

**Practical 3 Advanced SQL NULL Functions – Lefa Makhurubetshi**

## Question 1

```
6 -----
7 --1. Find all records where Size is missing and the purchase_amount is greater than 50.
8 --Expected Columns: Customer ID, Size, purchase_amount, Item Purchased
9
10    SELECT CUSTOMER_ID,
11          Size,
12          purchase_amount,
13          Item_Purchased
14     FROM practical3.shopping.trends
15    WHERE Size IS NULL AND purchase_amount > 50;
16
17 -----
18 --2. List the total number of purchases grouped by Season, treating NULL values as 'Unknown Season'.
19
20
```

table Chart

22 rows 57ms

	CUSTOMER_ID	SIZE	PURCHASE_AMOUNT	ITEM_PURCHASED
	11	null	74.0	Handbag
	15	null	54.0	Jeans
	22	null	88.0	Shirt
	32	null	54.0	Blouse
	62	null	57.0	Blouse
	73	null	65.0	Sandals
	91	null	54.0	Shoes
	97	null	56.0	Shoes
	100	null	55.0	Sneakers
	160	null	84.0	Coat

## Question 2

```
17 --2. List the total number of purchases grouped by Season, treating NULL values as "Unknown Season".
18 --Expected Columns: Season, Total Purchases
19
20
21 | SELECT IFNULL(season, 'Unknown Season') AS season,
22 |         SUM(purchase_amount) AS Total_Purchases
23 |     FROM practical3.shopping_trends
24 |     GROUP BY IFNULL(season, 'Unknown Season');
25 |
```

Results (just now)

Table Chart

SEARCH FILTER 5 rows 38ms

	A SEASON	## TOTAL_PURCHASES
1	Summer	3861.0
2	Unknown Season	1376.0
3	Winter	3975.0
4	Spring	3887.0
5	Fall	2570.0

### Question 3

```
26
27      --3. Count how many customers used each Payment Method, treating NULLs as 'Not Provided'.
28      --Expected Columns: Payment Method, Customer Count
29
30  |  SELECT IFNULL(payment_method, 'Not Provided') AS Payment_Method,
31      COUNT(customer_id) AS Customer_Count
32  |  FROM practical3.shopping.trends
33  |  GROUP BY IFNULL(payment_method, 'Not Provided');
34
35
```

Results (2 minutes ago)

Table Chart

#	PAYMENT_METHOD	CUSTOMER_COUNT
1	PayPal	51
2	Not Provided	30
3	Credit Card	44
4	Venmo	53
5	Debit Card	42
6	Bank Transfer	38
7	Cash	42

### Question 4

```
35
36      --4. Show customers where Promo Code Used is NULL and Review Rating is below 3.0.
37      --Expected Columns: Customer ID, Promo Code Used, Review Rating, Item Purchased
38
39  |  SELECT Customer_ID,
40      Promo_Code_Used,
41      Review_Rating,
42      Item_Purchased
43  |  FROM practical3.shopping.trends
44  WHERE Promo_Code_Used IS NULL AND Review_Rating < 3.0;
45
46
```

Results (2 minutes ago)

Table Chart

#	CUSTOMER_ID	PROMO_CODE_USED	REVIEW_RATING	ITEM_PURCHASED
1	21	null	2.5	Jeans
2	38	null	2.6	Jeans
3	61	null	2.5	Jeans
4	80	null	2.6	Sneakers
5	125	null	2.8	Sneakers
6	128	null	2.5	Shoes
7	180	null	2.5	Shorts
8	285	null	2.9	Blouse

### Question 5

```
46
47      --5. Group customers by Shipping Type, and return the average purchase_amount, treating missing values as 0.
48      --Expected Columns: Shipping Type, Average purchase_amount
49
50  |  SELECT shipping_type,
51      AVG(IFNULL(purchase_amount, 0)) AS Average_purchase_amount
52  |  FROM practical3.shopping.trends
53  |  GROUP BY shipping_type;
54
55
```

Results (2 minutes ago)

Table Chart

#	SHIPPING_TYPE	AVERAGE_PURCHASE_AMOUNT
1	Free Shipping	50.2142857
2	Store Pickup	55.3333333
3	null	52.7037037
4	Express	53.4545455
5	Standard	47.6666667
6	Next Day Air	54.8666667
7	2-Day Shipping	51.5576923

## Question 6

```
55 -----  
56 --6. Display the number of purchases per location only for those with more than 5 purchases and no NULL Payment Method.  
57 --Expected Columns: Location, Total Purchases  
58  
59 | SELECT  
60 |     location,  
61 |     SUM(previous_purchases) AS Total_Purchases  
62 | FROM practical3.shopping.trends  
63 | WHERE payment_method IS NOT NULL  
64 | GROUP BY location  
65 | HAVING SUM(previous_purchases) > 5;  
66  
67 -----
```

Results (2 minutes ago)

	LOCATION	TOTAL_PURCHASES
1	null	706.0
2	Maine	779.0
3	Oregon	595.0
4	Kentucky	786.0
5	Florida	653.0
6	Massachusetts	792.0
7	Texas	407.0
8	Rhode Island	514.0
9	New York	645.0

## Question 7

```
67 -----  
68 --7. Create a column Spender Category that classifies customers using CASE:  
69 --'High' if amount > 80, 'Medium' if BETWEEN 50 AND 80,  
70 --'Low' otherwise. Replace NULLs in purchase_amount with 0.  
71 --Expected Columns: Customer ID, purchase_amount, Spender Category  
72  
73 | SELECT customer_id,  
74 |     IFNULL(purchase_amount,0) AS purchase_amount,  
75 |     CASE  
76 |         WHEN purchase_amount > 80 THEN 'High'  
77 |         WHEN purchase_amount BETWEEN 50 AND 80 THEN 'Medium'  
78 |         ELSE 'Low'  
79 |     END AS spender_category  
80 | FROM practical3.shopping.trends;  
81  
82 -----
```

Results (2 minutes ago)

	CUSTOMER_ID	PURCHASE_AMOUNT	SPENDER_CATEGORY
1	1	20.0	Low
2	2	21.0	Low
3	3	27.0	Low
4	4	45.0	Low
5	5	80.0	Medium
6	6	82.0	High
7	7	50.0	Medium
8	8	29.0	Low
9	9	100.0	High
10	10	97.0	High

## Question 8

```
82
83      --8. Find customers who have no Previous Purchases value but whose Color is not NULL.
84      --Expected Columns: Customer ID, Color, Previous Purchases
85
86      SELECT customer_id,
87             color,
88             previous_purchases
89      FROM practical3.shopping.trends
90     WHERE color IS NOT NULL AND previous_purchases IS NULL;
91
92
```

Results (2 minutes ago)

Table Chart

#	CUSTOMER_ID	COLOR	PREVIOUS_PURCHASES
1	8	Green	null
2	21	Yellow	null
3	25	White	null
4	37	Maroon	null
5	40	Gray	null
6	43	Black	null
7	44	Green	null
8	70	White	null
9	73	Maroon	null
10	75	Pink	null

## Question 9

```
92
93      --9. Group records by Frequency of Purchases and show the total amount spent per group, treating NULL frequencies as 'Unknown'.
94      --Expected Columns: Frequency of Purchases, Total purchase_amount
95
96      SELECT IFNULL(frequency_of_purchases, 'Unknown') AS frequency_of_purchases,
97             SUM(purchase_amount) AS Total_Purchases
98      FROM practical3.shopping.trends
99     GROUP BY IFNULL(frequency_of_purchases, 'Unknown');
100
101
102      --10. Display a list of all Category values with the number of times each was purchased, excluding rows where Category is NULL
```

Results (2 minutes ago)

Table Chart

#	FREQUENCY_OF_PURCHASES	TOTAL_PURCHASES
1	Annually	1765.0
2	Monthly	1780.0
3	Bi-Weekly	2099.0
4	Quarterly	2541.0
5	Every 3 Months	1749.0
6	Weekly	2184.0
7	Unknown	1518.0
8	Fortnightly	2033.0

## Question 10

```
101 -----  
102 --10. Display a list of all Category values with the number of times each was purchased, excluding rows where Category is NULL.  
103 --Expected Columns: Category, Total Purchases  
104  
105 | SELECT Category,  
106 |     SUM(purchase_amount) AS Total_Purchases  
107 | FROM practical3.shopping.trends  
108 | WHERE Category IS NOT NULL  
109 | GROUP BY Category;  
110 | Ctrl+I to generate  
111 -----
```

Results (2 minutes ago)

Table Chart

	A CATEGORY	# TOTAL_PURCHASES
1	Clothing	3022.0
2	Accessories	4242.0
3	Footwear	3733.0
4	Outerwear	2880.0

## Question 11

```
111 -----  
112 --11. Return the top 5 Locations with the highest total purchase_amount, replacing NULLs in amount with 0.  
113 --Expected Columns: Location, Total purchase_amount  
114  
115 | SELECT  
116 |     location,  
117 |     SUM(IFNULL(previous_purchases.0)) AS Total_Purchases  
118 | FROM practical3.shopping.trends  
119 | GROUP BY location  
120 | ORDER BY SUM(IFNULL(previous_purchases.0)) DESC  
121 | LIMIT 5;  
122  
123 -----
```

Results (2 minutes ago)

Table Chart

	A LOCATION	# TOTAL_PURCHASES
1	Maine	924.0
2	Kentucky	912.0
3	Massachusetts	873.0
4	Florida	826.0
5	Rhode Island	743.0

## Question 12

```
124 -----  
125 --12. Group customers by Gender and Size, and count how many entries have a NULL Color.  
126 --Expected Columns: Gender, Size, Null Color Count  
127  
128 | SELECT gender,  
129 |     size,  
130 |     COUNT(customer_id) AS NULL_Color_Count  
131 | FROM practical3.shopping.trends  
132 | WHERE color IS NULL  
133 | GROUP BY gender,size;  
134  
135 -----
```

Results (2 minutes ago)

Table Chart

	A GENDER	A SIZE	# NULL_COLOR_COUNT
1	Male	S	5
2	Male	null	6
3	Male	L	6
4	Male	M	7
5	Male	XL	5

### Question 13

```
135      --13. Identify all Item Purchased where more than 3 purchases had NULL Shipping Type.
136      --Expected Columns: Item Purchased, NULL Shipping Type Count
137
138
139      | SELECT ITEM_PURCHASED,
140      |       COUNT(customer_id) AS NULL_Shipping_Type_Count
141      | FROM practical3.shopping.trends
142      | WHERE SHIPPING_TYPE IS NULL
143      | GROUP BY ITEM_PURCHASED
144      | HAVING COUNT(customer_id) > 3;
145      | Ctrl+I to generate
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## Question 16

```
166 -----  
167 --16. List all Colors that are missing (NULL) in at least 2 rows and the average Age of customers for those rows.  
168 --Expected Columns: Color, Average Age  
169  
170 | SELECT color,  
171 |     AVG(Age) AS Average_Age  
172 | FROM practical3.shopping.trends  
173 | WHERE color IS NULL  
174 | GROUP BY color  
175 | HAVING COUNT(*) >= 2;  
176  
177 -----
```

Results (2 minutes ago)

Table		Chart
#	COLOR	AVERAGE_AGE
1	null	47.8461538

## Question 17

```
177 -----  
178 --17. Use CASE to create a column Delivery Speed: 'Fast' if Shipping Type is 'Express' or 'Next Day Air', 'Slow' if 'Standard',  
179 --'Other' for all else including NULL. Then count how many customers fall into each category.  
180 --Expected Columns: Delivery Speed, Customer Count  
181  
182 | SELECT shipping_type,  
183 |     COUNT(customer_id) AS Customer_Count,  
184 |     CASE  
185 |         WHEN shipping_type IN ('Express','Next Day Air') THEN 'Fast'  
186 |         WHEN shipping_type = 'Standard' THEN 'Slow'  
187 |         ELSE 'Other'  
188 |     END AS Delivery_Speed  
189 | FROM practical3.shopping.trends  
190 | GROUP BY shipping_type;  
191  
192 -----
```

Results (2 minutes ago)

#	SIPPING_TYPE	CUSTOMER_COUNT	DELIVERY_SPEED
1	Free Shipping	42	Other
2	Store Pickup	45	Other
3	null	27	Other
4	Express	44	Fast
5	Standard	45	Slow
6	Next Day Air	45	Fast
7	2-Day Shipping	52	Other

## Question 18

```
192 -----  
193 --18. Find customers whose purchase_amount is NULL and whose Promo Code Used is 'Yes'.  
194 --Expected Columns: Customer ID, purchase_amount, Promo Code Used  
195  
196 | SELECT customer_id,  
197 |     purchase_amount,  
198 |     promo_code_used  
199 | FROM practical3.shopping.trends  
200 | WHERE purchase_amount IS NULL AND promo_code_used = 'Yes';  
201  
202 -----
```

Results (1 minute ago)

#	CUSTOMER_ID	PURCHASE_AMOUNT	PROMO_CODE_USED
1		13	TRUE
2		30	TRUE
3		78	TRUE
4		95	TRUE
5		124	TRUE
6		129	TRUE
7		130	TRUE
8		138	TRUE
9		153	TRUE
10		168	TRUE

## Question 19

```
202      --19.Group by Location and show the maximum Previous Purchases, replacing NULLs with 0, only where the average rating is above 4.0.
203      --Expected Columns: Location, Max Previous Purchases, Average Review Rating
204
205
206      SELECT
207          location,
208          MAX(IFNULL(Previous_Purchases,0)) AS MAX_Previous_Purchases,
209          AVG(Review_Rating) AS Average_Review_Rating
210      FROM practical3.shopping.trends
211      GROUP BY location
212      HAVING AVG(Review_Rating) > 4.0;
213
214
```

Results (2 minutes ago)

Table Chart

LOCATION MAX\_PREVIOUS\_PURCHASES AVERAGE REVIEW RATING

Query produced no results

## Question 20

```
214      |--20.Show customers who have a NULL Shipping Type but made a purchase in the range of 30 to 70 USD.
215      --Expected Columns: Customer ID, Shipping Type, purchase_amount, Item Purchased
216
217
218      SELECT customer_id,
219          shipping_type,
220          purchase_amount,
221          item_purchased
222      FROM practical3.shopping.trends
223      WHERE shipping_type IS NULL AND purchase_amount BETWEEN 30 AND 70;
224
225
```

Results (2 minutes ago)

Table Chart

#	CUSTOMER_ID	SHIPPING_TYPE	PURCHASE_AMOUNT	ITEM_PURCHASED
1	15	null	54.0	Jeans
2	105	null	43.0	Shirt
3	141	null	37.0	Shorts
4	196	null	66.0	Coat
5	213	null	36.0	Shirt
6	235	null	38.0	Sandals
7	293	null	35.0	null