	Pitt	1963-12-18	Male	Single	240
2	Jennifer	Aniston	1969-11-02	Female	Single	240
3	Angelina	Jolie	1975-06-04	Female	Single	100
4	Johnny	Depp	1963-06-09	Male	Single	200
5	Natalie	Portman	1981-06-09	Male	Married	60
6	Tom	Cruise	1962-07-03	Male	Divorced	570
7	Kylie	Jenner	1997-08-10	Female	Married	1000
8	Kim	Kardashian	1980-10-21	Female	Married	370
9	Amitabh	Bachchan	1942-10-11	Male	Married	400
10	Shahrukh	Khan	1965-11-02	Male	Married	600
11	priyanka	Chopra	1982-07-18	Female	Married	28
12	Tom	Hanks	1956-07-09	Male	Married	350

But the newly inserted row doesn't appear in the **SingleActors** view.

```
mysql> SELECT * FROM SingleActors;
```

FirstName	SecondName	DoB	Gender	MaritalStatus	NetWorthInMillions
Brad	Pitt	1963-12-18	Male	Single	240
Jennifer	Aniston	1969-11-02	Female	Single	240
Angelina	Jolie	1975-06-04	Female	Single	100
Johnny	Depp	1963-06-09	Male	Single	200

4 rows in set (0.00 sec)

This is because the row we just added does not qualify to appear in the view. The purpose of this view was to display single actors only. However, the view can still be used to make unwanted changes to the **Actors** table.

3. The **WITH CHECK OPTION** clause restricts users to update or insert data which is visible through the view. We will update the **SingleActors** view created in step 1 using the following query:

```
CREATE OR REPLACE VIEW SingleActors AS
SELECT FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillions
FROM Actors
WHERE MaritalStatus = 'Single'
WITH CHECK OPTION;
```

If we omit the **OR REPLACE** clause from the above query, we will get an error because a view with this name already exists.

Now try to insert a row in the Actors table through the SingleActors view as follows:

```
INSERT INTO SingleActors (FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillions)
VALUES ('Matt', 'Damon', '1970-10-08', 'Male', 'Married', 160);
```

```
mysql> CREATE OR REPLACE VIEW SingleActors AS
-> SELECT FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillions
-> FROM Actors
-> WHERE MaritalStatus = 'Single'
-> WITH CHECK OPTION;
Query OK, 0 rows affected (0.01 sec)

mysql> INSERT INTO SingleActors (FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillions)
-> VALUES ('Matt', 'Damon', '1970-10-08', 'Male', 'Married', 160);
ERROR 1369 (HY000): CHECK OPTION failed 'MovieIndustry.SingleActors'
```

We encounter the CHECK OPTION failed error message. The **WITH CHECK OPTION** clause ensures that only actors who are single can be inserted into the Actors table through this view. Now execute the following query:

```
INSERT INTO SingleActors (FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillions)
VALUES ('Charlize', 'Theron', '1975-08-07', 'Female', 'Single', 130);
```

```
mysql> INSERT INTO SingleActors (FirstName, SecondName, DoB, Gender, MaritalStatus, NetWorthInMillions)
-> VALUES ('Charlize', 'Theron', '1975-08-07', 'Female', 'Single', 130);
Query OK, 1 row affected (0.00 sec)

mysql> SELECT * FROM SingleActors;
+-----+-----+-----+-----+-----+-----+
| FirstName | SecondName | DoB      | Gender | MaritalStatus | NetWorthInMillions |
+-----+-----+-----+-----+-----+-----+
| Brad      | Pitt       | 1963-12-18 | Male   | Single        | 240                 |
| Jennifer  | Aniston    | 1969-11-02 | Female | Single        | 240                 |
| Angelina  | Jolie      | 1975-06-04 | Female | Single        | 100                 |
| Johnny    | Depp       | 1963-06-09 | Male   | Single        | 200                 |
| Charlize  | Theron     | 1975-08-07 | Female | Single        | 130                 |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

The row is inserted in the table and is visible through the view as well.

