04 nicks_diner SQL questions

ROW_NUMBER(), RANK()

Diner Dataset

```
CREATE SCHEMA nicks_diner;

use nicks_diner;

CREATE TABLE sales (
  customer_id VARCHAR(50),
  order_date DATE,
  product_id INTEGER
);

INSERT INTO sales
  (customer_id, order_date, product_id)
VALUES
  ('Chinku', '2024-01-01', '1'),
  ('Chinku', '2024-01-01', '2'),
  ('Chinku', '2024-01-07', '2'),
  ('Chinku', '2024-01-10', '3'),
  ('Chinku', '2024-01-11', '3'),
  ('Chinku', '2024-01-11', '3'),
  ('Minku', '2024-01-01', '2'),
  ('Minku', '2024-01-02', '2'),
  ('Minku', '2024-01-04', '1'),
  ('Minku', '2024-01-11', '1'),
  ('Minku', '2024-01-16', '3'),
  ('Minku', '2024-02-01', '3'),
  ('Pinku', '2024-01-01', '3'),
  ('Pinku', '2024-01-01', '3'),
  ('Pinku', '2024-01-07', '3');


CREATE TABLE menu (
  product_id INTEGER,
  product_name VARCHAR(50),
  price INTEGER
);

INSERT INTO menu
  (product_id, product_name, price)
```

```
VALUES
  ('1', 'sushi', '10'),
  ('2', 'Paneer curry', '15'),
  ('3', 'Noodles', '12');


CREATE TABLE members (
  customer_id VARCHAR(50),
  join_date DATE
);

INSERT INTO members
  (customer_id, join_date)
VALUES
  ('Chinku', '2024-01-07'),
  ('Minku', '2024-01-09');
```

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

First we need to rank the orders made by each customer, then we can get the first order made by each customer.

Using window functions

```
-- Q1.
WITH CTE AS (
    SELECT
      s.customer_id,
      m.product_name,
      s.order_date,
      ROW_NUMBER() OVER (PARTITION BY s.customer_id ORDER BY s.order_date,
s.product_id) AS row_rank
    FROM
      sales AS s
    JOIN
      menu AS m ON s.product_id = m.product_id
)
SELECT
  customer_id,
  product_name,
  order_date
FROM
  CTE
```

```
WHERE
  row_rank = 1;
```

customer_id	product_name	order_date
Chinku	sushi	2024-01-01
Minku	Paneer curry	2024-01-01
Pinku	Noodles	2024-01-01

Without using window functions

```
select
s.customer_id,
m.product_name,
s.order_date
from sales s
inner join menu m on s.product_id = m.product_id
where s.order_date  in (select min(order_date) from sales group by customer_id)
order by s.order_date, s.customer_id ;
```

customer_id	product_name	order_date
Chinku	sushi	2024-01-01
Chinku	Paneer curry	2024-01-01
Minku	Paneer curry	2024-01-01
Pinku	Noodles	2024-01-01
Pinku	Noodles	2024-01-01

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

Using window functions

```
WITH totals AS (
    SELECT
      product_name,
      COUNT(product_name) AS total_purchase_quantity,
      row_number() OVER(order by COUNT(product_name) DESC ) AS row_rank
    FROM
      sales AS s
      JOIN menu AS m ON s.product_id = m.product_id
    GROUP BY
      1
  )
```

```
SELECT
  product_name,
  total_purchase_quantity
FROM
  totals
WHERE
  row_rank = 1;
```

Without using window functions

```
select m.product_name, count(*) times_purchased from menu m
inner join sales s where s.product_id = m.product_id
group by  m.product_name
order by times_purchased DESC
limit 1;
```

3. Which item was the most popular for each customer?

```
SELECT
  customer_id,
  product_name,
  COUNT(product_name) AS total_purchase_quantity
FROM
  sales AS s
  INNER JOIN menu AS m ON s.product_id = m.product_id
GROUP BY
  customer_id,
  product_name
ORDER BY
  total_purchase_quantity DESC
```

```
  WITH CTE AS (
    SELECT
      customer_id,
      product_name,
      COUNT(product_name) AS total_purchase_quantity,
      rank() OVER (
        PARTITION BY customer_id
        ORDER BY
          COUNT(product_name) desc
      ) AS score
    FROM
```

```
      sales AS s
      JOIN menu AS m ON s.product_id = m.product_id
    GROUP BY
      customer_id,
      product_name
  )


SELECT
  customer_id,
  product_name,
  total_purchase_quantity
FROM
  CTE
WHERE
  score = 1;
```

customer_id	product_name	total_purchase_quantity
Chinku	Noodles	3
Minku	Paneer curry	2
Minku	sushi	2
Minku	Noodles	2
Pinku	Noodles	3

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

Need to get the first order where the order date is just greater than the joining date.

```
WITH ranked AS (
    SELECT
      s.customer_id,
      order_date,
      join_date,
      product_name,
      row_number() OVER (
        PARTITION BY s.customer_id
        ORDER BY
          order_date
      ) AS row_rank
    FROM
      sales AS s
      JOIN members AS mm ON s.customer_id = mm.customer_id
      JOIN menu AS m ON s.product_id = m.product_id
    WHERE
```

```
      order_date ≥ join_date
  )
SELECT
  customer_id,
  join_date,
  order_date,

--  CAST(join_date AS CHAR) AS join_date,
--  CAST(order_date AS CHAR) AS order_date,
  product_name
FROM
  ranked AS r
WHERE
  row_rank = 1
ORDER BY
  1;
```

customer_id	join_date	order_date	product_name
Chinku	2024-01-07	2024-01-07	Paneer curry
Minku	2024-01-09	2024-01-11	sushi

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

```
SELECT
  s.customer_id,
  COUNT(product_name) AS total_number_of_items,
  SUM(price) AS total_purchase_amount
FROM
  sales AS s
  JOIN members AS mm ON s.customer_id = mm.customer_id
  JOIN menu AS m ON s.product_id = m.product_id
WHERE
  order_date < join_date
GROUP BY
  1
ORDER BY
  1
```

customer_id	total_number_of_items	total_purchase_amount
Chinku	2	25
Minku	3	40

```sql
WITH members AS (
    SELECT
      s.customer_id,
      order_date,
      product_name,
      price,
      join_date
    FROM
      sales AS s
      JOIN menu AS m ON s.product_id = m.product_id
      LEFT JOIN members AS mm ON s.customer_id = mm.customer_id
  )
SELECT
  customer_id,
  order_date,
  product_name,
  price,
  CASE
    WHEN order_date ≥ join_date THEN 'Y'
    ELSE 'N'
  END AS member
FROM
  members
ORDER BY
  1,
  2,
  3;
```

customer_id	order_date	product_name	price	member
Chinku	2024-01-01	Paneer curry	15	N
Chinku	2024-01-01	sushi	10	N
Chinku	2024-01-07	Paneer curry	15	Y
Chinku	2024-01-10	Noodles	12	Y
Chinku	2024-01-11	Noodles	12	Y
Chinku	2024-01-11	Noodles	12	Y
Minku	2024-01-01	Paneer curry	15	N
Minku	2024-01-02	Paneer curry	15	N
Minku	2024-01-04	sushi	10	N
Minku	2024-01-11	sushi	10	Y
Minku	2024-01-16	Noodles	12	Y
Minku	2024-02-01	Noodles	12	Y
Pinku	2024-01-01	Noodles	12	N

customer_id	order_date	product_name	price	member
Pinku	2024-01-01	Noodles	12	N
Pinku	2024-01-07	Noodles	12	N