

Step 2 – Queries

Pay attention, I changed the queries to use List with select in the SQL files!

Query 1:

```
1  -- Query 1: Select all attractions along with the total number of tickets contains each attraction
2  SELECT A.attraction_id, A.attraction_name, L.location_name, COUNT(Tickets.ticket_id) AS total_tickets
3  FROM ATTRACTIONS A
4  LEFT JOIN Tickets ON A.attraction_id = Tickets.attraction_id
5  JOIN LOCATIONS L on L.LOCATION_ID = A.LOCATION_ID
6  GROUP BY A.attraction_id, a.attraction_name, L.location_name
7  ORDER BY total_tickets DESC;
8  /*
9  | It uses a LEFT JOIN to ensure all attractions are included, even if they haven't included in any tickets.
10 */
11
```

Query Result Script Output DBMS Output Explain Plan Autotrace SQL History

Download Execution time: 0.012 seconds

	ATTRACTION_ID	ATTRACTION_NAM	LOCATION_NAME	TOTAL_TICKETS
1	1	Observation Deck	Webster Groves	5
2	272	Amusement Park	Hong Kong	5
3	109	Water Park	Lummen	4
4	329	Amusement Park	Goiania	4
5	124	Amusement Park	Udine	4

Query 2:

```

100 -- Query 2: Find tickets of attractions located in both 'Delaware' and 'UT'
101 select distinct A2.attraction_name, category_name, A2.opening_hours, location_name, area_name
102 from (
103     SELECT attraction_name, opening_hours, category_name
104     FROM tickets T
105     join Attractions A ON T.attraction_id = A.attraction_id
106     join categories C ON C.category_id = T.category_id
107     WHERE location_id IN (
108         SELECT location_id
109         FROM Locations
110         WHERE area_id in (SELECT area_id FROM Areas WHERE area_name = 'Delaware')
111     )
112     INTERSECT
113     SELECT attraction_name, opening_hours, category_name
114     FROM tickets T
115     join Attractions A ON T.attraction_id = A.attraction_id
116     join categories C ON C.category_id = T.category_id
117     WHERE location_id IN (
118         SELECT location_id
119         FROM Locations
120         WHERE area_id in (SELECT area_id FROM Areas WHERE area_name = 'UT' )
121     )) A1
122 JOIN Attractions A2 ON A1.attraction_name = A2.attraction_name
123 JOIN LOCATIONS L ON L.location_id = A2.location_id
124 JOIN Areas A ON A.area_id = L.area_id
125 where area_name in ('UT', 'Delaware')
126

```

Query Result Script Output DBMS Output Explain Plan Autotrace SQL History

Download Execution time: 0.04 seconds

	ATTRACTION_NAM	CATEGORY_NAME	OPENING_HOURS	LOCATION_NAME	AREA_NAME
1	Museum	Child	24/7	Marlboro	Delaware
2	Museum	Child	24/7	Calgary	UT
3	Museum	Child	24/7	Eisenhüttenstadt	Delaware
4	Museum	Teenager	24/7	Calgary	UT
5	Museum	Teenager	24/7	Eisenhüttenstadt	Delaware
6	Golden Gate Bridge	Teenager	24/7	Antwerpen	UT

Query 3:

```

1 -- Query 3: Select all orders placed on or after 2024-01-01, along with the customer name and total order amount
2 SELECT c.customer_name, o.order_id, o.order_date, SUM(t.price) AS total_order_amount
3 FROM Orders o
4 INNER JOIN Customers c ON o.customer_id = c.customer_id
5 INNER JOIN Order_Items oi ON o.order_id = oi.order_id
6 INNER JOIN Tickets t ON oi.ticket_id = t.ticket_id
7 WHERE o.order_date >= TO_DATE('2024-01-01', 'YYYY-MM-DD')
8 GROUP BY c.customer_name, o.order_id, o.order_date
9 ORDER BY total_order_amount DESC;
10
11 /*
12 | This query selects all orders placed on or after a specific date, along with the customer name and total order amount.
13 */

```

Query Result Script Output DBMS Output Explain Plan Autotrace SQL History

Download Execution time: 0.075 seconds

	CUSTOMER_NAME	ORDER_ID	ORDER_DATE	TOTAL_ORDER_AMOUNT
1	Gloriane Boscher	180	2/24/2024, 12:00:00 AM	254
2	Reggi Wickes	162	5/12/2024, 12:00:00 AM	133
3	Bobina Hindsberg	388	2/29/2024, 12:00:00 AM	122
4	Tybie Ianni	253	1/26/2024, 12:00:00 AM	74
5	Burlie Scambler	201	5/9/2024, 12:00:00 AM	62

Query 4:

```

1  -- Query 4: Select all attractions that have not included by any tickets yet
2  SELECT A.Attraction_Id, A.attraction_name, location_name, area_name
3  FROM Attractions A
4  JOIN Locations L ON A.location_id = L.location_id
5  JOIN AREAS AR ON AR.area_id = L.area_id
6  LEFT JOIN Tickets T ON A.attraction_id = T.attraction_id
7  WHERE T.ticket_id IS NULL;
8
9  /*
10   It utilizes a LEFT JOIN to include attractions that haven't included by any tickets.
11  */
12

```

Query Result Script Output DBMS Output Explain Plan Autotrace SQL History

Download Execution time: 0.088 seconds

	ATTRACTION_ID	ATTRACTION_NAM	LOCATION_NAME	AREA_NAME
1	22	Botanical Garden	Aberdeen	VT
2	231	National Park	Bismarck	DE
3	327	Adventure Park	Bergen	Wyoming
4	337	Adventure Park	Traralgon	Oregon
5	49	National Park	New Fairfield	Kansas

Query 5 – Before update:

```

5  -- Query 5: Update the opening hours of all the Botanical Garden attractions
6  -- BEFORE UPDATE
7  select * from Attractions
8  WHERE attraction_id in (
9      SELECT attraction_id
10     FROM Attractions
11     WHERE attraction_name = 'Botanical Garden'
12 );
13
14 /*
15   It uses a subquery to find the attraction_id based on the attraction name.
16  */

```

Query Result Script Output DBMS Output Explain Plan Autotrace SQL History

Download Execution time: 0.01 seconds

	ATTRACTION_ID	ATTRACTION_NAM	DESCRIPTION	OPENING_HOURS	LOCATION_ID
1	313	Botanical Garden	313B Black 300W P4	8:00 AM - 5:00 PM	164
2	320	Botanical Garden	Biostar M6TSU M/B(11:30 AM - 8:30 PM	377
3	353	Botanical Garden	Antec Plus 660 ATX	9:30 AM - 6:30 PM	255
4	369	Botanical Garden	Combo Intel P4 1.9G	8:00 AM - 5:00 PM	327
5	376	Botanical Garden	AMD XP 1800+ & Gi	9:30 AM - 7:30 PM	383

Query 5 – Update:

```

1  -- Query 5: Update the opening hours of all the Botanical Garden attractions
2  UPDATE Attractions
3  SET opening_hours = '09:00 AM - 06:00 PM'
4  WHERE attraction_id in (
5  --SELECT attraction_id
6  --FROM Attractions
7  --WHERE attraction_name = 'Botanical Garden'
8  );
9
10 /*
11  It uses a subquery to find the attraction_id based on the attraction name.
12  */

```

Query 5 – After update:

22 rows updated.
Elapsed: 00:00:00.016

```

5  -- Query 5: Update the opening hours of all the Botanical Garden attractions
6  -- AFTER UPDATE
7  select * from Attractions
8  WHERE attraction_id in (
9  SELECT attraction_id
10 FROM Attractions
11 WHERE attraction_name = 'Botanical Garden'
12 );
13
14 /*
15  It uses a subquery to find the attraction_id based on the attraction name.
16  */

```

Query Result Script Output DBMS Output Explain Plan Autotrace SQL History

Download Execution time: 0.003 seconds

	ATTRACTION_ID	ATTRACTION_NAM	DESCRIPTION	OPENING_HOURS	LOCATION_ID
1	313	Botanical Garden	313B Black 300W P4/AMD Fan&US	09:00 AM - 06:00 PM	164
2	320	Botanical Garden	Biostar M6TSU M/B(30 day D.O.A V	09:00 AM - 06:00 PM	377
3	353	Botanical Garden	Antec Plus 660 ATX Mid tower 330	09:00 AM - 06:00 PM	255
4	369	Botanical Garden	Combo Intel P4 1.9Ghz (Box CPU)+	09:00 AM - 06:00 PM	327
5	376	Botanical Garden	AMD XP 1800+ & Gigabyte GA-7VK	09:00 AM - 06:00 PM	383
6	377	Botanical Garden	Combo Intel Celeron 1.8Ghz (Box C	09:00 AM - 06:00 PM	369

Query 6 – Before update:


```

4 -- Query 6: Update the price of all tickets for attractions located in the Delaware area and classified into teenager category
5 -- AFTER UPDATE.
6 select * from tickets t
7 WHERE t.category_id = (
8     SELECT c.category_id
9     FROM Categories c
10    WHERE c.category_name = 'Teenager'
11 )
12 AND t.attraction_id IN (
13     SELECT a.attraction_id
14     FROM Attractions a
15    JOIN Locations l ON a.location_id = l.location_id
16    JOIN Areas ar ON l.area_id = ar.area_id
17    WHERE ar.area_name = 'Delaware'
18 );
19

```

Query Result Script Output DBMS Output Explain Plan Autotrace SQL History

Download Execution time: 0.005 seconds

	TICKET_ID	PRICE	VALID_FROM	VALID_UNTIL	CATEGORY_ID	ATTRACTION_ID
1	402	60.5	7/1/2024, 12:00:00 A	12/31/2024, 12:00:00 A	2	401
2	406	60.5	7/1/2024, 12:00:00 A	12/31/2024, 12:00:00 A	2	404
3	410	60.5	7/1/2024, 12:00:00 A	12/31/2024, 12:00:00 A	2	412
4	411	60.5	7/1/2024, 12:00:00 A	12/31/2024, 12:00:00 A	2	413

Query 7 – Before delete:

```

54 -- Query 7: Find and sort desc orders history by customer id and delete all orders from earlier than the third order date
55 -- In other words, delete order history and keep only the last three orders
56 -- BEFORE UPDATE - count how many old orders exists
57 select o.customer_id, count(*) as count_orders
58 from orders o
59 where order_date = (
60     select order_date
61     from (
62         SELECT customer_id, order_date, ROW_NUMBER() OVER (PARTITION BY customer_id ORDER BY order_date DESC) AS rn
63        FROM orders)
64    where rn = 3 and customer_id = o.customer_id)
65 group by o.customer_id

```

Query Result Script Output DBMS Output Explain Plan Autotrace SQL History

Download Execution time: 0.003 seconds

	CUSTOMER_ID	COUNT_ORDERS
1	774	2
2	655	1
3	665	2
4	668	4
5	796	1

Query 7 – Customer 774 before delete:

66	
67	<code>select * from orders where customer_id = 774 order by order_date desc</code>

ORDER_ID	ORDER_DATE	CUSTOMER_ID
1	404 5/2/2024, 12:00:00 AM	774
2	402 5/2/2024, 12:00:00 AM	774
3	403 5/1/2024, 12:00:00 AM	774
4	401 5/1/2024, 12:00:00 AM	774
5	292 5/30/2018, 12:00:00 AM	774
6	101 3/30/2016, 12:00:00 AM	774
7	136 7/26/2012, 12:00:00 AM	774

Query 7 – Delete order items before deleting orders:

56	<code>-- delete order items</code>	
57	<code>delete from ORDER_ITEMS where order_id in (</code>	
58	<code>WITH ThrdOrderDates AS (</code>	
59	<code> SELECT customer_id, order_date AS third_order_date</code>	
60	<code> FROM (</code>	
61	<code> SELECT customer_id, order_date, ROW_NUMBER() OVER (PARTITION BY customer_id ORDER BY order_date DESC) AS rn</code>	
62	<code> FROM orders</code>	
63	<code>)</code>	
64	<code> WHERE rn = 3</code>	
65	<code>)</code>	
66		
67	<code>select order_id FROM orders</code>	
68	<code>WHERE (customer_id, order_date) IN (</code>	
69	<code> SELECT o.customer_id, o.order_date</code>	
70	<code> FROM orders o</code>	
71	<code> JOIN ThrdOrderDates t ON o.customer_id = t.customer_id</code>	
72	<code> WHERE o.order_date < t.third_order_date</code>	
73	<code>))</code>	
74		

Query 7 – Delete:

54	<code>-- Query 7: Find and sort desc orders history by customer id and delete all orders from earlier than the third order date</code>	
55	<code>-- In other words, delete order history and keep only orders from last three dates</code>	
56	<code>delete from orders where order_id in (</code>	
57	<code>WITH ThrdOrderDates AS (</code>	
58	<code> SELECT customer_id, order_date AS third_order_date</code>	
59	<code> FROM (</code>	
60	<code> SELECT customer_id, order_date, ROW_NUMBER() OVER (PARTITION BY customer_id ORDER BY order_date DESC) AS rn</code>	
61	<code> FROM orders</code>	
62	<code>)</code>	
63	<code> WHERE rn = 3</code>	
64	<code>)</code>	
65		
66	<code>SELECT * FROM orders</code>	
67	<code>WHERE (customer_id, order_date) IN (</code>	
68	<code> SELECT o.customer_id, o.order_date</code>	
69	<code> FROM orders o</code>	
70	<code> JOIN ThrdOrderDates t ON o.customer_id = t.customer_id</code>	
71	<code> WHERE o.order_date < t.third_order_date</code>	
72	<code>));</code>	
73		

Query 7 – After delete:

```

56 -- AFTER UPDATE - count how many old orders exists
57 WITH ThrdOrderDates AS (
58     SELECT customer_id, order_date AS third_order_date
59     FROM (
60         SELECT customer_id, order_date, ROW_NUMBER() OVER (PARTITION BY customer_id ORDER BY order_date DESC) AS rn
61         FROM orders
62     )
63     WHERE rn = 3
64 )
65
66 SELECT * FROM orders
67 WHERE (customer_id, order_date) IN (
68     SELECT o.customer_id, o.order_date
69     FROM orders o
70     JOIN ThrdOrderDates t ON o.customer_id = t.customer_id
71     WHERE o.order_date < t.third_order_date
72 )
73

```

Query Result Script Output DBMS Output Explain Plan Autotrace SQL History

Download Execution time: 0.033 seconds

ORDER_ID	ORDER_DATE	CUSTOMER_ID
No data found		

Query 7 – Customer 774 after delete:

```

78 select * from orders where customer_id = 774 order by order_date desc

```

Query Result Script Output DBMS Output Explain Plan Autotrace SQL History

Download Execution time: 0.002 seconds

	ORDER_ID	ORDER_DATE	CUSTOMER_ID
1	402	5/2/2024, 12:00:00 AM	774
2	404	5/2/2024, 12:00:00 AM	774
3	401	5/1/2024, 12:00:00 AM	774
4	403	5/1/2024, 12:00:00 AM	774

Query 7 – Table after delete:

```

60 WITH ThrdOrderDates AS (
61     SELECT customer_id, order_date AS third_order_date
62     FROM (
63         SELECT customer_id, order_date, ROW_NUMBER() OVER (PARTITION BY customer_id ORDER BY order_date DESC) AS rn
64         FROM orders
65     )
66     WHERE rn = 3
67 )
68
69 select count(order_id) FROM orders
70 WHERE (customer_id, order_date) IN (
71     SELECT o.customer_id, o.order_date
72     FROM orders o
73     JOIN ThrdOrderDates t ON o.customer_id = t.customer_id
74     WHERE o.order_date < t.third_order_date
75 )

```

Query Result Script Output DBMS Output Explain Plan Autotrace SQL History

Download Execution time: 0.021 seconds

	COUNT(ORDER_ID)
1	0

Query 8 – Before delete:

4

-- Query 8: Delete all tickets for a specific attraction

5

--BEFORE DELETE

6

select * FROM Tickets

7

WHERE attraction_id in (

8

SELECT attraction_id

9

FROM Attractions

10

WHERE attraction_name = 'Golden Gate Bridge'

11

);

12

13

/*

14

This query deletes all tickets for Golden Gate Bridge attraction.

15

It uses a subquery to find the attraction_id based on the attraction name.

16

*/

Query Result

Script Output

DBMS Output

Explain Plan

Autotrace

SQL History

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Download

Execution time: 0.013 seconds

	TICKET_ID	PRICE	VALID_FROM	VALID_UNTIL	CATEGORY_ID	ATTRACTION_ID
1	600	50	6/1/2024, 12:00:00 AM	12/31/2024, 12:00:00 AM	1	401
2	405	55	7/1/2024, 12:00:00 AM	12/31/2024, 12:00:00 AM	2	409
3	401	50	6/1/2024, 12:00:00 AM	12/31/2024, 12:00:00 AM	1	401
4	402	60.5	7/1/2024, 12:00:00 AM	12/31/2024, 12:00:00 AM	2	401

Query 8 – Delete:

4	-- Query 8: Delete all tickets for a specific attraction	
5	--BEFORE DELETE	
6	DELETE FROM Tickets	
7	WHERE attraction_id in (
8	SELECT attraction_id	
9	FROM Attractions	
10	WHERE attraction_name = 'Golden Gate Bridge'	
11);	
12		
13	/*	
14	This query deletes all tickets for Golden Gate Bridge attraction.	
15	It uses a subquery to find the attraction_id based on the attraction name.	
16	*/	

4 rows deleted.
Elapsed: 00:00:00.012

Query 8 – Table after delete:

```
4 -- Query 8: Delete all tickets for a specific attraction
5 --AFTER DELETE
6 select * FROM Tickets
7 WHERE attraction_id in (
8     SELECT attraction_id
9     FROM Attractions
10    WHERE attraction_name = 'Golden Gate Bridge'
11 );
12
13 /*
14 This query deletes all tickets for Golden Gate Bridge attraction.
15 It uses a subquery to find the attraction_id based on the attraction name.
16 */
```

Query Result Script Output DBMS Output Explain Plan Autotrace SQL History

Download Execution time: 0.003 seconds

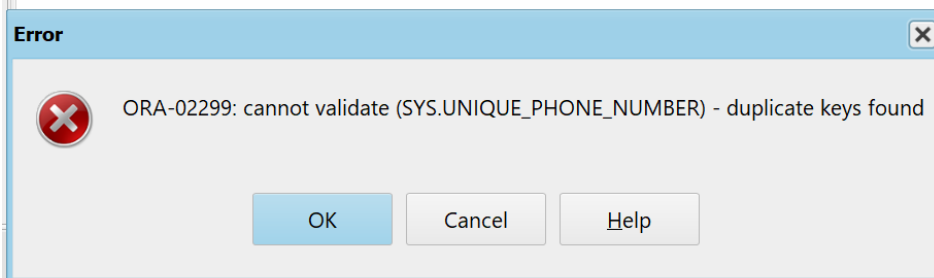
TICKET_ID	PRICE	VALID_FROM	VALID_UNTIL	CATEGORY_ID	ATTRACTION_ID
No data found					

Constraints:

Constraint 1:

Trying to add the constraint

```
-- Add constraint to Customers table for phone number uniqueness
ALTER TABLE Customers
ADD CONSTRAINT unique_phone_number UNIQUE (phone_number);
```



Add new phone number field and copy the data

```

ALTER TABLE Customers
ADD phone_number VARCHAR2(10);

update customers
set phone_number = phone_numer
where phone_numer in (
select phone_numer from (
SELECT phone_numer, COUNT(*)
FROM Customers
GROUP BY phone_numer
HAVING COUNT(*) > 1))

```

Validate the data has been copied

```
select * from customers
```

	CUSTOMER_ID	CUSTOMER_NAME	PHONE_NUMER	ADDRESS_LINE_1	ADDRESS_LINE_2	PHONE_NUMBER
1	1	Dorey Nacey	1234567890	83 Clyde Gallagher Crossing	Suite 21	
2	2	Rhodie Dainty	6242738669	747 Warbler Center	Suite 52	6242738669
3	3	Jobey Abrahm	4734466220	21701 Sheridan Court	Suite 6	4734466220
4	4	Ryley Trobridge	2785068828	05 Hayes Center	Apt 1357	2785068828
5	5	Elbertina Farrah	6706256225	26 Monica Lane	Suite 27	6706256225

Delete duplicates before adding the constraint

```

SELECT phone_number, COUNT(*)
FROM Customers
GROUP BY phone_number
HAVING COUNT(*) > 1;

```

```

DELETE FROM Order_Items
WHERE order_id IN (
    SELECT order_id
    FROM Orders
    WHERE customer_id IN (
        SELECT customer_id
        FROM Customers
        WHERE phone_number IN (
            SELECT phone_number
            FROM Customers
            GROUP BY phone_number
            HAVING COUNT(*) > 1
        )
    )
);

```

```

DELETE FROM Orders
WHERE customer_id IN (
    SELECT customer_id
    FROM Customers
    WHERE phone_number IN (
        SELECT phone_number
        FROM Customers
        GROUP BY phone_number
        HAVING COUNT(*) > 1
    )
);

```

```

-- Delete duplicate records, keeping only the first occurrence
DELETE FROM Customers
WHERE ROWID NOT IN (
    SELECT MIN(ROWID)
    FROM Customers
    GROUP BY phone_number
);

```

Rename old field

```

ALTER TABLE Customers
RENAME COLUMN phone_number TO old_phone_number;

```

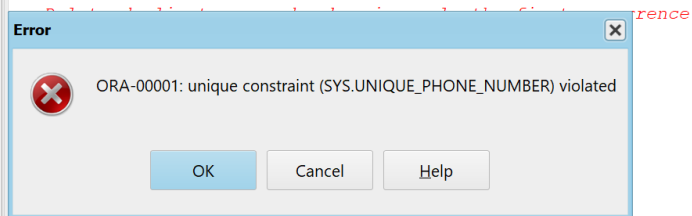
Adding the constraint

```

-- Add constraint to Customers table for ensuring phone_number is unique
ALTER TABLE Customers
ADD CONSTRAINT unique_phone_number UNIQUE (phone_number);

```

Attempt to insert invalid data



```
INSERT INTO Customers (customer_name, Old_Phone_Numer ,phone_number, address_line_1, address_line_2)
VALUES ('John Doe','6242738669', '6242738669', '123 Main St', 'Apt 4B');
```

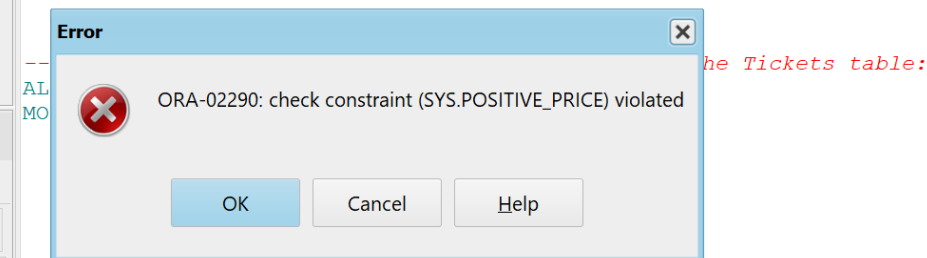
Constraint 2:

Adding the constraint

```
-- Add constraint to Tickets table for ensuring price is greater than zero
ALTER TABLE Tickets
ADD CONSTRAINT positive_price CHECK (price > 0);
```

Attempt to insert invalid data

```
-- Attempt to insert a ticket with an invalid price
INSERT INTO Tickets (price, valid_from, valid_until, category_id, attraction_id)
VALUES (-50, SYSDATE, SYSDATE + 30, 1, 401);
```



Constraint 3:

```
-- Add constraint to Orders table for setting default order_date to sysdate
ALTER TABLE Orders
MODIFY order_date DEFAULT SYSDATE;
```

Attempt to insert the a line without the new default key

```
-- Attempt to insert an order without an order_date
INSERT INTO Orders (customer_id)
VALUES (1);
```

```
select * from Orders
```

19:1 [101] binac@XE AS SYSDBA [00:57:45] 1 row inserted in 0.001 seconds