```
-- Performance
-- 1. a. Which 20% of branches are underperforming? - evident in "closed complaints
without relief" and negative customer service feedback


select top 20 percent
    D.bank_branch,
    (count(distinct(E.[Index]))) + (count(distinct(R.[Index]))) as Number_of_complaints
from
    Events as E
join
    Client as C
on
    E.Client_ID = C.client_id
join
    District as D
on
    C.district_id = D.district_id
join
    Reviews as R
on
    D.district_id = R.District
where
    E.Company_response_to_consumer = 'Closed without relief' and
    R.Rating = 1
group by
    D.bank_branch
order by
    Number_of_complaints desc
```

	bank_branch	Number_of_complaints
1	Quincy Quay	213
2	Quay Portland of Maine	199
3	New Britain Quay	199
4	Atlanta State Quay	196
5	Quay Warwick	194
6	Quay Manhattan	193
7	Milwaukee Central Quay	183
8	Lawrence Quay branch	179
9	Newton Quay	140
10	Quay Chicago	136
11	Quay Anchorage	133
12	Quay Nachsville Main	131
13	Quay Las Vegas	130
14	Quay Sioux Falls	127
15	Quay Yonkers	127
16	Quay Manchester	126

-- 1. ai. Can we rank Call Centre Servers' performance according to Call Duration and Outcome?

```
select
    L.server,
    replace(convert(varchar, CONVERT(time, dateadd(second, min(datediff(second,'00:00:00', L.ser_time)), '00:00:00')), 108), ':00:', ':') as Min_call_length,
    replace(convert(varchar, CONVERT(time, dateadd(second, avg(datediff(second,'00:00:00', L.ser_time)), '00:00:00')), 108), ':00:', ':') as Average_call_length,
    replace(convert(varchar, CONVERT(time, dateadd(second, max(datediff(second,'00:00:00', L.ser_time)), '00:00:00')), 108), ':00:', ':') as Max_call_length,
    sum(case when E.Company_response_to_consumer = 'Closed without relief' then 1 else 0 end) as Closed_without_relief,
    sum(case when E.Company_response_to_consumer = 'Untimely response' then 1 else 0 end) as Untimely_response,
    sum(case when E.Company_response_to_consumer = 'Closed with explanation' then 1 else 0 end) as Closed_with_explanation,
    sum(case when E.Company_response_to_consumer = 'Closed with relief' then 1 else 0 end) as Closed_with_relief,
    sum(case when E.Company_response_to_consumer = 'Closed with non-monetary relief' then 1 else 0 end) as Closed_with_non_monetary_relief,
    sum(case when E.Company_response_to_consumer = 'Closed with monetary relief' then 1 else 0 end) as Closed_with_monetary_relief,
    sum(case when E.Company_response_to_consumer = 'Closed' then 1 else 0 end) as Closed,
    sum(case when E.Company_response_to_consumer = 'In progress' then 1 else 0 end) as In_progress
from
    Logs as L
join
    Events as E
on
    L.Complaint_ID = E.Complaint_ID
group by
    server
order by
    Average_call_length desc
```

	server	Min_call_length	Average_call_length	Max_call_length	Closed_without_relief	Untimely_response	Closed_with_explanation	Closed_with_relief	Closed_with_non_monetary_relief	Closed_with_monetary_relief	Closed	In_progress
1	BENSION	00:31	00:12:45	00:28:05	4	0	69	4	8	14	1	0
2	GILI	00:34	00:12:43	00:28:59	1	1	53	1	7	11	1	0
3	MIKI	00:05	00:12:39	00:28:17	3	0	88	5	7	21	2	2
4	KAZAV	00:10	00:12:25	00:28:53	10	0	109	8	13	37	4	0
5	MORIAH	00:20	00:12:17	00:27:55	3	0	80	3	8	23	2	1
6	ANAT	00:12	00:12:09	00:27:52	5	0	65	4	6	17	2	1
7	TOVA	00:09	00:12:07	00:28:39	7	0	116	6	11	36	2	1
8	BASCH	00:00	00:11:58	00:25:44	3	0	70	3	3	23	3	0
9	AVIDAN	00:25	00:11:56	00:28:03	3	0	66	1	11	18	1	0
10	GELBER	00:03:28	00:11:53	00:16:58	0	0	4	0	1	2	0	0
11	MICHAL	00:16	00:11:46	00:26:51	3	0	79	5	6	20	1	1
12	NO_SERVER	00:22	00:11:44	00:27:42	1	0	29	3	7	9	1	0
13	DORIT	00:01	00:11:44	00:28:01	1	0	66	4	11	20	0	1
14	SHARON	00:13	00:11:37	00:28:22	6	0	111	6	10	24	1	0
15	SHLOMO	00:24	00:11:37	00:27:26	1	0	36	4	3	11	0	0
16	YIFAT	00:08	00:11:36	00:28:50	1	0	97	5	19	26	3	3
17	ELI	00:19	00:11:10	00:26:02	2	0	30	1	5	7	0	1
18	STEREN	00:02	00:11:05	00:27:32	6	0	72	4	4	17	2	2
19	IDIT	00:04	00:11:02	00:28:40	10	0	104	3	17	31	2	0
20	YITZ	00:07	00:11:00	00:28:15	6	0	94	4	12	22	5	0
21	DARMON	00:16	00:10:34	00:24:23	1	0	31	1	4	6	0	0
22	AVNI	00:14	00:10:19	00:27:06	3	2	105	5	9	21	3	0
23	NAAMA	00:01:07	00:10:06	00:20:52	0	0	23	1	3	4	0	0
24	ZOHARI	00:00	00:09:27	00:20:58	4	0	49	4	9	19	1	0
25	PINHAS	00:01:21	00:07:31	00:12:52	0	0	3	0	0	0	0	0

-- Which are the top 5 branches per positive customer feedback?

```
select top 5
    D.bank_branch,
    count(Distinct(R.[Index])) as Number_of_Ratings
from
    District as D
join
    Reviews as R
on
    D.district_id = R.District
where
    R.Rating = 5
group by
    D.bank_branch
order by
    Number_of_Ratings desc
```

	bank_branch	Number_of_Ratings
1	Quay Manchester	278
2	Minneapolis Quay	276
3	Washinton State Quay	273
4	Quay Nachsville Main	259
5	Quay Sioux Falls	233

-- What are the characteristics of these branches that could contribute to this positivity?

```sql
select top 5
    D.bank_branch,
    D. state_name,
    D.region,
    count(D.bank_branch) as Number_of_Ratings,
    sum(case when Review like '%friendly%' then 1 else 0 end) as Friendly,
    (sum(case when Review like '%fast%' then 1 else 0 end)) + (sum(case when Review like '%quick%' then 1 else 0 end)) as 'Fast',
    sum(case when Review like '%helpful%' then 1 else 0 end) as Helpful,
    sum(case when Review like '%easy%' then 1 else 0 end) as Easy
from
    District as D
join
    Reviews as R
on
    D.district_id = R.District
where
    R.Rating = 5
group by
    D.bank_branch,
    D.state_name,
    D.region
order by
    Number_of_Ratings desc
```

	bank_branch	state_name	region	Number_of_Ratings	Friendly	Fast	Helpful	Easy
1	Quay Manchester	Rhode Island	Northeast	278	85	163	98	83
2	Minneapolis Quay	Maryland	South	276	86	158	112	88
3	Washinton State Quay	New York	Northeast	273	96	136	104	84
4	Quay Nachsville Main	Ohio	Midwest	259	76	159	104	82
5	Quay Sioux Falls	New Jersey	Northeast	233	73	117	90	68

-- Which branches may be under-reporting their customer feedback? Highlight anything less than 2 StDev away from the mean

```sql
WITH Counts AS (
    SELECT
        D.bank_branch,
        COUNT(R.District) AS Number_of_complaints
    FROM
        District D
    JOIN
        Reviews R ON D.district_id = R.District
    GROUP BY
        D.bank_branch
),
Stats AS (
    SELECT
        AVG(Number_of_complaints) AS Mean,
        STDEV(Number_of_complaints) AS StandardDeviation
    FROM
        Counts
)
SELECT
    Counts.bank_branch,
    Counts.Number_of_complaints
FROM
    Counts
JOIN
    Stats ON 1=1
WHERE
    Counts.Number_of_complaints < (Mean - (2 * StandardDeviation)) OR Counts.Number_of_complaints > (Mean + (2 * StandardDeviation))
order by
    Number_of_complaints;
```

	bank_branch	Number_of_complaints
1	Charleston Branch	6
2	Quay Columbus Main St	6
3	Omaha Branch Quay	8
4	Honolulu Quay	10
5	Denver Colorado Branch	11
6	Quay Brockton	12

-- Dive deeper into this pattern by separating branches in urban from those in more rural areas, the best you can

Details of how small, medium and large defined taken from https://populationeducation.org/how-to-understand-the-urban-rural-population-split-in-the-u-s/

```sql
select
    D.bank_branch,
    D.city,
    D.region,
    case
        when D.city = 'Salt Lake City' then 200478
        when D.city = 'Danbury' then 86759
        when D.city = 'Atlanta' then 496461
        when D.city = 'Las Vegas' then 646790
        when D.city = 'Houston' then 2288000
        when D.city = 'Minneapolis' then 425336
    end as Population,
    case
        when
            (case
                when D.city = 'Salt Lake City' then 200478
                when D.city = 'Danbury' then 86759
                when D.city = 'Atlanta' then 496461
                when D.city = 'Las Vegas' then 646790
                when D.city = 'Houston' then 2288000
                when D.city = 'Minneapolis' then 425336
            end) > 1000000 then 'Large'
        when
            (case
                when D.city = 'Salt Lake City' then 200478
                when D.city = 'Danbury' then 86759
                when D.city = 'Atlanta' then 496461
                when D.city = 'Las Vegas' then 646790
                when D.city = 'Houston' then 2288000
                when D.city = 'Minneapolis' then 425336
            end) between 250000 and 1000000 then 'Medium'
        else 'Small'
    end as City_Classification,
    count(R.District) as Number_of_complaints
from
    District as D
join
    Reviews as R
on
    D.district_id = R.District
group by
    D.bank_branch,
    D.city,
    D.region
having
    count(R.District) <= 12
```

	bank_branch	city	region	Population	City_Classification	Number_of_complaints
1	Charleston Branch	Salt Lake City	West	200478	Small	6
2	Denver Colorado Branch	Danbury	Northeast	86759	Small	11
3	Honolulu Quay	Atlanta	South	496461	Medium	10
4	Omaha Branch Quay	Las Vegas	West	646790	Medium	8
5	Quay Brockton	Houston	South	2288000	Large	12
6	Quay Columbus Main St	Minneapolis	Midwest	425336	Medium	6

```
-- Customer complaints
-- How well are branches and customer service staff handling customer complaints?
-- Which customer service staff are closing the most queries either as "Closed without relief" or "Closed with Explanation"?
```

```sql
select
    L.server,
    sum(case when E.Company_response_to_consumer = 'Closed without relief' then 1 else 0 end) as Closed_without_relief,
    sum(case when E.Company_response_to_consumer = 'Closed with explanation' then 1 else 0 end) as Closed_with_explanation,
    (sum(case when E.Company_response_to_consumer = 'Closed without relief' then 1 else 0 end)) + (sum(case when E.Company_response_to_consumer = 'Closed with explanation' then 1 else 0 end)) as Total
from
    Logs as L
join
    Events as E
on
    L.Complaint_ID = E.Complaint_ID
group by
    server
order by
    Total desc
```

	server	Closed_without_relief	Closed_with_explanation	Total
1	TOVA	7	116	123
2	KAZAV	10	109	119
3	SHARON	6	111	117
4	IDIT	10	104	114
5	AVNI	3	105	108
6	YITZ	6	94	100
7	YIFAT	1	97	98
8	MIKI	3	88	91
9	MORIAH	3	80	83
10	MICHAL	3	79	82
11	STEREN	6	72	78
12	BASCH	3	70	73
13	BENSION	4	69	73
14	ANAT	5	65	70
15	AVIDAN	3	66	69
16	DORIT	1	66	67
17	GILI	1	53	54
18	ZOHARI	4	49	53
19	SHLOMO	1	36	37
20	DARMON	1	31	32
21	ELI	2	30	32
22	NO_SE...	1	29	30
23	NAAMA	0	23	23
24	GELBER	0	4	4
25	PINHAS	0	3	3

-- Which branches are proportionally receiving the most complaints regarding "Account opening, closing or management"?

```
select
    D.bank_branch,
    sum(case when E.Issue like '%Account opening, closing, or management%' then 1 else 0 end) as No_of_Complaints,
    count(E.Issue) as Total_Complaints,
    round(((cast(sum(case when E.Issue like '%Account opening, closing, or management%' then 1 else 0 end) as float)/count(E.Issue)) * 100), 2) as Percentage_of_Total_Complaints
from
    District as D
join
    Client as C
on
    D.district_id = C.district_id
join
    Events as E
on
    C.client_id = E.Client_ID
group by
    D.bank_branch
order by
    No_of_Complaints desc
```

	bank_branch	No_of_Complaints	Total_Complaints	Percentage_of_Total_Complaints
1	Quay Manhattan	726	2943	24.67
2	Quay Yonkers	206	797	25.85
3	Quay Philadelphia Central	179	698	25.64
4	Quay Brockton	178	680	26.18
5	Danbury Quay	111	475	23.37
6	Quay Los Angeles Main st	106	361	29.36
7	Quay Chicago	94	446	21.08
8	Quay Wichita	86	270	31.85
9	Quay Baltimore	83	333	24.92
10	Somerville Quay	82	264	31.06
11	Rochester Quay	81	275	29.45
12	Quay Nashua	81	318	25.47
13	Norwalk Quay	81	285	28.42
14	New Haven Quay	79	262	30.15
15	Washinton State Quay	77	251	30.68
16	Charleston Branch	76	271	28.04
17	Cambridge Quay	75	311	24.12