HW Murach Ch 16 Triggers Project

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Question :

Add two triggers of your choice (one has to be the audit table example but you can choose if you use insert, update or delete) to the Campus Eats database system. Test your triggers.

Ans:
Added two triggers in Campus eats database

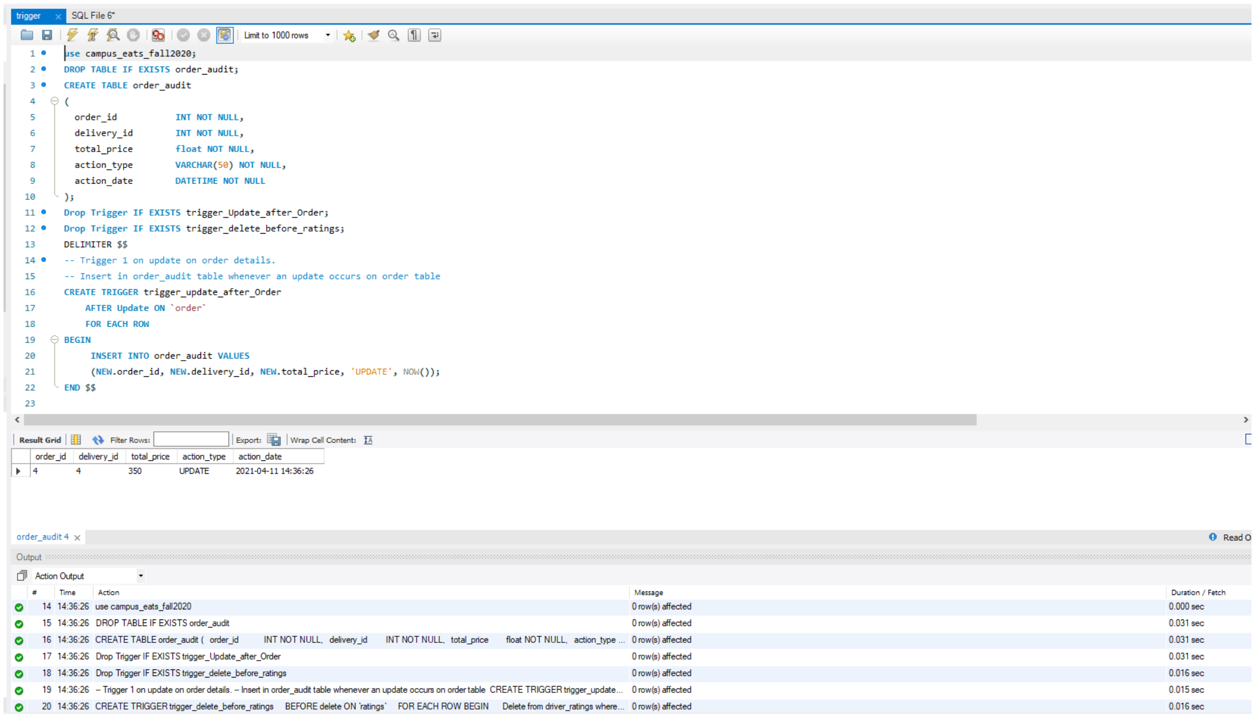
1. **Trigger on order table. Whenever an update occurs on the order table, trigger creates an entry in order_audit table.**
2. **Trigger on ratings table. Whenever rating is deleted from the ratings table, row in driver_ratings, restaurant_rating is deleted with the same rating_id.**

```
use campus_eats_fall2020;
DROP TABLE IF EXISTS order_audit;
CREATE TABLE order_audit
(
  order_id          INT NOT NULL,
  delivery_id        INT NOT NULL,
  total_price        float NOT NULL,
  action_type        VARCHAR(50) NOT NULL,
  action_date        DATETIME NOT NULL
);

Drop Trigger IF EXISTS trigger_Update_after_Order;
Drop Trigger IF EXISTS trigger_delete_before_ratings;

DELIMITER $$
-- Trigger 1 on update on order details.
-- Insert in order_audit table whenever an update occurs on order table
CREATE TRIGGER trigger_update_after_Order
   AFTER Update ON `order`
   FOR EACH ROW
BEGIN
    INSERT INTO order_audit VALUES
    (NEW.order_id, NEW.delivery_id, NEW.total_price, 'UPDATE', NOW());
END $$
```

```
-- Trigger 2 on ratings table.
-- On Delete of row from ratings table deletes row with same rating_id from driver_ratings,
restaurant_ratings
CREATE TRIGGER trigger_delete_before_ratings
   BEFORE delete ON `ratings`
   FOR EACH ROW
BEGIN
    Delete from driver_ratings where rating_id = OLD.rating_id;
    Delete from restaurant_ratings where rating_id = OLD.rating_id;
END $$
DELIMITER ;

-- Test the trigger on order_audit table
Update `order` set total_price=350 where order_id = 4;
select * from order_audit;

-- Test the trigger on ratings table
select d.rating_id, ontime_rating, courteous_rating, food_rating, price_rating
from driver_ratings d join restaurant_ratings r on d.rating_id = r.rating_id order by d.rating_id;
delete from ratings where rating_id = 2;
select d.rating_id, ontime_rating, courteous_rating, food_rating, price_rating
from driver_ratings d join restaurant_ratings r on d.rating_id = r.rating_id order by d.rating_id;
```

Screenshots showing successful completion of triggers:

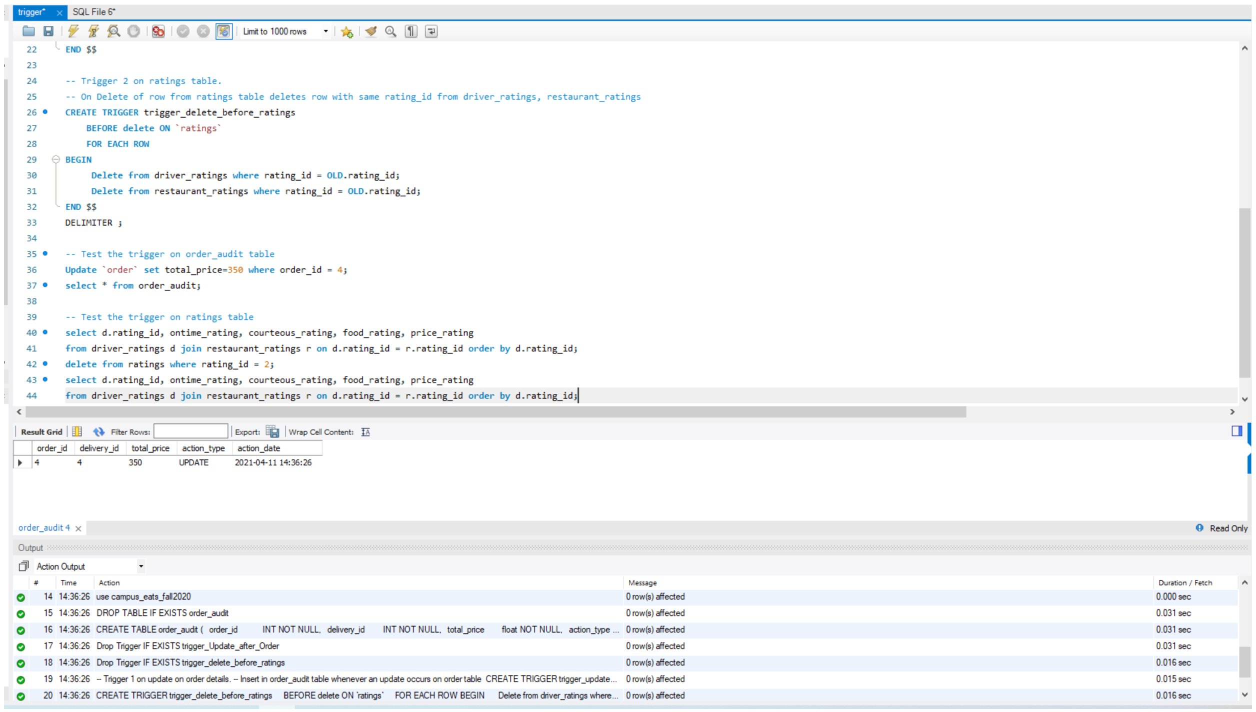
1. Screenshot with trigger1


```sql
use campus_eats_fall2020;
DROP TABLE IF EXISTS order_audit;
CREATE TABLE order_audit
(
  order_id          INT NOT NULL,
  delivery_id       INT NOT NULL,
  total_price       float NOT NULL,
  action_type       VARCHAR(50) NOT NULL,
  action_date       DATETIME NOT NULL
);
Drop Trigger IF EXISTS trigger_Update_after_Order;
Drop Trigger IF EXISTS trigger_delete_before_ratings;
DELIMITER $$
-- Trigger 1 on update on order details.
-- Insert in order_audit table whenever an update occurs on order table
CREATE TRIGGER trigger_update_after_Order
    AFTER Update ON `order`
    FOR EACH ROW
BEGIN
     INSERT INTO order_audit VALUES
     (NEW.order_id, NEW.delivery_id, NEW.total_price, 'UPDATE', NOW());
END $$
```

```
order_id  delivery_id  total_price  action_type  action_date
4         4            350          UPDATE       2021-04-11 14:36:26
```

```
#   Time      Action                                                                                                              Message             Duration / Fetch
14  14:36:26  use campus_eats_fall2020                                                                                            0 row(s) affected   0.000 sec
15  14:36:26  DROP TABLE IF EXISTS order_audit                                                                                    0 row(s) affected   0.031 sec
16  14:36:26  CREATE TABLE order_audit (  order_id     INT NOT NULL,  delivery_id     INT NOT NULL,  total_price     float NOT NULL,  action_type ...   0 row(s) affected   0.031 sec
17  14:36:26  Drop Trigger IF EXISTS trigger_Update_after_Order                                                                   0 row(s) affected   0.031 sec
18  14:36:26  Drop Trigger IF EXISTS trigger_delete_before_ratings                                                                0 row(s) affected   0.016 sec
19  14:36:26  -- Trigger 1 on update on order details. -- Insert in order_audit table whenever an update occurs on order table  CREATE TRIGGER trigger_update...   0 row(s) affected   0.015 sec
20  14:36:26  CREATE TRIGGER trigger_delete_before_ratings    BEFORE delete ON `ratings`    FOR EACH ROW BEGIN    Delete from driver_ratings where...   0 row(s) affected   0.016 sec
```

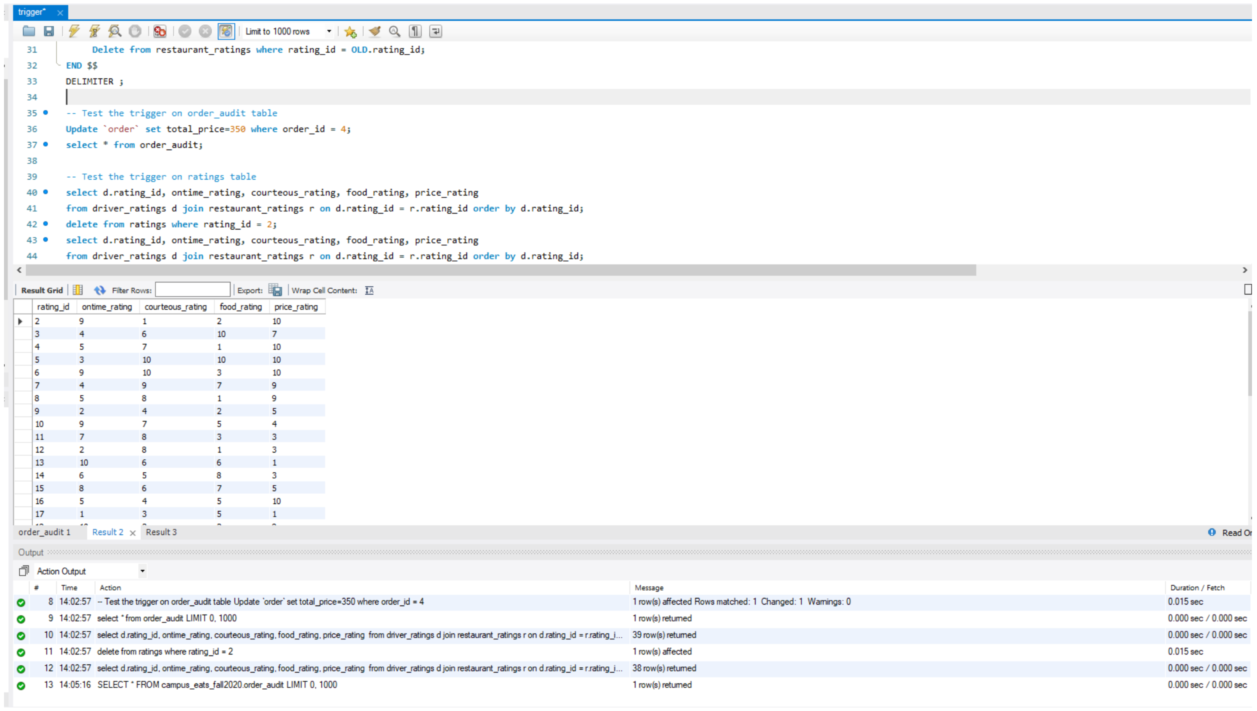
2. With trigger 2 and Output of order_audit table


```sql
END $$

-- Trigger 2 on ratings table.
-- On Delete of row from ratings table deletes row with same rating_id from driver_ratings, restaurant_ratings
CREATE TRIGGER trigger_delete_before_ratings
    BEFORE delete ON `ratings`
    FOR EACH ROW
BEGIN
     Delete from driver_ratings where rating_id = OLD.rating_id;
     Delete from restaurant_ratings where rating_id = OLD.rating_id;
END $$
DELIMITER ;

-- Test the trigger on order_audit table
Update `order` set total_price=350 where order_id = 4;
select * from order_audit;

-- Test the trigger on ratings table
select d.rating_id, ontime_rating, courteous_rating, food_rating, price_rating
from driver_ratings d join restaurant_ratings r on d.rating_id = r.rating_id order by d.rating_id;
delete from ratings where rating_id = 2;
select d.rating_id, ontime_rating, courteous_rating, food_rating, price_rating
from driver_ratings d join restaurant_ratings r on d.rating_id = r.rating_id order by d.rating_id;
```

```
order_id  delivery_id  total_price  action_type  action_date
4         4            350          UPDATE       2021-04-11 14:36:26
```

```
#   Time      Action                                                                                                              Message             Duration / Fetch
14  14:36:26  use campus_eats_fall2020                                                                                            0 row(s) affected   0.000 sec
15  14:36:26  DROP TABLE IF EXISTS order_audit                                                                                    0 row(s) affected   0.031 sec
16  14:36:26  CREATE TABLE order_audit (  order_id     INT NOT NULL,  delivery_id     INT NOT NULL,  total_price     float NOT NULL,  action_type ...   0 row(s) affected   0.031 sec
17  14:36:26  Drop Trigger IF EXISTS trigger_Update_after_Order                                                                   0 row(s) affected   0.031 sec
18  14:36:26  Drop Trigger IF EXISTS trigger_delete_before_ratings                                                                0 row(s) affected   0.016 sec
19  14:36:26  -- Trigger 1 on update on order details. -- Insert in order_audit table whenever an update occurs on order table  CREATE TRIGGER trigger_update...   0 row(s) affected   0.015 sec
20  14:36:26  CREATE TRIGGER trigger_delete_before_ratings    BEFORE delete ON `ratings`    FOR EACH ROW BEGIN    Delete from driver_ratings where...   0 row(s) affected   0.016 sec
```

3. Output before delete on ratings table

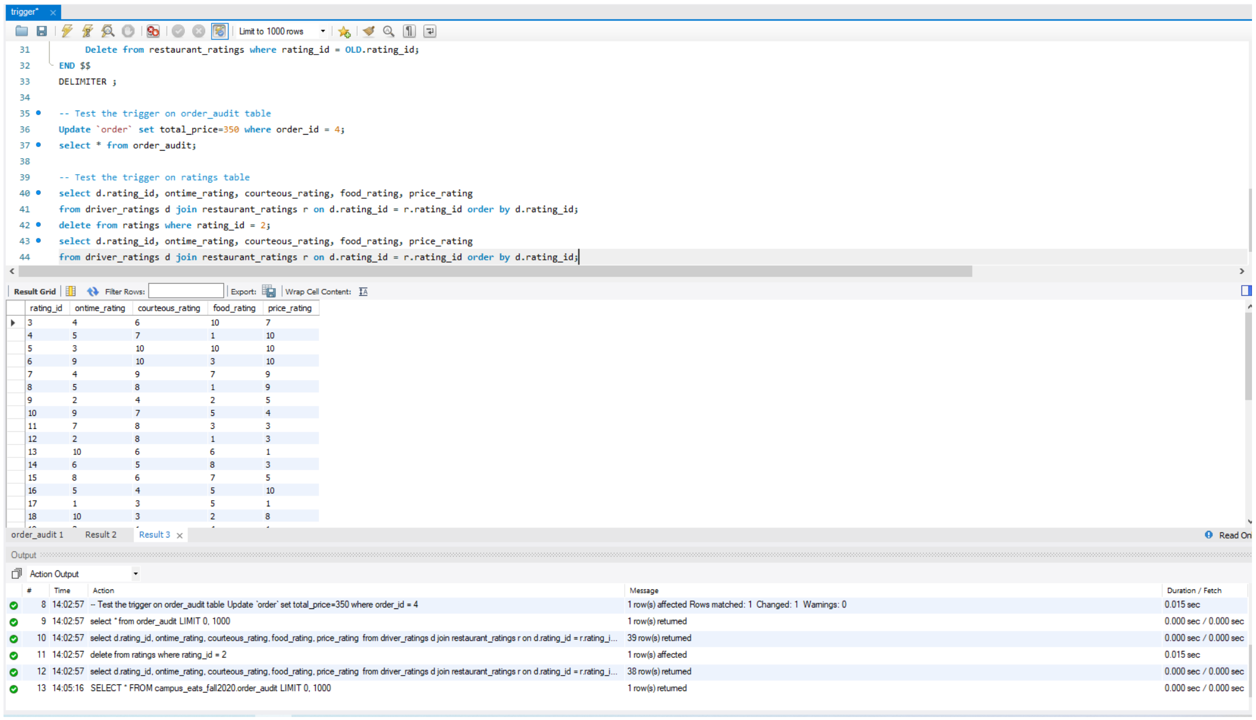


```
        Delete from restaurant_ratings where rating_id = OLD.rating_id;
    END $$
    DELIMITER ;

    -- Test the trigger on order_audit table
    Update `order` set total_price=350 where order_id = 4;
    select * from order_audit;

    -- Test the trigger on ratings table
    select d.rating_id, ontime_rating, courteous_rating, food_rating, price_rating
    from driver_ratings d join restaurant_ratings r on d.rating_id = r.rating_id order by d.rating_id;
    delete from ratings where rating_id = 2;
    select d.rating_id, ontime_rating, courteous_rating, food_rating, price_rating
    from driver_ratings d join restaurant_ratings r on d.rating_id = r.rating_id order by d.rating_id;
```

rating_id	ontime_rating	courteous_rating	food_rating	price_rating
2	9	1	2	10
3	4	6	10	7
4	5	7	1	10
5	3	10	10	10
6	9	10	3	10
7	4	9	7	9
8	5	8	1	9
9	2	4	2	5
10	9	7	5	4
11	7	8	3	3
12	2	8	1	3
13	10	6	6	1
14	6	5	8	3
15	8	6	7	5
16	5	4	5	10
17	1	3	5	1

```
#   Time      Action                                                                                                   Message                                              Duration / Fetch
8   14:02:57  -- Test the trigger on order_audit table Update `order` set total_price=350 where order_id = 4          1 row(s) affected Rows matched: 1  Changed: 1  Warnings: 0  0.015 sec
9   14:02:57  select * from order_audit LIMIT 0, 1000                                                                  1 row(s) returned                                    0.000 sec / 0.000 sec
10  14:02:57  select d.rating_id, ontime_rating, courteous_rating, food_rating, price_rating  from driver_ratings d join restaurant_ratings r on d.rating_id = r.rating_i...  39 row(s) returned  0.000 sec / 0.000 sec
11  14:02:57  delete from ratings where rating_id = 2                                                                   1 row(s) affected                                    0.015 sec
12  14:02:57  select d.rating_id, ontime_rating, courteous_rating, food_rating, price_rating  from driver_ratings d join restaurant_ratings r on d.rating_id = r.rating_i...  38 row(s) returned  0.000 sec / 0.000 sec
13  14:05:16  SELECT * FROM campus_eats_fall2020.order_audit LIMIT 0, 1000                                             1 row(s) returned                                    0.000 sec / 0.000 sec
```

4. Output after delete on ratings table



```
        Delete from restaurant_ratings where rating_id = OLD.rating_id;
    END $$
    DELIMITER ;

    -- Test the trigger on order_audit table
    Update `order` set total_price=350 where order_id = 4;
    select * from order_audit;

    -- Test the trigger on ratings table
    select d.rating_id, ontime_rating, courteous_rating, food_rating, price_rating
    from driver_ratings d join restaurant_ratings r on d.rating_id = r.rating_id order by d.rating_id;
    delete from ratings where rating_id = 2;
    select d.rating_id, ontime_rating, courteous_rating, food_rating, price_rating
    from driver_ratings d join restaurant_ratings r on d.rating_id = r.rating_id order by d.rating_id;
```

rating_id	ontime_rating	courteous_rating	food_rating	price_rating
3	4	6	10	7
4	5	7	1	10
5	3	10	10	10
6	9	10	3	10
7	4	9	7	9
8	5	8	1	9
9	2	4	2	5
10	9	7	5	4
11	7	8	3	3
12	2	8	1	3
13	10	6	6	1
14	6	5	8	3
15	8	6	7	5
16	5	4	5	10
17	1	3	5	1
18	10	3	2	8

```
#   Time      Action                                                                                                   Message                                              Duration / Fetch
8   14:02:57  -- Test the trigger on order_audit table Update `order` set total_price=350 where order_id = 4          1 row(s) affected Rows matched: 1  Changed: 1  Warnings: 0  0.015 sec
9   14:02:57  select * from order_audit LIMIT 0, 1000                                                                  1 row(s) returned                                    0.000 sec / 0.000 sec
10  14:02:57  select d.rating_id, ontime_rating, courteous_rating, food_rating, price_rating  from driver_ratings d join restaurant_ratings r on d.rating_id = r.rating_i...  39 row(s) returned  0.000 sec / 0.000 sec
11  14:02:57  delete from ratings where rating_id = 2                                                                   1 row(s) affected                                    0.015 sec
12  14:02:57  select d.rating_id, ontime_rating, courteous_rating, food_rating, price_rating  from driver_ratings d join restaurant_ratings r on d.rating_id = r.rating_i...  38 row(s) returned  0.000 sec / 0.000 sec
13  14:05:16  SELECT * FROM campus_eats_fall2020.order_audit LIMIT 0, 1000                                             1 row(s) returned                                    0.000 sec / 0.000 sec
```