Query1.

```sql
1   WITH recent_month AS (
2       SELECT '2021-01-01 00:00:00'::timestamp AS recent_month)
3
4   SELECT brands.name AS brandName,
5   COUNT(DISTINCT receipts.receiptId) AS receipts_scanned
6   FROM Fetchrewards.receipts
7   JOIN Fetchrewards.items ON Fetchrewards.receipts.receiptId = Fetchrewards.items.receiptId
8   JOIN Fetchrewards.brands ON items.barCode = brands.barCode
9   JOIN recent_month ON TRUE
10  where receipts.dateScanned>= recent_month.recent_month
11  group by brands.name
12  order by receipts_scanned desc
13  LIMIT 5
14  ;
```

Data output   Messages   Notifications

	brandname character varying (255)	receipts_scanned bigint
1	Tostitos	11
2	Swanson	11
3	Kettle Brand	3
4	Jell-O	2
5	Cracker Barrel Cheese	2

Query2.

```sql
WITH recent_month AS (
    SELECT '2021-01-01'::timestamp AS recent_month,
           '2020-12-01'::timestamp AS previous_month),
recent_ranking AS (
    SELECT brands.name AS brandName,
           COUNT(DISTINCT receipts.receiptId) AS receipts_scanned,
           DENSE_RANK() OVER (ORDER BY COUNT(DISTINCT receipts.receiptId) DESC) AS rank
    FROM Fetchrewards.receipts
    JOIN Fetchrewards.items ON Fetchrewards.receipts.receiptId = Fetchrewards.items.receiptId
    JOIN Fetchrewards.brands ON items.barCode = brands.barCode
    JOIN recent_month ON receipts.dateScanned >= recent_month.recent_month
                     AND receipts.dateScanned < recent_month.recent_month + INTERVAL '1 month'
    GROUP BY brands.name
    ORDER BY rank
    LIMIT 5),
previous_ranking AS (
    SELECT brands.name AS brandName,
           COUNT(DISTINCT receipts.receiptId) AS receipts_scanned,
           DENSE_RANK() OVER (ORDER BY COUNT(DISTINCT receipts.receiptId) DESC) AS rank
    FROM Fetchrewards.receipts
    JOIN Fetchrewards.items ON Fetchrewards.receipts.receiptId = Fetchrewards.items.receiptId
    JOIN Fetchrewards.brands ON items.barCode = brands.barCode
    JOIN recent_month ON receipts.dateScanned >= recent_month.previous_month
                     AND receipts.dateScanned < recent_month.previous_month + INTERVAL '1 month'
    GROUP BY brands.name
    ORDER BY rank
    LIMIT 5
)
SELECT r.brandName AS recent_brandName, r.receipts_scanned AS recent_receipts_scanned, r.rank AS recent_rank,
       p.brandName AS previous_brandName, p.receipts_scanned AS previous_receipts_scanned, p.rank AS previous_rank
FROM recent_ranking r
FULL OUTER JOIN previous_ranking p ON r.brandName = p.brandName
ORDER BY COALESCE(r.rank, p.rank), COALESCE(p.rank, r.rank);
```

output   Messages   Notifications

recent_brandname character varying (255)	recent_receipts_scanned bigint	recent_rank bigint	previous_brandname character varying (255)	previous_receipts_scanned bigint	previous_rank bigint
Tostitos	11	1	[null]	[null]	[null]
Swanson	11	1	[null]	[null]	[null]
Kettle Brand	3	2	[null]	[null]	[null]
Cracker Barrel Cheese	2	3	[null]	[null]	[null]
Jell-O	2	3	[null]	[null]	[null]

Query3.

```sql
1  SELECT rewardsReceiptStatus,
2         AVG(totalSpent) AS average_spend
3  FROM Fetchrewards.receipts
4  --Considered "FINISHED" as completed
5  WHERE rewardsReceiptStatus IN ('FINISHED', 'REJECTED')
6  GROUP BY rewardsReceiptStatus;
7
```

Data output   Messages   Notifications

rewardsreceiptstatus character varying (255) 🔒	average_spend numeric 🔒
1	REJECTED	27.5114035087719298
2	FINISHED	59.8252439024390244

Query4.

```
1   SELECT receipts.rewardsReceiptStatus,
2          SUM(purchasedItemCount) AS total_items
3   FROM Fetchrewards.receipts
4   JOIN Fetchrewards.items ON receipts.receiptId = items.receiptId
5   WHERE receipts.rewardsReceiptStatus IN ('FINISHED', 'REJECTED')
6   GROUP BY receipts.rewardsReceiptStatus;
7
```

Data output | Messages | Notifications

	rewardsreceiptstatus character varying (255)	total_items numeric
1	REJECTED	232.00
2	FINISHED	746720.00

Query5.

Query | Query History

```
1   WITH max_created_date AS (
2       SELECT
3           MAX(createdDate) AS max_created_date,
4           (MAX(createdDate) - INTERVAL '6 months') AS six_months_prior
5       FROM Fetchrewards.users
6   ),
7   recent_users AS (
8       SELECT userId
9       FROM Fetchrewards.users, max_created_date
10      WHERE createdDate >= max_created_date.six_months_prior
11  )
12  SELECT brands.name, SUM(receipts.totalSpent) AS total_spend
13  FROM Fetchrewards.receipts
14  INNER JOIN recent_users ON receipts.userId = recent_users.userId
15  INNER JOIN Fetchrewards.items ON receipts.receiptId = Fetchrewards.items.receiptId
16  INNER JOIN Fetchrewards.brands ON Fetchrewards.items.barCode = Fetchrewards.brands.barCode
17  GROUP BY brands.name
18  ORDER BY total_spend DESC
19  LIMIT 1;
```

Data output | Messages | Notifications

	name character varying (255)	total_spend numeric
1	Tostitos	15799.37

Query6.

```sql
1   WITH max_created_date AS (
2       SELECT
3           MAX(createdDate) AS max_created_date,
4           (MAX(createdDate) - INTERVAL '6 months') AS six_months_prior
5       FROM Fetchrewards.users
6   ),
7   recent_users AS (
8       SELECT userId
9       FROM Fetchrewards.users, max_created_date
10      WHERE createdDate >= max_created_date.six_months_prior
11  )
12  SELECT brands.name, COUNT(items.receiptId) AS transaction_count
13  FROM Fetchrewards.receipts
14  INNER JOIN recent_users ON receipts.userId = recent_users.userId
15  INNER JOIN Fetchrewards.items ON receipts.receiptId = Fetchrewards.items.receiptId
16  INNER JOIN Fetchrewards.brands ON Fetchrewards.items.barCode = Fetchrewards.brands.barCode
17  GROUP BY brands.name
18  ORDER BY transaction_count DESC
19  LIMIT 1;
20
```

Data output   Messages   Notifications

	name character varying (255)	transaction_count bigint
1	Tostitos	23