PROJECT-3

Operation Analytics and Investigating Metric Spike.

Project description:

Overview- Analyzing a company's end-to-end operations is a critical step in the process of operational analytics. this analysis helps identify areas of improvement within the company. metric spike investigation is one of the main applications of operational analytics. this entails figuring out why and how important metrics suddenly change.as a decline in sales or a reduction in daily user engagement.

Purpose- purpose of this project is to understand the role of data analyst.as a data analyst I will be working with various teams such as operations, support and marketing assisting them by drawing insightful conclusions from data. And making it essential to comprehend how to investigate metric spike to respond to questions from various departments within the company.

Plan- as a role of a data analyst I must create a database and different tables to derive insights from the data to answer questions.by using advanced SQL skills I can analyze the data and I can provide valuable insights that can help improve the company's operations and understand sudden changes in key metrics.

Approach:

I used SQL commands to create the databases that were required for the project. These are:1 oaim_spike; 2 ope_ana_spike.

Case study 1: uses the first database oaim_spike, to work on job data analysis using job-data dataset. I used the appropriate SQL queries to add values to the table.

Case study 2: uses the second database ope_ana_spike, to work on the metric spike investigation with the “users”,” events”,” email_events” tables. And after that import a csv file into my SQL workbench to add values to the tables.

after it has been created the necessary insights are derived from the tables by running SQL queries.

Tech-Slack-Used:

I connected to **MySQL workbench** as a software and server with the service name mysql@localhost:3306 with **version- 8.0.23** with MySQL community server – GPL.

I used MySQL workbench because it is an open-source relational database design tool. And it is a friendly user interface.

And I used Microsoft excel 365 to import csv file into MySQL workbench; Microsoft word 365 to create project PDF.

INSIGHTS:

Case study 1 – Job Data Analysis

A. Jobs Reviewed Over Time:

Task - Write an SQL query to calculate the number of jobs reviewed per hour for each day in November 2020.

Query:

```
SELECT
    ds AS date,
    COUNT(job_id) AS total_jobs_reviewed_per_hour,
    SUM(time_spent) / 3600 AS total_hours_spent_per_day
FROM
    job_data
GROUP BY ds
ORDER BY ds;
```

Result Table:

date	total_jobs_reviewed_per_hour	total_hours_spent_per_day
2020-11-25	1	0.0125
2020-11-26	1	0.0156
2020-11-27	1	0.0289
2020-11-28	2	0.0092
2020-11-29	1	0.0056
2020-11-30	2	0.0111

Insight: The total number of jobs evaluated per hour and the total number of hours spent reviewing jobs throughout the month of November are displayed in the above table.

Additionally, it indicates that more jobs were reviewed on November 28 and 30, compared to other dates in the same month.

B. Throughput Analysis:

Task -write an SQL query to calculate the 7-day rolling average of throughput. Additionally, explain whether you prefer using the daily metric or the 7-day rolling average for throughput, and why.

Query:

```
SELECT
    ds AS 'date',
    ROUND(COUNT(event) / SUM(time_spent), 3) AS daily_throughtput,
    (SELECT
            ROUND(COUNT(event) / SUM(time_spent), 3)
        FROM
            job_data) AS 7day_rolling_avg
FROM
    job_data
GROUP BY ds
ORDER BY ds;
```

Result Table:

	date	daily_throughtput	7day_rolling_avg
▶	2020-11-25	0.022	0.027
	2020-11-26	0.018	0.027
	2020-11-27	0.010	0.027
	2020-11-28	0.061	0.027
	2020-11-29	0.050	0.027
	2020-11-30	0.050	0.027

Insight: the above table shows 7day rolling average of throughput.

I prefer the 7day rolling average over the daily metric. The reason is the daily measurements are subject to fluctuations due to external factors outside the company's control. These causes may generate abrupt surges that could mislead the organization and lead to potentially dangerous actions. Therefore, since the 7day rolling average is less affected by the aforementioned factors and can provide a realistic sense of the data.so, it is the best option for obtaining an accurate understanding of the throughput data.

C. Language Share Analysis:

Task: write an SQL query to calculate percentage share of each language over the last 30 days.

Query:

```
SELECT
    language,
    SUM(time_spent) / (SELECT
            SUM(time_spent)
        FROM
            job_data) * 100 AS percentage_share
FROM
    job_data
GROUP BY language
ORDER BY 2 DESC;
```

Result Table:

language	percentage_share
french	34.8993
persian	32.8859
italin	15.1007
arabic	8.3893
english	5.0336
hindi	3.6913

Insight: the percentage share of language during the previous 30 days is displayed in the table above.

Additionally, it demonstrates that the Hindi language has the lowest percentage share of 3.6913 and the French language has the largest share of 34.8993.

D. Duplicate Rows Detection:

Task: write an SQL query to display duplicate rows from the job_data table.

Query:

```
SELECT
    *
FROM
    job_data
WHERE
    job_id IN (SELECT
            job_id
        FROM
            job_data
        GROUP BY job_id
        HAVING COUNT(*) > 1)
ORDER BY ds;
```

Result Table:

ds	job_id	actor_id	event	language	time_spent	org
2020-11-26	23	1004	skip	persian	56	A
2020-11-28	23	1005	transfer	persian	22	D
2020-11-29	23	1003	decision	persian	20	C

Insight: three duplicate rows with actor-id's1004,1005, and 1003 in the job_data table are seen in the above table.

Case study 2 - Investigating Metric Spike:

A. Weekly User Engagement:

Task – write an SQL query to calculate the weekly user engagement.

Query:

```
SELECT
    EXTRACT(WEEK FROM occured_at) AS week_number,
    COUNT(DISTINCT user_id) as activeness_users
FROM
    `events`
GROUP BY week_number;
```

Result Table:

week_number	activeness_users
17	663
18	1068
19	1113
20	1154
21	1121
22	1186
23	1232
24	1275
25	1264
26	1302
27	1372
28	1365
29	1376
30	1467
31	1299
32	1225
33	1225
34	1204
35	104

Insight: user engagement is displayed weekly in the above table.

At week 35, there are 104 fewer active users engaged.

At week 30, there are 1467 active users, which is the highest user engagement.

B. User Growth Analysis:

Task – write an SQL query to calculate the user growth for the product.

Query:

```
select week_num,year_num,active_users,sum(active_users)
over(order by week_num,year_num) as cumulative_users_growth
from
(
select  extract(week from created_at)as week_num,
extract(year from created_at)as year_num,
count(distinct user_id)as active_users from users
WHERE state ='active'
group by week_num,year_num
ORDER BY week_num,year_num
)s;
```

Result Table:

week_num	year_num	active_users	cumulative_users_growth
0	2013	23	23
1	2013	30	53
2	2013	48	101
3	2013	36	137
4	2013	30	167
5	2013	48	215
6	2013	38	253
7	2013	42	295
8	2013	34	329
9	2013	43	372
10	2013	32	404
11	2013	31	435
12	2013	33	468
13	2013	39	507
14	2013	35	542
15	2013	43	585
16	2013	46	631
17	2013	49	680
18	2013	44	724
19	2013	57	781
20	2013	39	820
21	2013	49	869
22	2013	54	923
23	2013	50	973
24	2013	45	1018
25	2013	57	1075
26	2013	56	1131
27	2013	52	1183
28	2013	72	1255
29	2013	67	1322
30	2013	67	1389
31	2013	67	1456
32	2013	71	1527
33	2013	73	1600
34	2013	78	1678
35	2013	63	1741
36	2013	72	1813
37	2013	85	1898
38	2013	90	1988
39	2013	84	2072
40	2013	87	2159
41	2013	73	2232
42	2013	99	2331
43	2013	89	2420
44	2013	96	2516
45	2013	91	2607
46	2013	88	2695

	46	2013	88	2695
	47	2013	102	2797
	48	2013	97	2894
	49	2013	116	3010
	50	2013	124	3134
	51	2013	102	3236
	52	2013	47	3283
	0	2014	83	3366
	1	2014	126	3492
	2	2014	109	3601
	3	2014	113	3714
	4	2014	130	3844
	5	2014	133	3977
	6	2014	135	4112
	7	2014	125	4237
	8	2014	129	4366
	9	2014	133	4499
	10	2014	154	4653
	11	2014	130	4783
	12	2014	148	4931
	13	2014	167	5098
	14	2014	162	5260
	15	2014	164	5424
	16	2014	179	5603

	13	2014	167	5098
	14	2014	162	5260
	15	2014	164	5424
	16	2014	179	5603
	17	2014	170	5773
	18	2014	163	5936
	19	2014	185	6121
	20	2014	176	6297
	21	2014	183	6480
	22	2014	196	6676
	23	2014	196	6872
	24	2014	229	7101
	25	2014	207	7308
	26	2014	201	7509
	27	2014	222	7731
	28	2014	215	7946
	29	2014	221	8167
	30	2014	238	8405
	31	2014	193	8598
	32	2014	245	8843
	33	2014	261	9104
	34	2014	259	9363
	35	2014	18	9381

Insight: the product's user growth is displayed in the above table.

With 124 active users as of the 50th week of 2013-has the best user growth for the product. And 18 users were the least active on the 35th week of 2014.

C. Weekly Retention Analysis:

Task- Write an SQL query to calculate the weekly retention of users based on their sign-up cohort.

Query:

```
SELECT first AS 'week_number',
    SUM(CASE WHEN week_number = 0 THEN 1 ELSE 0 END) AS 'Week 0',
    SUM(CASE WHEN week_number = 1 THEN 1 ELSE 0 END) AS 'Week 1',
    SUM(CASE WHEN week_number = 2 THEN 1 ELSE 0 END) AS 'Week 2',
    SUM(CASE WHEN week_number = 3 THEN 1 ELSE 0 END) AS 'Week 3',
    SUM(CASE WHEN week_number = 4 THEN 1 ELSE 0 END) AS 'Week 4',
    SUM(CASE WHEN week_number = 5 THEN 1 ELSE 0 END) AS 'Week 5',
    SUM(CASE WHEN week_number = 6 THEN 1 ELSE 0 END) AS 'Week 6',
    SUM(CASE WHEN week_number = 7 THEN 1 ELSE 0 END) AS 'Week 7',
    SUM(CASE WHEN week_number = 8 THEN 1 ELSE 0 END) AS 'Week 8',
    SUM(CASE WHEN week_number = 9 THEN 1 ELSE 0 END) AS 'Week 9',
    SUM(CASE WHEN week_number = 10 THEN 1 ELSE 0 END) AS 'Week 10',
    SUM(CASE WHEN week_number = 11 THEN 1 ELSE 0 END) AS 'Week 11',
    SUM(CASE WHEN week_number = 12 THEN 1 ELSE 0 END) AS 'Week 12',
    SUM(CASE WHEN week_number = 13 THEN 1 ELSE 0 END) AS 'Week 13',
    SUM(CASE WHEN week_number = 14 THEN 1 ELSE 0 END) AS 'Week 14',
    SUM(CASE WHEN week_number = 15 THEN 1 ELSE 0 END) AS 'Week 15',
    SUM(CASE WHEN week_number = 16 THEN 1 ELSE 0 END) AS 'Week 16',
    SUM(CASE WHEN week_number = 17 THEN 1 ELSE 0 END) AS 'Week 17',
    SUM(CASE WHEN week_number = 18 THEN 1 ELSE 0 END) AS 'Week 18'
```

```
FROM
(SELECT
        m.user_id,
            m.signup_week,
            n.first,
            m.signup_week - n.first AS week_number
    FROM
        (SELECT
        user_id, EXTRACT(WEEK FROM occured_at) AS signup_week
    FROM
        events
    GROUP BY 1 , 2) m, (SELECT
        user_id, MIN(EXTRACT(WEEK FROM occured_at)) AS first
    FROM
        events
    GROUP BY 1) n
    WHERE
        m.user_id = n.user_id) sub
GROUP BY first
ORDER BY first;
```

Result Table:

week_number	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11
17	663	472	324	251	205	187	167	146	145	145	136	131
18	596	362	261	203	168	147	144	127	113	122	106	118
19	427	284	173	153	114	95	91	81	95	82	68	65
20	358	223	165	121	91	72	63	67	63	65	67	41
21	317	187	131	91	74	63	75	72	58	48	45	39
22	326	224	150	107	87	73	63	60	55	48	41	39
23	328	219	138	101	90	79	69	61	54	47	35	30
24	339	205	143	102	81	63	65	61	38	39	29	0
25	305	218	139	101	75	63	50	46	38	35	2	0
26	288	181	114	83	73	55	47	43	29	0	0	0
27	292	199	121	106	68	53	40	36	1	0	0	0
28	274	194	114	69	46	30	28	3	0	0	0	0
29	270	186	102	65	47	40	1	0	0	0	0	0
30	294	202	121	78	53	3	0	0	0	0	0	0
31	215	145	76	57	1	0	0	0	0	0	0	0
32	267	188	94	8	0	0	0	0	0	0	0	0
33	286	202	9	0	0	0	0	0	0	0	0	0
34	279	44	0	0	0	0	0	0	0	0	0	0
35	18	0	0	0	0	0	0	0	0	0	0	0

Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18
132	143	116	91	82	77	5
127	110	97	85	67	4	0
63	42	51	49	2	0	0
40	33	40	0	0	0	0
35	28	2	0	0	0	0
31	1	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0
0	0	0	0	0	0	0

Insight: based on their sign-up cohort, the weekly retention of users is displayed in the above table from first week to last.

In comparison to previous remaining week numbers, there were more retained users on the seventeenth week number.

D. Weekly Engagement Per Device:

Task: Write an SQL query to calculate the weekly engagement per device.

Query:

```sql
SELECT
    EXTRACT(WEEK FROM occured_at) AS week,
    EXTRACT(YEAR FROM occured_at) AS year,
    device,
    COUNT(DISTINCT user_id) AS weekly_engagement_device
FROM
    events
WHERE
    event_type = 'engagement'
GROUP BY week , year , device
ORDER BY week , year , device;
```

Result Table:

week	year	device	weekly_engagement_device
17	2014	acer aspire desktop	9
17	2014	acer aspire notebook	20
17	2014	amazon fire phone	4
17	2014	asus chromebook	21
17	2014	dell inspiron desktop	18
17	2014	dell inspiron notebook	46
17	2014	hp pavilion desktop	14
17	2014	htc one	16
17	2014	ipad air	27
17	2014	ipad mini	19
17	2014	iphone 4s	21
17	2014	iphone 5	65
17	2014	iphone 5s	42
17	2014	kindle fire	6
17	2014	lenovo thinkpad	86
17	2014	mac mini	6
17	2014	macbook air	54
17	2014	macbook pro	143
17	2014	nexus 10	16
17	2014	nexus 5	40
17	2014	nexus 7	18
17	2014	nokia lumia 635	17
17	2014	samsumg galaxy tablet	8
17	2014	samsung galaxy note	7
17	2014	samsung galaxy s4	52
17	2014	windows surface	10

	17	2014	windows surface	10
	18	2014	acer aspire desktop	26
	18	2014	acer aspire notebook	33
	18	2014	amazon fire phone	9
	18	2014	asus chromebook	42
	18	2014	dell inspiron desktop	58
	18	2014	dell inspiron notebook	77
	18	2014	hp pavilion desktop	37
	18	2014	htc one	19
	18	2014	ipad air	52
	18	2014	ipad mini	30
	18	2014	iphone 4s	46
	18	2014	iphone 5	113
	18	2014	iphone 5s	73
	18	2014	kindle fire	27
	18	2014	lenovo thinkpad	153
	18	2014	mac mini	13
	18	2014	macbook air	121
	18	2014	macbook pro	252
	18	2014	nexus 10	30
	18	2014	nexus 5	73
	18	2014	nexus 7	30
	18	2014	nokia lumia 635	33
	18	2014	samsumg galaxy tablet	11
	18	2014	samsung galaxy note	15
	18	2014	samsung galaxy s4	82

	18	2014	samsung galaxy s4	82
	18	2014	windows surface	10
	19	2014	acer aspire desktop	23
	19	2014	acer aspire notebook	41
	19	2014	amazon fire phone	12
	19	2014	asus chromebook	27
	19	2014	dell inspiron desktop	36
	19	2014	dell inspiron notebook	83
	19	2014	hp pavilion desktop	40
	19	2014	htc one	30
	19	2014	ipad air	55
	19	2014	ipad mini	36
	19	2014	iphone 4s	44
	19	2014	iphone 5	115
	19	2014	iphone 5s	79
	19	2014	kindle fire	21
	19	2014	lenovo thinkpad	178
	19	2014	mac mini	18
	19	2014	macbook air	112
	19	2014	macbook pro	266
	19	2014	nexus 10	25
	19	2014	nexus 5	87
	19	2014	nexus 7	41
	19	2014	nokia lumia 635	23
	19	2014	samsumg galaxy tablet	6
	19	2014	samsung galaxy note	11

	19	2014	samsung galaxy note	11
	19	2014	samsung galaxy s4	91
	19	2014	windows surface	16
	20	2014	acer aspire desktop	23
	20	2014	acer aspire notebook	40
	20	2014	amazon fire phone	11
	20	2014	asus chromebook	41
	20	2014	dell inspiron desktop	52
	20	2014	dell inspiron notebook	84
	20	2014	hp pavilion desktop	30
	20	2014	htc one	29
	20	2014	ipad air	59
	20	2014	ipad mini	32
	20	2014	iphone 4s	55
	20	2014	iphone 5	125
	20	2014	iphone 5s	79
	20	2014	kindle fire	23
	20	2014	lenovo thinkpad	173
	20	2014	mac mini	26
	20	2014	macbook air	119
	20	2014	macbook pro	256
	20	2014	nexus 10	22
	20	2014	nexus 5	103
	20	2014	nexus 7	32
	20	2014	nokia lumia 635	22
	20	2014	samsumg galaxy tablet	9

	29	2014	kindle fire	37
	29	2014	lenovo thinkpad	209
	29	2014	mac mini	31
	29	2014	macbook air	148
	29	2014	macbook pro	295
	29	2014	nexus 10	25
	29	2014	nexus 5	77
	29	2014	nexus 7	45
	29	2014	nokia lumia 635	43
	29	2014	samsumg galaxy tablet	13
	29	2014	samsung galaxy note	16
	29	2014	samsung galaxy s4	samsung galax
	29	2014	windows surface	28
	30	2014	acer aspire desktop	33
	30	2014	acer aspire notebook	60
	30	2014	amazon fire phone	12
	30	2014	asus chromebook	56
	30	2014	dell inspiron desktop	54
	30	2014	dell inspiron notebook	127
	30	2014	hp pavilion desktop	42
	30	2014	htc one	31
	30	2014	ipad air	70
	30	2014	ipad mini	35
	30	2014	iphone 4s	65
	30	2014	iphone 5	152
	30	2014	iphone 5s	103

	21	2014	nokia lumia 635	25
	21	2014	samsumg galaxy tablet	6
	21	2014	samsung galaxy note	20
	21	2014	samsung galaxy s4	84
	21	2014	windows surface	17
	22	2014	acer aspire desktop	25
	22	2014	acer aspire notebook	41
	22	2014	amazon fire phone	5
	22	2014	asus chromebook	52
	22	2014	dell inspiron desktop	52
	22	2014	dell inspiron notebook	92
	22	2014	hp pavilion desktop	38
	22	2014	htc one	24
	22	2014	ipad air	58
	22	2014	ipad mini	34
	22	2014	iphone 4s	45
	22	2014	iphone 5	125
	22	2014	iphone 5s	71
	22	2014	kindle fire	21
	22	2014	lenovo thinkpad	176
	22	2014	mac mini	25
	22	2014	macbook air	145
	22	2014	macbook pro	251
	22	2014	nexus 10	27
	22	2014	nexus 5	96
	22	2014	nexus 7	45

	22	2014	nexus 7	45
	22	2014	nokia lumia 635	25
	22	2014	samsumg galaxy tablet	10
	22	2014	samsung galaxy note	19
	22	2014	samsung galaxy s4	105
	22	2014	windows surface	15
	23	2014	acer aspire desktop	22
	23	2014	acer aspire notebook	43
	23	2014	amazon fire phone	16
	23	2014	asus chromebook	49
	23	2014	dell inspiron desktop	53
	23	2014	dell inspiron notebook	103
	23	2014	hp pavilion desktop	54
	23	2014	htc one	20
	23	2014	ipad air	41
	23	2014	ipad mini	33
	23	2014	iphone 4s	53
	23	2014	iphone 5	152
	23	2014	iphone 5s	79
	23	2014	kindle fire	25
	23	2014	lenovo thinkpad	176
	23	2014	mac mini	18
	23	2014	macbook air	124
	23	2014	macbook pro	266
	23	2014	nexus 10	45
	23	2014	nexus 5	88

	23	2014	nexus 5	88
	23	2014	nexus 7	36
	23	2014	nokia lumia 635	31
	23	2014	samsumg galaxy tablet	14
	23	2014	samsung galaxy note	14
	23	2014	samsung galaxy s4	99
	23	2014	windows surface	14
	24	2014	acer aspire desktop	24
	24	2014	acer aspire notebook	40
	24	2014	amazon fire phone	11
	24	2014	asus chromebook	43
	24	2014	dell inspiron desktop	59
	24	2014	dell inspiron notebook	99
	24	2014	hp pavilion desktop	56
	24	2014	htc one	20
	24	2014	ipad air	57
	24	2014	ipad mini	39
	24	2014	iphone 4s	53
	24	2014	iphone 5	142
	24	2014	iphone 5s	79
	24	2014	kindle fire	25
	24	2014	lenovo thinkpad	165
	24	2014	mac mini	29
	24	2014	macbook air	152
	24	2014	macbook pro	255
	24	2014	nexus 10	38

	24	2014	nexus 10	38
	24	2014	nexus 5	87
	24	2014	nexus 7	49
	24	2014	nokia lumia 635	35
	24	2014	samsumg galaxy tablet	11
	24	2014	samsung galaxy note	20
	24	2014	samsung galaxy s4	101
	24	2014	windows surface	22
	25	2014	acer aspire desktop	28
	25	2014	acer aspire notebook	47
	25	2014	amazon fire phone	13
	25	2014	asus chromebook	38
	25	2014	dell inspiron desktop	52
	25	2014	dell inspiron notebook	105
	25	2014	hp pavilion desktop	52
	25	2014	htc one	21
	25	2014	ipad air	57
	25	2014	ipad mini	30
	25	2014	iphone 4s	40
	25	2014	iphone 5	137
	25	2014	iphone 5s	78
	25	2014	kindle fire	24
	25	2014	lenovo thinkpad	197
	25	2014	mac mini	21
	25	2014	macbook air	121
	25	2014	macbook pro	275

	25	2014	macbook pro	275
	25	2014	nexus 10	29
	25	2014	nexus 5	89
	25	2014	nexus 7	51
	25	2014	nokia lumia 635	37
	25	2014	samsumg galaxy tablet	12
	25	2014	samsung galaxy note	14
	25	2014	samsung galaxy s4	99
	25	2014	windows surface	22
	26	2014	acer aspire desktop	29
	26	2014	acer aspire notebook	35
	26	2014	amazon fire phone	13
	26	2014	asus chromebook	49
	26	2014	dell inspiron desktop	60
	26	2014	dell inspiron notebook	89
	26	2014	hp pavilion desktop	46
	26	2014	htc one	23
	26	2014	ipad air	56
	26	2014	ipad mini	43
	26	2014	iphone 4s	50
	26	2014	iphone 5	152
	26	2014	iphone 5s	94
	26	2014	kindle fire	26
	26	2014	lenovo thinkpad	192
	26	2014	mac mini	11
	26	2014	macbook air	134

	26	2014	macbook air	134
	26	2014	macbook pro	269
	26	2014	nexus 10	29
	26	2014	nexus 5	87
	26	2014	nexus 7	46
	26	2014	nokia lumia 635	42
	26	2014	samsumg galaxy tablet	12
	26	2014	samsung galaxy note	9
	26	2014	samsung galaxy s4	112
	26	2014	windows surface	21
	27	2014	acer aspire desktop	29
	27	2014	acer aspire notebook	49
	27	2014	amazon fire phone	10
	27	2014	asus chromebook	52
	27	2014	dell inspiron desktop	53
	27	2014	dell inspiron notebook	89
	27	2014	hp pavilion desktop	56
	27	2014	htc one	27
	27	2014	ipad air	55
	27	2014	ipad mini	35
	27	2014	iphone 4s	67
	27	2014	iphone 5	163
	27	2014	iphone 5s	83
	27	2014	kindle fire	25
	27	2014	lenovo thinkpad	202
	27	2014	mac mini	15

	27	2014	mac mini	15
	27	2014	macbook air	142
	27	2014	macbook pro	302
	27	2014	nexus 10	37
	27	2014	nexus 5	84
	27	2014	nexus 7	40
	27	2014	nokia lumia 635	31
	27	2014	samsumg galaxy tablet	15
	27	2014	samsung galaxy note	15
	27	2014	samsung galaxy s4	116
	27	2014	windows surface	33
	28	2014	acer aspire desktop	30
	28	2014	acer aspire notebook	49
	28	2014	amazon fire phone	6
	28	2014	asus chromebook	50
	28	2014	dell inspiron desktop	56
	28	2014	dell inspiron notebook	103
	28	2014	hp pavilion desktop	56
	28	2014	htc one	26
	28	2014	ipad air	54
	28	2014	ipad mini	35
	28	2014	iphone 4s	61
	28	2014	iphone 5	151
	28	2014	iphone 5s	93
	28	2014	kindle fire	31
	28	2014	lenovo thinkpad	220

	28	2014	lenovo thinkpad	220
	28	2014	mac mini	28
	28	2014	macbook air	148
	28	2014	macbook pro	295
	28	2014	nexus 10	26
	28	2014	nexus 5	85
	28	2014	nexus 7	39
	28	2014	nokia lumia 635	35
	28	2014	samsumg galaxy tablet	9
	28	2014	samsung galaxy note	10
	28	2014	samsung galaxy s4	122
	28	2014	windows surface	33
	29	2014	acer aspire desktop	28
	29	2014	acer aspire notebook	53
	29	2014	amazon fire phone	12
	29	2014	asus chromebook	49
	29	2014	dell inspiron desktop	54
	29	2014	dell inspiron notebook	113
	29	2014	hp pavilion desktop	58
	29	2014	htc one	31
	29	2014	ipad air	52
	29	2014	ipad mini	34
	29	2014	iphone 4s	60
	29	2014	iphone 5	144
	29	2014	iphone 5s	90
	29	2014	kindle fire	37

Insight: each device's weekly involvement is displayed in the above table.

On the 27th week of 2014, the MacBook pro had the greatest engagement rate with 302 users.

E. Email Engagement Analysis:

TASK: Write an SQL query to calculate the email engagement metrics.

Query:

```sql
SELECT
    100 * SUM(CASE
        WHEN email_category = 'email_open' THEN 1
        ELSE 0
    END) / SUM(CASE
        WHEN email_category = 'email_sent' THEN 1
        ELSE 0
    END) AS email_open_rate,
    100 * SUM(CASE
        WHEN email_category = 'email_click' THEN 1
        ELSE 0
    END) / SUM(CASE
        WHEN email_category = 'email_sent' THEN 1
        ELSE 0
    END) AS email_click_rate
FROM (SELECT *,
            CASE
                WHEN action IN ('sent_weekly_digest' , 'sent_reengagement_email') THEN 'email_sent'
                WHEN action IN ('email_open') THEN 'email_open'
                WHEN action IN ('email_clickthrough') THEN 'email_click'
            END AS email_category
    FROM   email_events) AS t;
```

Result Table:

	email_open_rate	email_click_rate
▶	33.5834	14.7899

Insight: email engagement metrics are included in the resultant table.

In this case, the email open rate is 33.5834% and the email click rate is 14.7899%.

RESULT:

Using my extensive SQL skills, I was able to extract valuable information from two databases. It is possible to enhance business operations and comprehend abrupt shifts in important metrics by using result tables.

This project has improved my understanding of the value of operational analytics. This effort has helped me to comprehend how the business employ metric spike

as a weapon of mass destruction. Management can use insights to create data-driven decision by taking a proactive and educated approach.