**Solution for case study problems**

**Creating the tables:**

1. **Members table**

CREATE TABLE members (

customer\_id VARCHAR(1) PRIMARY KEY,

join\_date DATE

);

**Inserting data**

INSERT INTO members

("customer\_id", "join\_date")

VALUES

('A', '2021-01-07'),

('B', '2021-01-09');

**2. Menu table**

CREATE TABLE menu (

product\_id INT PRIMARY KEY,

product\_name VARCHAR(5),

price INTEGER

);

**Inserting data**

INSERT INTO menu

("product\_id", "product\_name", "price")

VALUES

('1', 'sushi', '10'),

('2', 'curry', '15'),

('3', 'ramen', '12');

**3. Sales Table**

CREATE TABLE sales (

customer\_id VARCHAR(1) ,

order\_date DATE,

product\_id INT

);

**Inserting data**

INSERT INTO sales

("customer\_id", "order\_date", "product\_id")

VALUES

('A', '2021-01-01', '1'),

('A', '2021-01-01', '2'),

('A', '2021-01-07', '2'),

('A', '2021-01-10', '3'),

('A', '2021-01-11', '3'),

('A', '2021-01-11', '3'),

('B', '2021-01-01', '2'),

('B', '2021-01-02', '2'),

('B', '2021-01-04', '1'),

('B', '2021-01-11', '1'),

('B', '2021-01-16', '3'),

('B', '2021-02-01', '3'),

('C', '2021-01-01', '3'),

('C', '2021-01-01', '3'),

('C', '2021-01-07', '3');

**Display table data**

select \* from menu

|  |  |  |
| --- | --- | --- |
| product\_id | product\_name | price |
| 1 | sushi | 10 |
| 2 | curry | 15 |
| 3 | ramen | 12 |

select\* from members

|  |  |
| --- | --- |
| customer\_id | join\_date |
| A | 1/7/2021 |
| B | 1/9/2021 |

select \* from Sales

|  |  |  |
| --- | --- | --- |
| customer\_id | order\_date | product\_id |
| A | 1/1/2021 | 1 |
| A | 1/1/2021 | 2 |
| A | 1/7/2021 | 2 |
| A | 1/10/2021 | 3 |
| A | 1/11/2021 | 3 |
| A | 1/11/2021 | 3 |
| B | 1/1/2021 | 2 |
| B | 1/2/2021 | 2 |
| B | 1/4/2021 | 1 |
| B | 1/11/2021 | 1 |
| B | 1/16/2021 | 3 |
| B | 2/1/2021 | 3 |
| C | 1/1/2021 | 3 |
| C | 1/1/2021 | 3 |
| C | 1/7/2021 | 3 |

**Solutions for the problem statements**

1. **Total amount spend by each customer**

select s.customer\_id,sum(m.price)

from sales as s

join menu as m

on s.product\_id=m.product\_id

group by s.customer\_id

order by s.customer\_id;

**solution:**

|  |  |
| --- | --- |
| customer\_id | sum |
| A | 76 |
| B | 74 |
| C | 36 |

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

select customer\_id, count(distinct order\_date)

from sales

group by customer\_id;

**solution:**

|  |  |
| --- | --- |
| customer\_id | count |
| A | 4 |
| B | 6 |
| C | 2 |

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

with purchase\_rank as

(select s.customer\_id, m.product\_name,

rank() over (partition by s.customer\_id order by s.order\_date) as P\_rank

from sales as s

join menu as m

on s.product\_id=m.product\_id

order by s.order\_date)

select customer\_id, product\_name

from purchase\_rank

where P\_rank=1

group by customer\_id, product\_name, p\_rank;

**solution:**

|  |  |
| --- | --- |
| customer\_id | product\_name |
| A | curry |
| A | sushi |
| B | curry |
| C | ramen |

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

select m.product\_name, count(s.product\_id) as purchase\_count

from menu as m

join sales as s

on m.product\_id=s.product\_id

group by m.product\_name

order by count(s.product\_id) desc

limit 1;

**solution:**

|  |  |
| --- | --- |
| product\_name | purchase\_count |
| ramen | 1/8/1900 |

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

with purchase\_rank as

(select s.customer\_id, m.product\_name ,

dense\_rank() over (partition by s.customer\_id order by count(s.product\_id) DESC) as p\_rank

from sales as s

join menu as m

on m.product\_id=s.product\_id

group by s.customer\_id, m.product\_name)

select customer\_id, product\_name

from purchase\_rank

where p\_rank=1

**solution:**

|  |  |
| --- | --- |
| customer\_id | product\_name |
| A | ramen |
| B | curry |
| B | sushi |
| B | ramen |
| C | ramen |

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

with membership\_customers as

(select me.customer\_id, m.product\_name,

dense\_rank() over (partition by me.customer\_id order by s.order\_date) as order\_series

from members as me

left join sales as s

on me.customer\_id=s.customer\_id

join menu as m

on s.product\_id=m.product\_id

where s.order\_date>= me.join\_date

group by me.customer\_id, m.product\_name, s.order\_date)

select customer\_id, product\_name

from membership\_customers

where order\_series=1

**solution:**

|  |  |
| --- | --- |
| customer\_id | product\_name |
| A | curry |
| B | sushi |

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

with membership\_customers as

(select me.customer\_id, m.product\_name,

rank() over (partition by me.customer\_id order by s.order\_date DESC) as order\_series

from members as me

left join sales as s

on me.customer\_id=s.customer\_id

join menu as m

on s.product\_id=m.product\_id

where s.order\_date<me.join\_date

group by me.customer\_id, m.product\_name, s.order\_date)

select customer\_id, product\_name

from membership\_customers

where order\_series=1

**solution:**

|  |  |
| --- | --- |
| customer\_id | product\_name |
| A | sushi |
| A | curry |
| B | sushi |

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

select me.customer\_id, count(s.product\_id) as item\_count,sum(m.price) as amount\_spent

from members as me

left join sales as s

on me.customer\_id=s.customer\_id

join menu as m

on s.product\_id=m.product\_id

where s.order\_date<= me.join\_date

group by me.customer\_id

**solution:**

|  |  |  |
| --- | --- | --- |
| customer\_id | item\_count | amount\_spent |
| A | 3 | 40 |
| B | 3 | 40 |

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

with points as

(select product\_name,product\_id,

case

when product\_name='sushi' then price\*10\*2

else price\*10

end as point

from menu

)

select s.customer\_id, sum(p.point)

from sales as s

join points as p

on s.product\_id=p.product\_id

group by s.customer\_id

order by s.customer\_id

**solution:**

|  |  |
| --- | --- |
| customer\_id | sum |
| A | 860 |
| B | 940 |
| C | 360 |

1. **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 points as

(select me.customer\_id, m.product\_name,m.product\_id,s.order\_date,

case

when m.product\_name='sushi' then m.price\*10\*2

else

case

when s.order\_date between me.join\_date and me.join\_date + INTERVAL '7 days' then m.price\*10\*2

else m.price\*10

end

end as point

from members as me

left join sales as s on me.customer\_id=s.customer\_id

join menu as m on m.product\_id=s.product\_id

)

select p.customer\_id, sum(p.point)

from points as p

where p.order\_date<='2021-01-31'

group by p.customer\_id

order by p.customer\_id

**solution:**

|  |  |
| --- | --- |
| customer\_id | sum |
| A | 1370 |
| B | 940 |