

# **DENORMALIZATION RULES APPLIED ON NORMALIZATION TABLES**

GROUP 16

## **DESCRIPTION:**

1. ADDING REDUNDANCY
2. MULTIVALUED ATTRIBUTE
3. STORING DERIVABLE VALUE
4. PRE-JOINING TABLES
5. JOIN DETAIL IN MASTER
6. HARD CODED VALUES

# ADDING REDUNDANCY

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Two records of a column have the same value or the data is repeated in multiple columns.

```
mysql> describe task;
ERROR 1146 (42S02): Table 'hotel_chain.task' doesn't exist
mysql> select * from hotel_branch;
+----+-----+-----+-----+
| H_id | h_name | h_address | staff_id |
+----+-----+-----+-----+
| 1001 | unique | lahore    | 1         |
| 1002 | five_star | Multan    | 2         |
| 1003 | five_star | Sheikhpura | 3         |
+----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> _
```

# MULTIVALUED ATTRIBUTE

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The attribute having more than one values in a record is known as multivalued attribute.

```
3 rows in set (0.00 sec)

mysql> update hotel_branch set h_address='karachi,lahore' where h_id='1001';
Query OK, 1 row affected (0.02 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from hotel_branch;
+----+-----+-----+-----+
| H_id | h_name | h_address | staff_id |
+----+-----+-----+-----+
| 1001 | unique | karachi,lahore | 1         |
| 1002 | five_star | Multan    | 2         |
| 1003 | five_star | Sheikhpura | 3         |
+----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql>
```

## Deriving values of one attribute column from another.

## PRE-JOINING TABLE CUSTOMER & ROOM\_BOOKING

[illegible]

# JOIN DETAIL WITH MASTER

Adding the necessary details of child table in parent table.

```
MySQL 8.0 Command Line Client - Unicode

c_id      int      NO      PRI      NULL
c_name    varchar(15) YES      MUL      NULL
r_id      int      YES      NULL
c_address varchar(30) YES      NULL
phone_no  int      YES      NULL
dob       date   YES      NULL
age       int      YES      NULL

7 rows in set (0.00 sec)

mysql> select * from customer;

+----+-----+-----+-----+-----+-----+-----+
| c_id | c_name | r_id | c_address | phone_no | dob       | age |
+----+-----+-----+-----+-----+-----+-----+
| 100  | NOOR  | 10   | Farooqabad | 38876257 | 2002-03-12 | 23 |
| 200  | NIMRA | 20   | Sheikhpura | 38887257 | 2004-09-20 | 20 |
| 300  | shanze | 30   | Sheikhpura | 333447257 | 2010-04-21 | 15 |
+----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> ALTER TABLE preorder ADD COLUMN cust_name VARCHAR(40), ADD COLUMN cust_address VARCHAR(50), ADD COLUMN cust_phone_no int(15);
Query OK, 0 rows affected, 1 warning (0.04 sec)
Records: 0 Duplicates: 0 Warnings: 1

mysql> UPDATE preorder JOIN customer ON preorder.cust_id = customer.c_id SET preorder.cust_name = customer.c_name, preorder.cust_address = customer.c_address, preorder.cust_phone_no = customer.phone_no;
Query OK, 3 rows affected (0.01 sec)
Rows matched: 3 Changed: 3 Warnings: 0

mysql> SELECT * FROM preorder;

+----+-----+-----+-----+-----+-----+-----+
| order_id | meal      | taxi_services | cust_id | cust_name | cust_address | cust_phone_no |
+----+-----+-----+-----+-----+-----+-----+
| 110      | breakfast | yes           | 100     | NOOR      | Farooqabad   | 38876257      |
| 220      | dinner   | no            | 200     | NIMRA     | Sheikhpura   | 38887257      |
| 330      | lunch    | yes           | 300     | shanze    | Sheikhpura   | 333447257      |
+----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql>
```

# SHORT CIRCUIT KEYS

Adding foreign keys of 1st two tables in the 3rd table so that the 3rd table can access the data of other two tables easily.

```
MySQL 8.0 Command Line Client

mysql> describe customer;

+----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+----+-----+-----+-----+-----+-----+
| c_id  | int  | NO   | PRI | NULL    |       |
| c_name | varchar(20) | YES | MUL | NULL    |       |
| r_id  | int  | YES  |     | NULL    |       |
| c_address | varchar(30) | YES |     | NULL    |       |
+----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> describe loyalty_points;

+----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+----+-----+-----+-----+-----+-----+
| points_id | int | NO | PRI | NULL |       |
| service_points | int | YES |     | NULL |       |
| upgrade_points | int | YES |     | NULL |       |
| cus_id | int | YES | MUL | NULL |       |
+----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> describe staff
-> ;

+----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+----+-----+-----+-----+-----+-----+
| s_id  | int  | NO   | PRI | NULL    |       |
| s_name | varchar(20) | YES |     | NULL    |       |
| s_address | varchar(30) | YES |     | NULL    |       |
| s_role | varchar(20) | YES |     | NULL    |       |
| r_id  | int  | YES  | UNI | NULL    |       |
| room_type | varchar(15) | YES |     | NULL    |       |
| dob   | date | YES  |     | NULL    |       |
| customer_id | int | YES | MUL | NULL    |       |
| loyalty_points_id | int | YES | MUL | NULL    |       |
+----+-----+-----+-----+-----+-----+
9 rows in set (0.00 sec)

mysql>
```

# HARD CODED VALUES

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Adding a fixed value directly in the the query

```
MySQL 8.0 Command Line Client - Unicode
mysql> AC
mysql> SELECT * FROM grade WHERE grade = 2;
+-----+-----+-----+-----+
| grade | lowsalary | H_salary | d_no |
+-----+-----+-----+-----+
| 2     | 12000    | 19000   | 102  |
+-----+-----+-----+-----+
1 row in set (0.01 sec)

mysql> INSERT INTO grade (grade, lowsalary, H_salary, d_no) VALUES (5, 16000, 23000, 105);
ERROR 1452 (23000): Cannot add or update a child row: a foreign key constraint fails ('company`.`grade`, CONSTRAINT `grade_ibfk_1` FOREIGN KEY (`d_no`) REFERENCES `dept` (`department_number`))
mysql> INSERT INTO grade (grade, lowsalary, H_salary) VALUES (5, 16000, 23000);
Query OK, 1 row affected (0.02 sec)

mysql> SELECT * FROM grade;
+-----+-----+-----+-----+
| grade | lowsalary | H_salary | d_no |
+-----+-----+-----+-----+
| 1     | 10000    | 17000   | 101  |
| 2     | 12000    | 19000   | 102  |
| 3     | 14000    | 20000   | 103  |
| 4     | 15000    | 22000   | 104  |
| 5     | 16000    | 23000   | NULL |
+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> _
```