

Amazon Sales Data Analysis in SQL

Presented By
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List all the 18 questions mentioned:

1. Write a query to list all products with their product_id, product_name, and category.
2. Write a query to display all columns for products that have a rating of 4.0 or higher.
3. Write a query to list products that are in the Computers&Accessories category.
4. Write a query to find all products where the about_product column contains the word durable.
5. Write a query to count the total number of products in the dataset.
6. Write a query to find the average rating of all products.
7. Write a query to list the top 5 highest-rated products based on the rating, sorted in descending order.

8. Write a query to list all products along with the number of reviews they have. Include columns for `product_id`, `product_name`, and `review_count`.
9. Write a query to find products that have the same rating and belong to the same category. Display `product_id`, `product_name`, `category`, and `rating`.
10. Write a query using a CASE statement to categorize products into three categories based on their rating: Excellent for ratings 4.5 and above, Good for ratings between 4.0 and 4.5, and Average for ratings below 4.0.
11. Write a query to add a new column `discount_amount` to the `products` table that calculates the difference between `actual_price` and `discounted_price`.
12. Write a query using an advanced function to find the product with the highest `discount_percentage`.

13. Create a view named HighRatingProducts that includes products with a rating of 4.5 and above.
14. Write a query using a window function to rank products based on their rating within each category.
15. Write a query to calculate the cumulative count of products added each month sorted by discounted_price.
16. Write a stored procedure to update the rating of a product given its product_id and new rating.
17. Write a query to find the category with the highest average rating for products. Use subqueries and aggregate functions to achieve this.
18. Write a query to find pairs of products from the same category where one product has a higher rating than the other. Display columns for product_id_1, product_name_1, rating_1, product_id_2, product_name_2, and rating_2.

Question 1 - List all products with their **product_id**, **product_name**, and **category**.

Query used:

```
SELECT product_id, product_name, category  
FROM product_reviews;
```

```
30      -- apoorv ranjan  
31 •    SELECT product_id, product_name, category  
32      FROM product_reviews;
```

product_id	product_name	category
B07JW9H4J1	Wayona Nylon Braided USB to Lightning Fast Ch...	Computers&Accessories Accessories&Peripheral...
B098NS6PVG	Ambrane Unbreakable 60W / 3A Fast Charging ...	Computers&Accessories Accessories&Peripheral...
B096MSW6CT	Source Fast Phone Charging Cable & Data Sync...	Computers&Accessories Accessories&Peripheral...
B08HDJ86NZ	boAt Deuce USB 300 2 in 1 Type-C & Micro USB ...	Computers&Accessories Accessories&Peripheral...
B08CF3B7N1	Portronics Konnect L 1.2M Fast Charging 3A 8 P...	Computers&Accessories Accessories&Peripheral...

product_reviews 4 x

Output

Question 2 - Display all columns for products that have a rating of 4.0 or higher.

Query used:

```
SELECT *
```

```
FROM product_reviews
```

```
WHERE rating >= 4.0;
```

```
33 -- Q2.  
34 -- apoorv ranjan  
35 • SELECT * FROM product_reviews WHERE rating >= 4.0;  
36
```

Result Grid					Filter Rows:	Export:	Wrap Cell Content:	Fetch rows:
	product_id	product_name	category	discount				
▶	B07JW9H4J1	Wayona Nylon Braided USB to Lightning Fast Ch...	Computers&Accessories Accessories&Peripheral...	399				
	B098NS6PVG	Ambrane Unbreakable 60W / 3A Fast Charging ...	Computers&Accessories Accessories&Peripheral...	199				
	B08HDJ86NZ	boAt Deuce USB 300 2 in 1 Type-C & Micro USB ...	Computers&Accessories Accessories&Peripheral...	329				
	B08CF3B7N1	Portronics Konnect L 1.2M Fast Charging 3A 8 P...	Computers&Accessories Accessories&Peripheral...	154				

Question 3 - List products in the "Computers&Accessories" category.

Query used:

```
SELECT product_id, product_name, category, rating
FROM product_reviews WHERE category LIKE 'Computers&Accessories%';
```

```
36 -- Q3.
37 -- apoorv ranjan
38 • SELECT product_id, product_name, category, rating
39 FROM product_reviews WHERE category LIKE 'Computers&Accessories%';
```

result Grid				
Filter Rows: <input type="text"/> Exports: <input type="text"/> Wrap Cell Content: <input type="text"/> Fetch rows: <input type="text"/>				
product_id	product_name	category	rating	
B07JW9H4J1	Wayona Nylon Braided USB to Lightning Fast Ch...	Computers&Accessories Accessories&Peripheral...	4.2	
B098NS6PVG	Ambrane Unbreakable 60W / 3A Fast Charging ...	Computers&Accessories Accessories&Peripheral...	4	
B096MSW6CT	Sounce Fast Phone Charging Cable & Data Sync...	Computers&Accessories Accessories&Peripheral...	3.9	
B08HDJ86NZ	boAt Deuce USB 300 2 in 1 Type-C & Micro USB ...	Computers&Accessories Accessories&Peripheral...	4.2	
B08CF3B7N1	Portronics Konnect L 1.2M Fast Charging 3A 8 P...	Computers&Accessories Accessories&Peripheral...	4.2	

product_reviews 17 x

Output




Action Output

#	Time	Action	Message
---	------	--------	---------

Question 4 - Find all products where **about_product** contains "durable."

```
SELECT product_id,  
       product_name,  
       about_product  
FROM product_reviews  
WHERE about_product LIKE '%durable%';
```

```
40 -- Q4.  
41 -- apoorv ranjan  
42 • SELECT product_id, product_name, about_product  
43 FROM product_reviews  
44 WHERE about_product LIKE '%durable%';
```

Result Grid  Filter Rows: <input type="text"/> Export:  Wrap Cell Content: 			
	product_id	product_name	about_product
▶	B07JW9H4J1	Wayona Nylon Braided USB to Lightning Fast Ch...	High Compatibility : Compatible With iPhone 12, ...
	B098NS6PVG	Ambrane Unbreakable 60W / 3A Fast Charging ...	Compatible with all Type C enabled devices, be i...
	B096MSW6CT	Source Fast Phone Charging Cable & Data Sync...	【 Fast Charger& Data Sync】-With built-in safet...
	B08CF3B7N1	Portronics Konnect L 1.2M Fast Charging 3A 8 P...	[CHARGE & SYNC FUNCTION]- This cable comes...
	B08WRWPM22	boAt Micro USB 55 Tangle-free, Sturdy Micro US...	It Ensures High Speed Transmission And Chargi...
product_reviews 19 ×			

Question 5 - Count the total number of products.

```
SELECT COUNT(DISTINCT product_id) AS total_products  
FROM product_reviews;
```

```
45      -- Q5.  
46      -- apoorv ranjan  
47 •    SELECT COUNT(DISTINCT product_id) AS total_products  
48      FROM product_reviews;
```

Result Grid			Filter Rows: <input type="text"/>	Export: 	Wrap Cell Content: 
	total_products				
▶	1351				

Question 6 - Average rating of all products.

```
SELECT AVG(rating) AS average_rating  
FROM product_reviews;
```

```
49      -- Q6.  
50      -- apoorv ranjan  
51 •     SELECT AVG(rating) AS average_rating  
52      FROM product_reviews;
```

Result Grid



Filter Rows:

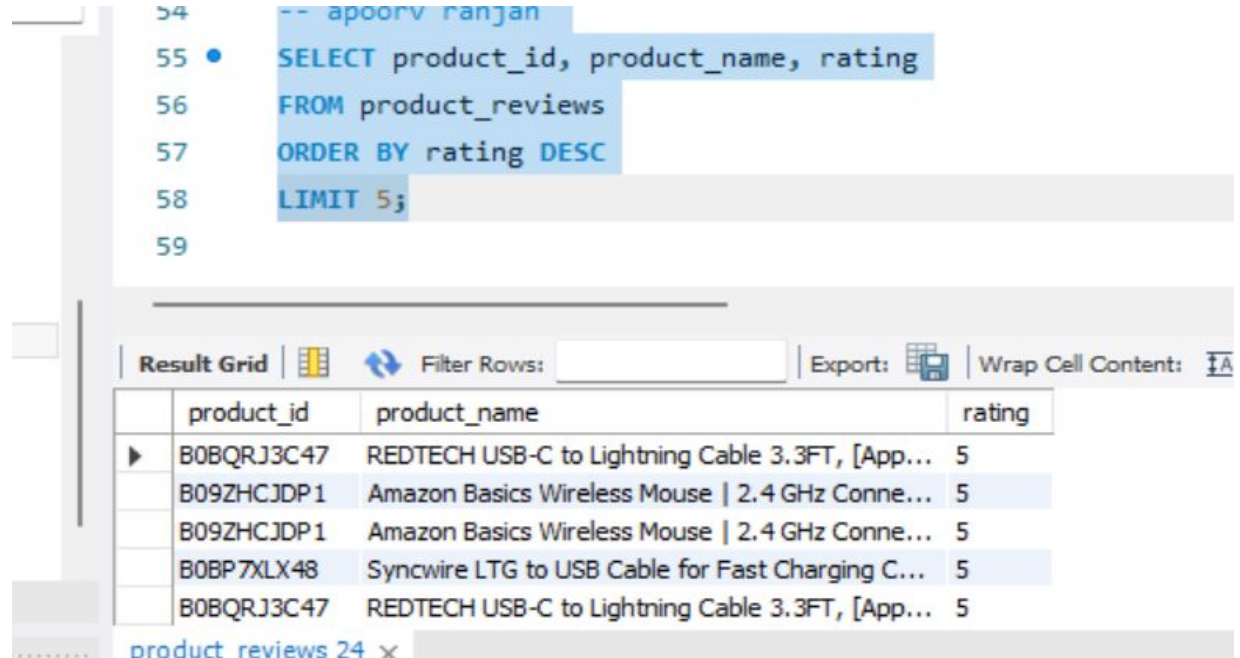
Export:



	average_rating
▶	4.096587025671689

Question 7 - Top 5 highest-rated products based on rating.

```
SELECT product_id, product_name, rating
FROM product_reviews
ORDER BY rating DESC
LIMIT 5;
```



The screenshot shows a SQL query editor with a query that has been executed. The query is as follows:

```
54 -- apoorv ranjan
55 • SELECT product_id, product_name, rating
56 FROM product_reviews
57 ORDER BY rating DESC
58 LIMIT 5;
59
```

Below the query editor, the results are displayed in a table. The table has three columns: `product_id`, `product_name`, and `rating`. The results show the top 5 highest-rated products based on the rating.

	product_id	product_name	rating
▶	B0BQRJ3C47	REDTECH USB-C to Lightning Cable 3.3FT, [App...	5
	B09ZHCJDP1	Amazon Basics Wireless Mouse 2.4 GHz Conne...	5
	B09ZHCJDP1	Amazon Basics Wireless Mouse 2.4 GHz Conne...	5
	B0BP7XLX48	Syncwire LTG to USB Cable for Fast Charging C...	5
	B0BQRJ3C47	REDTECH USB-C to Lightning Cable 3.3FT, [App...	5

At the bottom of the screenshot, there is a status bar that reads "product reviews 24 x".

Question 8 - List products with number of reviews.

```
SELECT product_id, product_name, COUNT(review_id) AS review_count
FROM product_reviews
GROUP BY product_id, product_name
ORDER BY review_count DESC;
```

```
60 -- apoorv ranjan
61 • SELECT product_id, product_name, COUNT(review_id) AS review_count
62 FROM product_reviews
63 GROUP BY product_id, product_name
64 ORDER BY review_count DESC;
65
```

Result Grid			
Filter Rows:		Export:	Wrap Cell Content: Fetch rows:
	product_id	product_name	review_count
▶	B07JW9H4J1	Wayona Nylon Braided USB to Lightning Fast Ch...	9
	B098NS6PVG	Ambrane Unbreakable 60W / 3A Fast Charging ...	9
	B096MSW6CT	Source Fast Phone Charging Cable & Data Sync...	9
	B08HDJ86NZ	boAt Deuce USB 300 2 in 1 Type-C & Micro USB ...	9
	B08CF3B7N1	Portronics Konnect L 1.2M Fast Charging 3A 8 P...	9

Question 9 - Same rating in the same category.

```
SELECT p1.product_id, p1.product_name, p1.category, p1.rating, p2.product_id,  
p2.product_name, p2.rating
```




```
FROM product_reviews p1
```

```
JOIN product_reviews p2
```

```
ON p1.category = p2.category AND p1.product_id <> p2.product_id
```

```
WHERE p1.rating = p2.rating;
```


```
65 -- Q9.  
66 -- apoorv ranjan  
67 • SELECT p1.product_id, p1.product_name, p1.category, p1.rating, p2.product_id, p2.product_name, p2  
68 FROM product_reviews p1  
69 JOIN product_reviews p2  
70 ON p1.category = p2.category AND p1.product_id <> p2.product_id
```

Result Grid					
Filter Rows: <input type="text"/>					
Export:  Wrap Cell Content:  Fetch rows: 					
product_id	product_name	category	rating	product_name	product_id
B07GVGTSLN	Wayona Usb Type C Fast Charger Cable Fast C...	Computers&Accessories Accessories&Peripheral...	4.2	B07JWS	
B01GGKZ0V6	AmazonBasics USB Type-C to USB Type-C 2.0 C...	Computers&Accessories Accessories&Peripheral...	4.2	B07JWS	
B0B4DT8MKT	Wecool Unbreakable 3 in 1 Charging Cable with ...	Computers&Accessories Accessories&Peripheral...	4.2	B07JWS	
B07232M876	Amazonbasics Micro Usb Fast Charging Cable F...	Computers&Accessories Accessories&Peripheral...	4.2	B07JWS	

Question 10 - Categorize products into Excellent, Good, and Average.

```
SELECT *, CASE  
    WHEN rating >= 4.5 THEN 'Excellent'  
    WHEN rating >= 4.0 THEN 'Good'  
    ELSE 'Average'  
END AS rating_category  
FROM product_reviews;
```

```
75 -- apoorv ranjan  
76 • SELECT product_id, product_name, rating,  
77 CASE  
78     WHEN rating >= 4.5 THEN 'Excellent'  
79     WHEN rating >= 4.0 THEN 'Good'  
80     ELSE 'Average'
```

Result Grid   Filter Rows: Export:  Wrap Cell Content:  Fetch rows

	product_id	product_name	rating	rating_category
▶	B0BQRJ3C47	REDTECH USB-C to Lightning Cable 3.3FT, [App...	5	Excellent
	B09ZHCJDP1	Amazon Basics Wireless Mouse 2.4 GHz Conne...	5	Excellent
	B0BP7XLX48	Syncwire LTG to USB Cable for Fast Charging C...	5	Excellent
	B0BQRJ3C47	REDTECH USB-C to Lightning Cable 3.3FT, [App...	5	Excellent
	B09ZHCJDP1	Amazon Basics Wireless Mouse 2.4 GHz Conne...	5	Excellent

Result 28

Question 11 - Add **discount_amount** as a new column.

```
ALTER TABLE
product_reviews
ADD COLUMN
discount_amount
DECIMAL(10, 2);
UPDATE product_reviews
SET discount_amount =
COALESCE(actual_price, 0) -
COALESCE(discounted_price,
0);
```

```
88 • UPDATE product_reviews
89 SET discount_amount = COALESCE(actual_price, 0) - COALESCE(discounted_price, 0);
90 • SELECT product_id, product_name, actual_price, discounted_price, discount_amount
91 FROM product_reviews
92 LIMIT 10;
93
```

Result Grid

Filter Rows:

Export:

Wrap Cell Content:

Fetch rows:

	product_id	product_name	actual_price	discounted_price	discount_amount
	B07JW9H4J1	Wayona Nylon Braided USB to Lightning Fast Ch...	1,099	399	-398.00
	B098NS6PVG	Ambrane Unbreakable 60W / 3A Fast Charging ...	349	199	150.00
	B096MSW6CT	Source Fast Phone Charging Cable & Data Sync...	1,899	199	-198.00
	B08HDJ86NZ	boAt Deuce USB 300 2 in 1 Type-C & Micro USB ...	699	329	370.00
	B08CF3B7N1	Portronics Konnect L 1.2M Fast Charging 3A 8 P...	399	154	245.00

product_reviews 29

Output

Question 12 - Query for the highest discount percentage.

```
SELECT product_id,  
       product_name,  
       actual_price,  
       discounted_price,  
       (actual_price - discounted_price) / actual_price * 100 AS  
discount_percentage  
FROM (  
  SELECT product_id,  
         product_name,  
         actual_price,  
         discounted_price,  
         RANK() OVER (ORDER BY (actual_price - discounted_price) /  
actual_price * 100 DESC) AS ranking  
  FROM product_reviews  
  WHERE actual_price > 0  
) AS ranked  
WHERE ranking = 1;
```

```
93 -- Q12.  
94 -- apoorv ranjan  
95 • SELECT product_id,  
96       product_name,
```

Result Grid					
Filter Rows:		Export:		Wrap Cell Content:	
product_id	product_name	actual_price	discounted_price	discount_percentage	
B0BF57RN3K	Fire-Boltt Ninja Call Pro Plus 1.83" Smart Watch ...	19,999	1,799	94.73684210526315	
B0BF54972T	Fire-Boltt Ninja Call Pro Plus 1.83" Smart Watch ...	19,999	1,799	94.73684210526315	
B0BF563HB4	Fire-Boltt Ninja Call Pro Plus 1.83" Smart Watch ...	19,999	1,799	94.73684210526315	
B0BF4YBLPX	Fire-Boltt Ninja Call Pro Plus 1.83" Smart Watch ...	19,999	1,799	94.73684210526315	
B0BF54LXW6	Fire-Boltt Ninja Call Pro Plus 1.83" Smart Watch ...	19,999	1,799	94.73684210526315	

Result 31 x

Output

Question 13 - Create a view `HighRatingProducts`.

```
CREATE VIEW HighRatingProducts AS
```

```
SELECT *
```

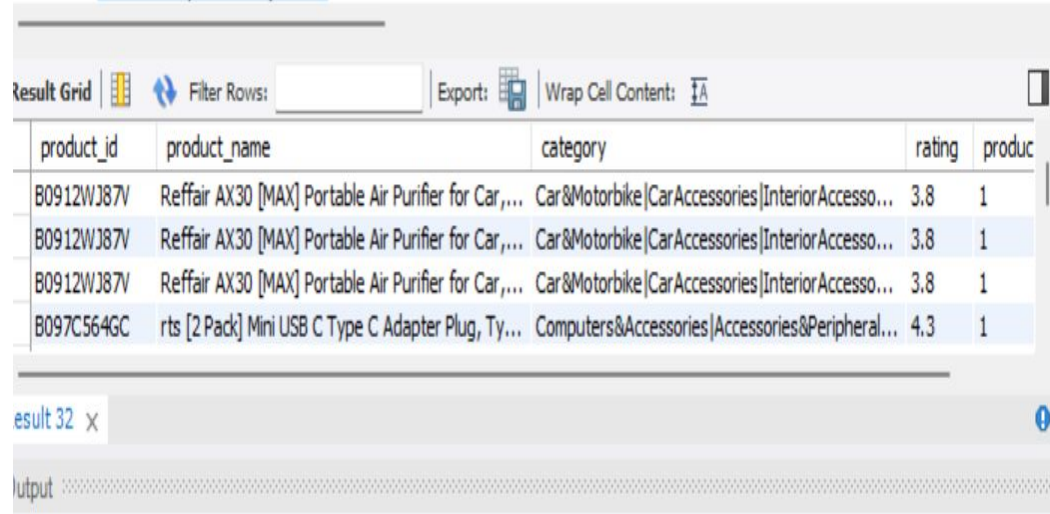
```
FROM product_reviews
```

```
WHERE rating >= 4.5;
```

Question 14 - Rank products by rating within each category using window functions.

```
SELECT  
product_id,product_name,c  
ategory,rating,  
RANK() OVER (PARTITION  
BY category ORDER BY  
rating DESC) AS  
product_rank  
FROM product_reviews;
```

```
L17 -- Q14.  
L18 -- apoorv ranjan  
L19 • SELECT product_id,product_name,category,rating,  
L20 RANK() OVER (PARTITION BY category ORDER BY rating DESC) AS product_rank
```

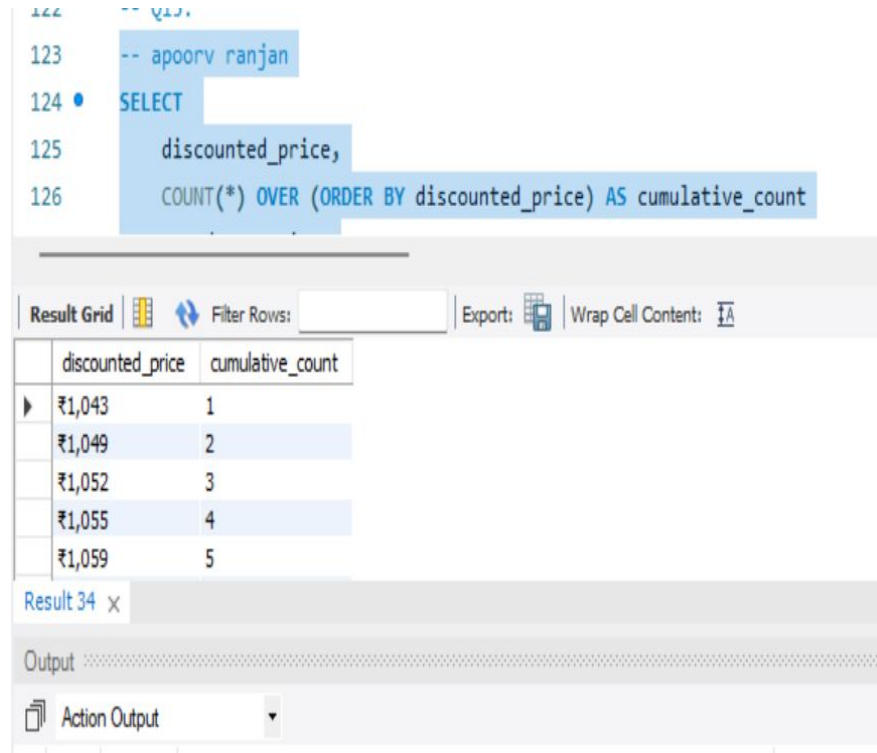


The screenshot shows a database query result grid with the following columns: product_id, product_name, category, rating, and product_rank. The results are sorted by category and then by rating in descending order. The first three rows belong to the 'Car&Motorbike|CarAccessories|InteriorAccesso...' category and have a rating of 3.8. The fourth row belongs to the 'Computers&Accessories|Accessories&Peripheral...' category and has a rating of 4.3. All rows have a product_rank of 1.

product_id	product_name	category	rating	product_rank
B0912WJ87V	Reffair AX30 [MAX] Portable Air Purifier for Car,...	Car&Motorbike CarAccessories InteriorAccesso...	3.8	1
B0912WJ87V	Reffair AX30 [MAX] Portable Air Purifier for Car,...	Car&Motorbike CarAccessories InteriorAccesso...	3.8	1
B0912WJ87V	Reffair AX30 [MAX] Portable Air Purifier for Car,...	Car&Motorbike CarAccessories InteriorAccesso...	3.8	1
B097C564GC	rts [2 Pack] Mini USB C Type C Adapter Plug, Ty...	Computers&Accessories Accessories&Peripheral...	4.3	1

Question 15 - Cumulative count of products added each month sorted by discounted price.

```
SELECT
    discounted_price,
    COUNT(*) OVER (ORDER
BY discounted_price) AS
cumulative_count
FROM product_reviews
GROUP BY discounted_price
ORDER BY discounted_price;
```



The screenshot shows a SQL IDE interface. The top pane displays a SQL query with line numbers 123 to 126. The query is: `SELECT discounted_price, COUNT(*) OVER (ORDER BY discounted_price) AS cumulative_count`. The bottom pane shows the 'Result Grid' with two columns: 'discounted_price' and 'cumulative_count'. The results are sorted by 'discounted_price' in ascending order. The first five rows are visible, showing prices from ₹1,043 to ₹1,059 and cumulative counts from 1 to 5. Below the result grid, there is a 'Result 34' tab and an 'Output' section with an 'Action Output' dropdown.

discounted_price	cumulative_count
₹1,043	1
₹1,049	2
₹1,052	3
₹1,055	4
₹1,059	5

Question 16 - Stored procedure to update product rating.

```
DELIMITER //
```

```
CREATE PROCEDURE UpdateProductRating(IN prod_id INT, IN new_rating  
DECIMAL(3,2))
```

```
BEGIN
```

```
    UPDATE product_reviews
```

```
    SET rating = new_rating
```

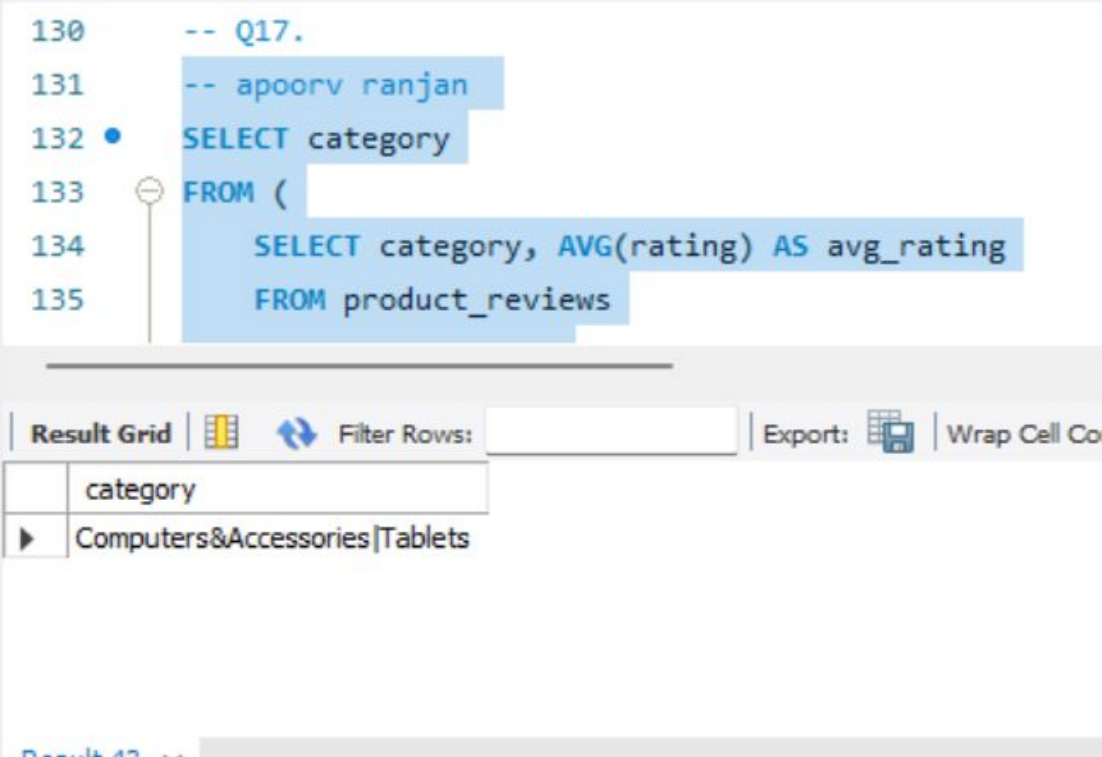
```
    WHERE product_id = prod_id;
```

```
END //
```

```
DELIMITER ;
```

Question 17 - Highest average rating by category.

```
SELECT category
FROM (
    SELECT category, AVG(rating) AS
    avg_rating
    FROM product_reviews
    GROUP BY category
    ORDER BY avg_rating DESC
    LIMIT 1
) AS subquery;
```



The screenshot shows a SQL query editor with line numbers 130 to 135. The query is as follows:

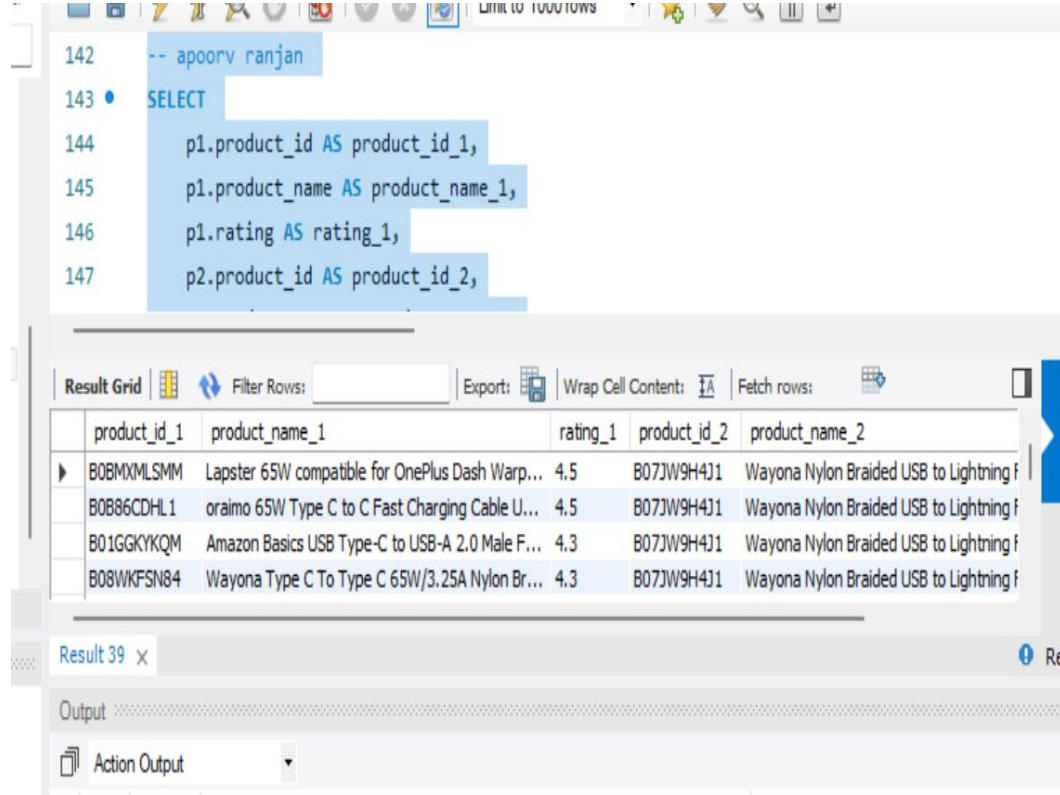
```
130 -- Q17.
131 -- apoorv ranjan
132 SELECT category
133 FROM (
134     SELECT category, AVG(rating) AS avg_rating
135     FROM product_reviews
```

Below the editor is a toolbar with 'Result Grid', 'Filter Rows', 'Export', and 'Wrap Cell Content' options. The 'Result Grid' is active, showing a table with the following data:

category
Computers&Accessories Tablets

Question 18 - Pair comparisons with higher rating

```
SELECT p1.product_id,  
p1.product_name, p1.rating,  
p2.product_id, p2.product_name,  
p2.rating  
  
FROM product_reviews p1  
  
JOIN product_reviews p2  
  
ON p1.category = p2.category AND  
p1.product_id <> p2.product_id  
  
WHERE p1.rating > p2.rating;
```



The screenshot shows a SQL IDE interface. The top pane displays a SQL query with line numbers 142 to 147. The query is a self-join on the product_reviews table, filtering for pairs of products in the same category where one has a higher rating than the other. The bottom pane shows the 'Result Grid' with 4 rows of data. The columns are product_id_1, product_name_1, rating_1, product_id_2, and product_name_2. The results show comparisons between a Lapster power bank and Wayona USB cables, and an oraimo charging cable and a Wayona power bank.

```
142 -- apoorv ranjan  
143 SELECT  
144     p1.product_id AS product_id_1,  
145     p1.product_name AS product_name_1,  
146     p1.rating AS rating_1,  
147     p2.product_id AS product_id_2,
```

	product_id_1	product_name_1	rating_1	product_id_2	product_name_2
▶	B0BMXMLSMM	Lapster 65W compatible for OnePlus Dash Warp...	4.5	B07JW9H4J1	Wayona Nylon Braided USB to Lightning f
	B0B86CDHL1	oraimo 65W Type C to C Fast Charging Cable U...	4.5	B07JW9H4J1	Wayona Nylon Braided USB to Lightning f
	B01GGKYKQM	Amazon Basics USB Type-C to USB-A 2.0 Male F...	4.3	B07JW9H4J1	Wayona Nylon Braided USB to Lightning f
	B08WKFSN84	Wayona Type C To Type C 65W/3.25A Nylon Br...	4.3	B07JW9H4J1	Wayona Nylon Braided USB to Lightning f

Result 39 x

Output

Action Output