Capstone 1

Relevel

by Unacademy

Introduction to Case

Ginny is a big fan of Japanese food, so she decided to start a restaurant at the beginning of 2021 that sells his three favorite foods: sushi, curry, and ramen.

Ginny's Diner needs your help to stay afloat – the restaurant has collected some fundamental data from their few months of operation but has no idea how to use it to help them operate the business.

Problem Statement

Ginny wants to use the data to answer a few simple questions about his customers, especially about their:

- visiting patterns,
- how much money they've spent, and
- which menu items are their favorite.

This deeper connection with her customers will help her deliver a better and more personalized experience for her loyal customers.

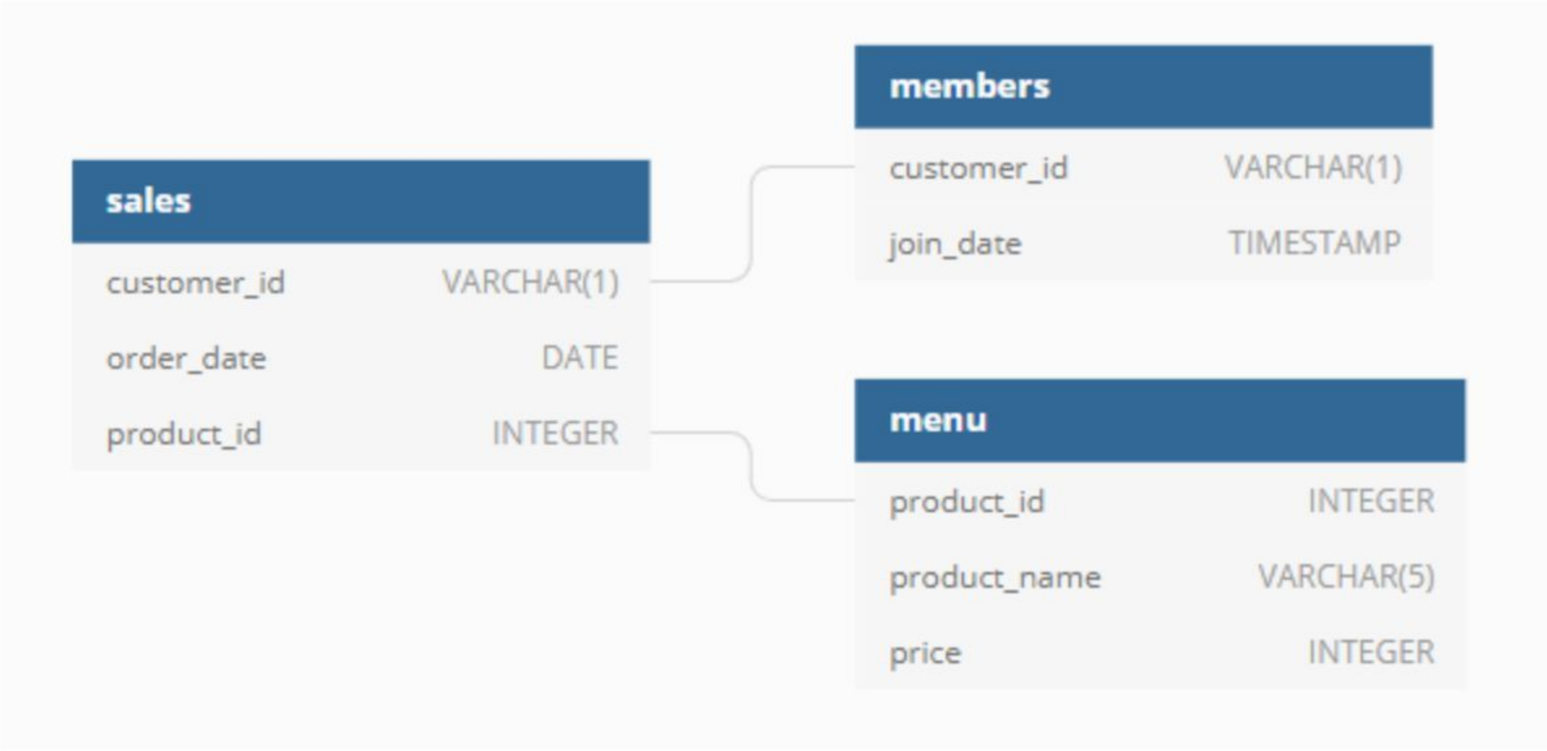
She plans on using these insights to help him decide whether she should expand the existing customer loyalty program. Additionally, she needs help to generate some essential datasets so her team can quickly inspect the data without needing to use SQL.

Problem Statement (contd.)

The data set contains the following three tables, which you may refer to in the relationship diagram below to understand the connection:

- sales
- members
- menu

Table Relationship



sales

customer_id	VARCHAR(1)
order_date	DATE
product_id	INTEGER

members

customer_id	VARCHAR(1)
join_date	TIMESTAMP

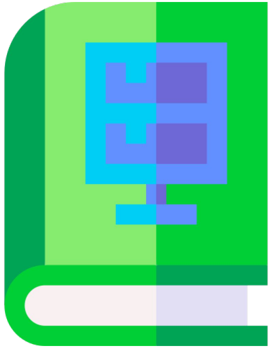
menu

product_id	INTEGER
product_name	VARCHAR(5)
price	INTEGER

Database

The database can be accessed here: https://www.db-fiddle.com/f/wFVPv4s89DLRB2fP5tfX8c/8

This tool will also be used to query.



Problem Statement - 1

What is the total amount each customer spent at the restaurant?

Solution - 1

```
SELECT
        s.customer_id,
        SUM(price) AS total_sales
FROM
dbo.sales AS s
JOIN dbo.menu AS m
ON s.product_id = m.product_id
GROUP BY customer_id
```

Problem Statement - 2

How many days has each customer visited the restaurant?

Solution - 2

```
SELECT
      customer_id,
  COUNT(DISTINCT(order_date)) AS visit_count
FROM
      dbo.sales
GROUP BY customer_id;
```

Problem Statement - 3

What was the first item from the menu purchased by each customer?

Solution - 3

```
WITH ordered_sales_cte AS
(
 SELECT customer_id, order_date, product_name,
  DENSE_RANK() OVER(PARTITION BY s.customer_id
  ORDER BY s.order_date) AS rank
 FROM dbo.sales AS s
 JOIN dbo.menu AS m
  ON s.product_id = m.product_id
)
SELECT customer_id, product_name
FROM ordered_sales_cte
WHERE rank = 1
GROUP BY customer_id, product_name;
```

Problem Statement - 4

What is the most purchased item on the menu and how many times was it purchased by all customers?

Solution - 4

```
SELECT (COUNT(s.product_id)) AS most_purchased, product_name

FROM dbo.sales AS s

JOIN dbo.menu AS m

 ON s.product_id = m.product_id

GROUP BY s.product_id, product_name

ORDER BY most_purchased DESC

LIMIT 1
```

Problem Statement - 5

Which item was the most popular one for each customer?

Solution - 5

```
WITH fav_item_cte AS
(
 SELECT s.customer_id, m.product_name,
  COUNT(m.product_id) AS order_count,
  DENSE_RANK() OVER(PARTITION BY s.customer_id
  ORDER BY COUNT(m.product_id) DESC) AS rank
FROM dbo.menu AS m
JOIN dbo.sales AS s
 ON m.product_id = s.product_id
GROUP BY s.customer_id, m.product_name
)
SELECT customer_id, product_name, order_count
FROM fav_item_cte
WHERE rank = 1;
```

Problem Statement - 6

Which item was purchased first by the customer after they became a member?

Solution - 6

```
WITH member_sales_cte AS
(
 SELECT s.customer_id, m.join_date, s.order_date,   s.product_id,
        DENSE_RANK() OVER(PARTITION BY s.customer_id
  ORDER BY s.order_date) AS rank
    FROM dbo.sales AS s
 JOIN dbo.members AS m
  ON s.customer_id = m.customer_id
 WHERE s.order_date = m.join_date
)
SELECT s.customer_id, s.order_date, m2.product_name
FROM member_sales_cte AS s
JOIN dbo.menu AS m2
 ON s.product_id = m2.product_id
```

Problem Statement - 7

Which item was purchased right before the customer became a member?

Solution - 7

```
WITH prior_member_purchased_cte AS
(
 SELECT s.customer_id, m.join_date, s.order_date, s.product_id,
        DENSE_RANK() OVER(PARTITION BY s.customer_id
        ORDER BY s.order_date DESC) AS rank
 FROM dbo.sales AS s
 JOIN dbo.members AS m
  ON s.customer_id = m.customer_id
 WHERE s.order_date < m.join_date
)
SELECT s.customer_id, s.order_date, m2.product_name
FROM prior_member_purchased_cte AS s
JOIN dbo.menu AS m2
 ON s.product_id = m2.product_id
WHERE rank = 1;
```

Problem Statement - 8

What is the total number of items and amount spent for each member before they became a member?

Solution - 8

```
SELECT
          s.customer_id,
   COUNT(DISTINCT s.product_id) AS unique_menu_item,
   SUM(mm.price) AS total_sales
FROM
          dbo.sales AS s
JOIN
          dbo.members AS m
 ON s.customer_id = m.customer_id
JOIN
          dbo.menu AS mm
 ON s.product_id = mm.product_id
WHERE s.order_date < m.join_date
GROUP BY s.customer_id;
```

Problem Statement - 9

If each customers’ $1 spent equates to 10 points and sushi has a 2x points multiplier — how many points would each customer have?

Solution - 9

```
WITH price_points AS
 (
 SELECT *,
 CASE
   WHEN product_id = 1 THEN price * 20
   ELSE price * 10
   END AS points
 FROM
   dbo.menu
 )
```

Solution - 9

```
SELECT
          s.customer_id,
   SUM(p.points) AS total_points
FROM
          price_points AS p
JOIN
          dbo.sales AS s
ON p.product_id = s.product_id
GROUP BY
          s.customer_id
ORDER BY
          customer_id
```

Problem Statement - 10

In the first week after a customer joins the program, (including their join date) they earn 2x points on all items; not just sushi — how many points do customer A and B have at the end of Jan21?

Note :here you can use a concept of **interval function** which returns the index of the argument that is more than the first argument meaning It returns 0 if 1st number is less than the 2nd number and 1 if 1st number is less than the 3rd number and so on or -1 if 1st number is null

Solution - 10

```
WITH dates_cte AS
(
SELECT *,
  join_date + INTERVAL'6 day' AS valid_date,
  DATE('2021-01-31') AS last_date
 FROM
  dbo.members AS m
 ),
 points_cte AS (
 SELECT d.customer_id, s.order_date, d.join_date,
 d.valid_date, d.last_date, m.product_name, m.price,
 SUM(CASE
  WHEN m.product_name = 'sushi' THEN 2 * 10 * m.price
  WHEN s.order_date BETWEEN d.join_date AND d.valid_date THEN 2 * 10 * m.price
  ELSE 10 * m.price
  END) AS points
```

Solution - 10

```
FROM dates_cte AS d
JOIN dbo.sales AS s
 ON d.customer_id = s.customer_id
JOIN dbo.menu AS m
 ON s.product_id = m.product_id
WHERE s.order_date < d.last_date
GROUP BY d.customer_id, s.order_date, d.join_date, d.valid_date, d.last_date, m.product_name, m.price
)
SELECT
        customer_id,
   SUM(points) AS total_points
FROM
        points_cte
GROUP BY
        customer_id
```

In the next class we will study:

- Capstone 2

Thank You