



Warby Parker Capstone

Learn SQL from Scratch

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Question 1

Q: What columns does the table have?

A: The wildcard (*) allows us to pull all the columns in the survey table. These columns are:

1. **question** (stores which question was answered)
2. **user_id** (stores unique user id associated with each quiz-taker; the same user_id appears for multiple questions if the user answers more than one question)
3. **response** (records response)

```
/*Question 1*/  
SELECT *  
FROM survey  
LIMIT 10;
```

question	user_id	response
1. What are you looking for?	005e7f99-d48c-4fce-b605-10506c85aaf7	Women's Styles
2. What's your fit?	005e7f99-d48c-4fce-b605-10506c85aaf7	Medium
3. Which shapes do you like?	00a556ed-f13e-4c67-8704-27e3573684cd	Round
4. Which colors do you like?	00a556ed-f13e-4c67-8704-27e3573684cd	Two-Tone
1. What are you looking for?	00a556ed-f13e-4c67-8704-27e3573684cd	I'm not sure. Let's skip it.
2. What's your fit?	00a556ed-f13e-4c67-8704-27e3573684cd	Narrow
5. When was your last eye exam?	00a556ed-f13e-4c67-8704-27e3573684cd	<1 Year
3. Which shapes do you like?	00bf9d63-0999-43a3-9e5b-9c372e6890d2	Square
5. When was your last eye exam?	00bf9d63-0999-43a3-9e5b-9c372e6890d2	<1 Year

Question 2

- Q: How many times was each question answered?

Question 1: 500 times

Question 2: 475 times

Question 3: 380 times

Question 4: 361 times

Question 5: 270 times

*Each response denotes a unique user (presumably)

```
/*Question 2*/  
SELECT question,  
COUNT (DISTINCT user_id) AS 'Number of  
Responses'  
FROM survey  
GROUP BY question;
```

question	Number of Responses
1. What are you looking for?	500
2. What's your fit?	475
3. Which shapes do you like?	380
4. Which colors do you like?	361
5. When was your last eye exam?	270

Question 3

Q: Using a spreadsheet program like Excel or Google Sheets, calculate the percentage of users who answer each question:

Completion rate is calculated as $100 * (\text{current question completion} / \text{previous question completion})$

Which question(s) of the quiz have a lower completion rates?—Question 5

What do you think is the reason?—People forget to make their yearly eye exam appointment and don't want to admit it!

Warby Parker Capstone		
question	count(distinct user_id)	Response Rate
1. What are you looking for?	500	100%
2. What's your fit?	475	95%
3. Which shapes do you like?	380	80%
4. Which colors do you like?	361	95%
5. When was your last eye exam?	270	75%

Question 4

Q: What columns do the tables quiz, home_try_on and purchase have?

A: Quiz has the following columns:

1. user_id
2. style
3. fit
4. shape
5. color

home_try_on has the following columns:

1. user_id
2. number_of_pairs
3. address

purchase has the following columns:

1. user_id
2. product_id
3. style
4. model_name
5. color
6. price

Question 4/

```
SELECT *  
FROM quiz  
LIMIT 5;
```

```
SELECT *  
FROM home_try_on  
LIMIT 5;
```

```
SELECT *  
FROM purchase  
LIMIT 5;
```

Question 5

Q: Join all the tables

Basically, what we are doing here is joining the home_try_on and purchase tables to the quiz table using the user_id field, which is common to all three tables.

```
/*Question 5*/  
SELECT q.user_id,  
       h.user_id IS NOT NULL AS 'is_home_try_on',  
       h.number_of_pairs,  
       p.user_id IS NOT NULL AS 'is_purchase'  
FROM quiz q  
LEFT JOIN home_try_on h  
ON q.user_id = h.user_id  
LEFT JOIN purchase p  
ON p.user_id = q.user_id  
LIMIT 10;
```

Question 6--Exploration

Q: What are the most popular color from the quiz table?

Tortoise

```
SELECT color, shape, count(user_id)
FROM quiz
GROUP BY 1
ORDER BY 3 DESC;
```

color	shape	count(user_id)
Tortoise	Square	292
Black	Round	280
Crystal	Square	210
Neutral	Square	114
Two-Tone	Round	104

Question 6--Exploration

Q: What is the most popular color from the purchase table?

Jet Black. The most popular color from the quiz table is Tortoise—it seems that people switch their minds about the color they like after potentially trying on a few pairs at home. If I were Warby Parker, I would see if there are any factors that lead people to switch from tortoise to black—do these individuals have something that tie them together (face shape, a preference for a certain style, hair color, etc.) that would lead them to prefer jet black over tortoise?

```
SELECT color, model_name, count(user_id)
FROM purchase
GROUP BY 1
ORDER BY 3 DESC;
```

color	model_name	count(user_id)
Jet Black	Lucy	86
Driftwood Fade	Dawes	63
Rosewood Tortoise	Eugene Narrow	62
Rose Crystal	Eugene Narrow	54
Layered Tortoise Matte	Brady	52
Pearled Tortoise	Olive	50
Elderflower Crystal	Lucy	44
Sea Glass Gray	Brady	43
Endangered Tortoise	Monocle	41

Question 6--Exploration

Q: What are the most popular models purchased?

Eugene Narrow, followed by Dawes. Olive and the Monocle lag far behind; I would recommend examining spending more resources advertising the Eugene Narrow and Dawes styles.

```
SELECT model_name, price, count(user_id)
FROM purchase
GROUP BY 1
ORDER BY 3 DESC;
```

model_name	price	count(user_id)
Eugene Narrow	95	116
Dawes	150	107
Brady	95	95
Lucy	150	86
Olive	95	50
Monocle	50	41

Question 6--Exploration

Q: What is the conversion rate from trying on to purchasing?

66%—I would say that this is pretty good for an e-commerce company, but if Warby Parker wanted to optimize for conversion rate, I recommend finding a way to integrate eye exams into the business model. The greatest drop in quiz completion rate occurs at the question about the individual's last eye exam—to me, this says that people are getting through the quiz, realize that they don't have a valid Rx to get new glasses, and then drop out of the purchase funnel entirely.

```
WITH quiz_to_purchase as (  
  SELECT q.user_id,  
         h.user_id IS NOT NULL AS  
         'is_home_try_on',  
         h.number_of_pairs,  
         p.user_id IS NOT NULL AS  
         'is_purchase'  
  FROM quiz q  
  LEFT JOIN home_try_on h  
        ON q.user_id = h.user_id  
  LEFT JOIN purchase p  
        ON p.user_id = q.user_id)  
SELECT count(*),  
       100.00*SUM(is_purchase)/SUM(is_home_try_on) AS 'Conversion Rate'  
FROM quiz_to_purchase;
```

Question 6--Exploration

Q: What is the purchase conversion rate for people who tried on 3 pairs of glasses?

53 %

```
WITH quiz_to_purchase as (  
  SELECT q.user_id,  
         h.user_id IS NOT NULL AS 'is_home_try_on',  
         h.number_of_pairs,  
         p.user_id IS NOT NULL AS 'is_purchase'  
  FROM quiz q  
  LEFT JOIN home_try_on h  
    ON q.user_id = h.user_id  
  LEFT JOIN purchase p  
    ON p.user_id = q.user_id)  
SELECT 100.00*  
       sum(is_purchase)/count(is_purchase) AS '3  
Pair Conversion Rate'  
FROM quiz_to_purchase  
WHERE number_of_pairs = '3 pairs';
```

Question 6--Exploration

Q: What is the purchase conversion rate for people who tried on 5 pairs of glasses?

79%; the purchase conversion rate increases when people try on more pairs of glasses. If I were Warby Parker, I would incentivize people to select 5 pairs of glasses rather than just 3 for home-try-on.

```
WITH quiz_to_purchase as (  
  SELECT q.user_id,  
         h.user_id IS NOT NULL AS 'is_home_try_on',  
         h.number_of_pairs,  
         p.user_id IS NOT NULL AS 'is_purchase'  
  FROM quiz q  
  LEFT JOIN home_try_on h  
    ON q.user_id = h.user_id  
  LEFT JOIN purchase p  
    ON p.user_id = q.user_id)  
SELECT 100.00*  
       sum(is_purchase)/count(is_purchase) AS '5  
Pair Conversion Rate'  
FROM quiz_to_purchase  
WHERE number_of_pairs = '5 pairs';
```