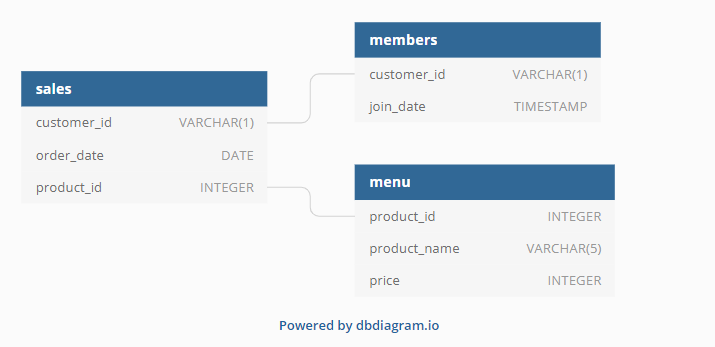
**# Entity Relationship Diagram**



**# Question**

**# Q1. What is the total amount each customer spent at the restaurant?**

SELECT

    s.customer\_id,

    sum(m.price) as total\_sale

FROM sales s

    INNER JOIN menu m ON s.product\_id = m.product\_id

GROUP BY s.customer\_id

ORDER BY s.customer\_id ASC;

**# Q2. How many days has each customer visited the restaurant?**

SELECT

    s.customer\_id,

    COUNT(DISTINCT s.order\_date) AS visit\_count

FROM sales s

GROUP BY s.customer\_id;

**# Q3. What was the first item from the menu purchased by each customer?**

WITH ordered\_sales AS (

  SELECT

    s.customer\_id,

    s.order\_date,

    m.product\_name,

    DENSE\_RANK() OVER (

      PARTITION BY s.customer\_id

      ORDER BY s.order\_date) AS rank

  FROM sales s

    INNER JOIN menu m

        ON s.product\_id = m.product\_id

)

SELECT

  customer\_id,

  product\_name

FROM ordered\_sales

WHERE rank = 1

GROUP BY customer\_id, product\_name;

**# Q4. What is the most purchased item on the menu and how many times was it purchased by all customers?**

SELECT

    m.product\_id,

    m.product\_name,

    COUNT(s.product\_id) AS number\_of\_purchases

FROM menu m

    INNER JOIN sales s

        ON m.product\_id = s.product\_id

GROUP BY m.product\_id

ORDER BY number\_of\_purchases DESC

LIMIT 1;

**# Q5. Which item was the most popular for each customer?**

WITH ordered\_sales AS (

  SELECT

    s.customer\_id,

    s.order\_date,

    m.product\_name,

    DENSE\_RANK() OVER (

      PARTITION BY s.customer\_id

      ORDER BY s.order\_date) AS rank

  FROM sales s

  INNER JOIN menu m

    ON s.product\_id = m.product\_id

)

SELECT

  customer\_id,

  product\_name

FROM ordered\_sales

WHERE rank = 1

GROUP BY customer\_id, product\_name;

**# Q6. Which item was purchased first by the customer after they became a member?**

WITH joined\_as\_member AS (

  SELECT

    m.customer\_id,

    s.product\_id,

    ROW\_NUMBER() OVER (

      PARTITION BY m.customer\_id

      ORDER BY s.order\_date) AS row\_num

  FROM members m

  INNER JOIN sales s

    ON m.customer\_id = s.customer\_id

    AND s.order\_date >= m.join\_date

)

SELECT

  customer\_id,

  product\_name

FROM joined\_as\_member j

    INNER JOIN menu m

        ON j.product\_id = m.product\_id

WHERE row\_num = 1

ORDER BY customer\_id ASC;

**# Q7. Which item was purchased just before the customer became a member?**

WITH purchased\_prior\_member AS (

  SELECT

    m.customer\_id,

    s.product\_id,

    ROW\_NUMBER() OVER (

      PARTITION BY m.customer\_id

      ORDER BY s.order\_date DESC) AS rank

  FROM members m

    INNER JOIN sales s

        ON m.customer\_id = s.customer\_id

        AND s.order\_date < m.join\_date

)

SELECT

  p.customer\_id,

  m.product\_name

FROM purchased\_prior\_member p

    INNER JOIN menu m

        ON p.product\_id = m.product\_id

WHERE rank = 1

ORDER BY p.customer\_id ASC;

**# Q8. What is the total items and amount spent for each member before they became a member?**

SELECT

  s.customer\_id,

  COUNT(s.product\_id) AS total\_items,

  SUM(mn.price) AS total\_sales

FROM sales s

    INNER JOIN members m

        ON s.customer\_id = m.customer\_id

        AND s.order\_date < m.join\_date

    INNER JOIN menu mn

        ON s.product\_id = mn.product\_id

GROUP BY s.customer\_id

ORDER BY s.customer\_id;

**# Q9. If each $1 spent equates to 10 points and sushi has a 2x points multiplier — how many points would each customer have?**

WITH points\_cte AS (

  SELECT

    product\_id,

    CASE

      WHEN product\_id = 1 THEN price \* 20

      ELSE price \* 10 END AS points

  FROM menu

)

SELECT

  sales.customer\_id,

  SUM(p\_cte.points) AS total\_points

FROM sales s

    INNER JOIN points\_cte p\_cte

        ON s.product\_id = p\_cte.product\_id

GROUP BY s.customer\_id

ORDER BY s.customer\_id;

**# Q10: 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 January?**

WITH dates\_cte AS (

  SELECT

    customer\_id,

      join\_date,

      join\_date + 6 AS valid\_date,

      DATE\_TRUNC(

        'month', '2021-01-31'::DATE)

        + interval '1 month'

        - interval '1 day' AS last\_date

  FROM members

)

SELECT

  sales.customer\_id,

  SUM(CASE

    WHEN mn.product\_name = 'sushi'

        THEN 2 \* 10 \* mn.price

    WHEN s.order\_date BETWEEN d.join\_date AND d.valid\_date

        THEN 2 \* 10 \* mn.price

    ELSE 10 \* mn.price END) AS points

FROM sales s

    INNER JOIN dates\_cte d

        ON s.customer\_id = d.customer\_id

        AND d.join\_date <= s.order\_date

        AND s.order\_date <= d.last\_date

    INNER JOIN menu mn

        ON s.product\_id = mn.product\_id

GROUP BY sales.customer\_id;