Project 3: Operation Analytics and Investigating Metric Spike

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Project Description

The goal of this project is to acquire data and extract insights from a given dataset to assist in deriving efficient operational strategies for a company. The objective of this project is to offer insights into two distinct operational scenarios and metric analytics.

Approach

In this project, the analysis involves delving into two distinct sets of data tables to extract insightful answers to operational inquiries pertinent to a company. According to the provided dataset, our initial step involves studying and cleaning the tables in Microsoft Excel. The database is then created and established in MySQL Workbench.

The first case study revolves around scrutinizing job data to enhance operational efficiency. This project entails identifying diverse metrics such as throughput, productivity, etc., and offering recommendations to enhance overall efficiency.

The second case study delves into product analysis to extract insights and showcase key performance indicators. This entails scrutinizing data to detect patterns and trends like user growth over time, user engagement, cohort analysis for retention, and email metrics.

Tech-Stack Used

- Microsoft Excel
- MySQL Workbench 8.0

Resources used:

- MySQL Workbench 8.0 to run SQL queries
- Datasets provided Case Study 1 (Job Data), Case Study 2 (Investigating metric spike)

In Case Study 1, MySQL was the main tool for analysis. I used MySQL to extract data from the "job_data" table, calculating the number of jobs reviewed per hour per day for November 2020 and the 7-day rolling average of throughput. Additionally, MySQL helped determine the percentage share of each language in the last 30 days and identify duplicate rows. This efficient querying enabled meaningful insights from the job data.

In Case Study 2, MySQL was solely used for data analysis. It interacted with tables like "users," "events," and "email_events," enabling data retrieval, calculations, and insight generation. With SQL's robust querying, user engagement, growth, retention, and email metrics were effectively examined, making it the primary tool for deriving insights.

Case Study 1: Job Data Analysis

A. **Jobs Reviewed Over Time:**
   - Objective: Calculate the number of jobs reviewed per hour for each day in November 2020.
   - Your Task: Write an SQL query to calculate the number of jobs reviewed per hour for each day in November 2020.

```sql
/*Jobs Reviewed Over Time:
Objective: Calculate the number of jobs reviewed per hour for each day in November 2020.
Your Task: Write an SQL query to calculate the number of jobs reviewed per hour for each
day in November 2020.*/

SELECT
    ds AS date,
    COUNT(job_id) AS number_of_jobs,
    (SUM(time_spent) / 3600) AS time_spent_per_hour
FROM
    job_data
WHERE
    ds BETWEEN '1-11-2020' AND '30-11-2020'
GROUP BY ds
ORDER BY ds;
```

Result Grid | Filter Rows:

date	number_of_jobs	time_spent_per_hour
11/25/2020	1	0.0125
11/26/2020	1	0.0156
11/27/2020	1	0.0289
11/28/2020	2	0.0092
11/29/2020	1	0.0056
11/30/2020	2	0.0111

Insights - The number of jobs assessed hourly each day in November 2020 exhibited fluctuations, reflecting varying levels of reviewing activity over the course of the month.

B. **Throughput Analysis:**
   - Objective: Calculate the 7-day rolling average of throughput (number of events per second).
   - Your 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.

```
Limit to 1000 rows
82  /*Throughput Analysis:
83  Objective: Calculate the 7-day rolling average of throughput (number of events per second).
84  Your Task: Write an SQL query to calculate the 7-day rolling average of throughput.
85  Additionally, explain whether you prefer using the daily metric or the 7-day rolling
86  average for throughput, and why.*/
87
88
89  # weekly_throughput
90  select round((count(event)/sum(time_spent)),2) as weekly_throughput
91  from job_data;
92  # daily_throughput
93  select ds as date, round((count(event)/sum(time_spent)),2) as daily_metric
94  from job_data group by date;
```

Result Grid

weekly_throughput
0.03

Result Grid Filter Ro

date	daily_metric
11/30/2020	0.05
11/29/2020	0.05
11/28/2020	0.06
11/27/2020	0.01
11/26/2020	0.02
11/25/2020	0.02

Insights – Preference should be for the weekly throughput as the daily metric shows the evidence of a subtle downward trend.

C. **Language Share Analysis:**
   - Objective: Calculate the percentage share of each language in the last 30 days.
   - Your Task: Write an SQL query to calculate the percentage share of each language over the last 30 days.

```
93
94  /*Language Share Analysis:
95  Objective: Calculate the percentage share of each language in the last 30 days.
96  Your Task: Write an SQL query to calculate the percentage share of each language over
97  the last 30 days.*/
98
99  SELECT
100     language,
101     count(language) as total_language,
102     (COUNT(language)*100)/SUM(count(language)) over() as perc_share
103 FROM
104     job_data
105 GROUP BY language
106 ORDER BY language DESC;
107
108
109
```

Result Grid | Filter Rows:

language	total_language	perc_share
Persian	3	37.5000
Italian	1	12.5000
Hindi	1	12.5000
French	1	12.5000
English	1	12.5000
Arabic	1	12.5000

Insight : The percentage share of Persian language is the highest at 37.5%

D. **Duplicate Rows Detection:**
   - Objective: Identify duplicate rows in the data.
   - Your Task: Write an SQL query to display duplicate rows from the job_data table.

```sql
/*Duplicate Rows Detection:
Objective: Identify duplicate rows in the data.
Your Task: Write an SQL query to display duplicate rows from the job_data table.*/

SELECT
    actor_id, COUNT(actor_id) AS total_count
FROM
    job_data
GROUP BY actor_id
HAVING total_count > 1;
```

Result Grid | Filter

actor_id	total_count
1003	2

Insight : There are a total of 2 duplicate rows with the actor_id - 1003.

Case Study 2: Investigating Metric Spike

A. **Weekly User Engagement:**
   - Objective: Measure the activeness of users on a weekly basis.
   - Your Task: Write an SQL query to calculate the weekly user engagement.

```sql
/*Objective: Measure the activeness of users on a weekly basis.
Your Task: Write an SQL query to calculate the weekly user engagement.*/

SELECT
    COUNT(DISTINCT user_id) AS active_users,
    WEEK(occurred_at) AS week_number
FROM
    events
WHERE
    event_type = 'engagement'
GROUP BY week_number
ORDER BY active_users DESC;
```

Result Grid | Filter Rows:

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

Insight : The highest user engagement happened on week 30 with 1467 active users. Although the user engagement increased upwards from week 17, it dropped after week 30.

B. **User Growth Analysis:**

- Objective: Analyse the growth of users over time for a product.
- Your Task: Write an SQL query to calculate the user growth for the product.

```
Limit to 1000 rows
121  /*2. User Growth Analysis:
122  Objective: Analyze the growth of users over time for a product.
123  Your Task: Write an SQL query to calculate the user growth for the product.*/
124
125
126
127  SELECT year, week_num, num_users, SUM(num_users) OVER (ORDER BY year, week_num) AS user_growth
128  FROM (
129  select
130  year(created_at) as year,
131  week(created_at) as week_num,
132  count(DISTINCT user_id) as num_users
133  from users
134  group by year, week_num
135  order by year, week_num) as A;
```

year	week_num	num_users	user_growth
2013	0	23	23
2013	1	30	53
2013	2	48	101
2013	3	36	137
2013	4	30	167
2013	5	48	215
2013	6	38	253
2013	7	42	295
2013	8	34	329
2013	9	43	372
2013	10	32	404
2013	11	31	435
2013	12	33	468
2013	13	39	507
2013	14	35	542
2013	15	43	585
2013	16	46	631
2013	17	49	680
2013	18	44	724
2013	19	57	781
2013	20	39	820
2013	21	49	869
2013	22	54	923
2013	23	50	973
2013	24	45	1018
2013	25	57	1075
2013	26	56	1131
2013	27	52	1183
2013	28	72	1255
2013	29	67	1322
2013	30	67	1389
2013	31	67	1456
2013	32	71	1527
2013	33	73	1600
2013	34	78	1678
2013	35	63	1741
2013	36	72	1813
2013	37	85	1898
2013	38	90	1988
2013	39	84	2072
2013	40	87	2159
2013	41	73	2232
2013	42	99	2331
2013	43	89	2420
2013	44	96	2516
2013	45	91	2607
2013	46	88	2695
2013	47	102	2797
2013	48	97	2894
2013	49	116	3010
2013	50	124	3134
2013	51	102	3236
2013	52	47	3283
2014	0	83	3366
2014	1	126	3492
2014	2	109	3601
2014	3	113	3714
2014	4	130	3844
2014	5	133	3977
2014	6	135	4112
2014	7	125	4237
2014	8	129	4366
2014	9	133	4499
2014	10	154	4653
2014	11	130	4783
2014	12	148	4931
2014	13	167	5098
2014	14	162	5260
2014	15	164	5424
2014	16	179	5603
2014	17	170	5773
2014	18	163	5936
2014	19	185	6121
2014	20	176	6297
2014	21	183	6480
2014	22	196	6676
2014	23	196	6872
2014	24	229	7101
2014	25	207	7308
2014	26	201	7509
2014	27	222	7731
2014	28	215	7946
2014	29	221	8167
2014	30	238	8405
2014	31	193	8598
2014	32	245	8843
2014	33	261	9104
2014	34	259	9363
2014	35	18	9381

Insight : There is a tremendous increase in user growth from 23 in the beginning of 2013 to 9381 at the end of year 2014.

C. **Weekly Retention Analysis:**

- Objective: Analyse the retention of users on a weekly basis after signing up for a product.
- Your Task: Write an SQL query to calculate the weekly retention of users based on their sign-up cohort.

```sql
/*3. Weekly Retention Analysis:
Objective: Analyze the retention of users on a weekly basis after signing up for a product.
Your Task: Write an SQL query to calculate the weekly retention of users based on their sign-up cohort.*/

SELECT
    COUNT(user_id),
    SUM(CASE WHEN retention_week = 1 THEN 1 ELSE 0 END) AS per_week_retention
FROM
    (SELECT
        a.user_id,
            a.sign_up_week,
            b.engagement_week,
            b.engagement_week - a.sign_up_week AS retention_week
    FROM
            (SELECT DISTINCT user_id, EXTRACT(WEEK FROM occurred_at) AS sign_up_week
             FROM events
             WHERE event_type = 'signup_flow' AND event_name = 'complete_signup'
             AND EXTRACT(WEEK FROM occurred_at) = 18)a
             LEFT JOIN (SELECT DISTINCT user_id, EXTRACT(WEEK FROM occurred_at) AS engagement_week
                        FROM events
                        WHERE event_type = 'engagement')b
                        ON a.user_id = b.user_id)c
GROUP BY user_id
ORDER BY user_id;
```

Result Grid | Filter Rows:

COUNT(user_id)	per_week_retention
2	0
1	0
1	0
8	1
8	0
1	0
6	1
6	1
3	0
3	1
4	1
7	1
3	1
2	1
7	1
3	1
5	0
2	1
1	0
3	1
4	1
1	0
6	0
1	0
2	1
1	0
5	1
6	1
3	0
1	0
1	0
7	1
1	0
1	0
1	0
5	1
1	0
1	0
1	0
4	1
1	0
1	0
1	0
6	1
14	1
2	0
7	0
3	1
2	0
3	1
5	1
3	1
9	1
3	1
1	0
5	1
2	1
4	1
5	1
4	1
1	0
3	1
2	1
9	1
6	1
1	0
3	1
2	1
2	1
9	1

COUNT(user_id)	per_week_retention
4	1
2	1
3	1
1	0
1	0
6	1
2	1
2	0
3	1
4	1
1	0
1	0
4	0
7	1
2	1
2	1
3	1
4	1
4	1
2	1
5	1
4	1
4	1
4	1
1	0
8	1
5	1
6	1
4	0
13	1
3	1
3	1
4	1
6	1
1	0
3	1
1	0
3	1
6	1
2	1
4	1
3	1
2	1
6	1
3	1
5	1
3	1
2	1
1	0
2	1
13	1
2	1
5	1
3	1
3	1
9	1
3	1
7	1
2	1
3	1
7	1
2	1
1	0
1	0
4	1
8	1
2	1
7	1
2	0
9	1
3	1
12	1
5	1
6	1
5	1
2	1
7	1
4	1
4	1
2	1
1	0
2	1

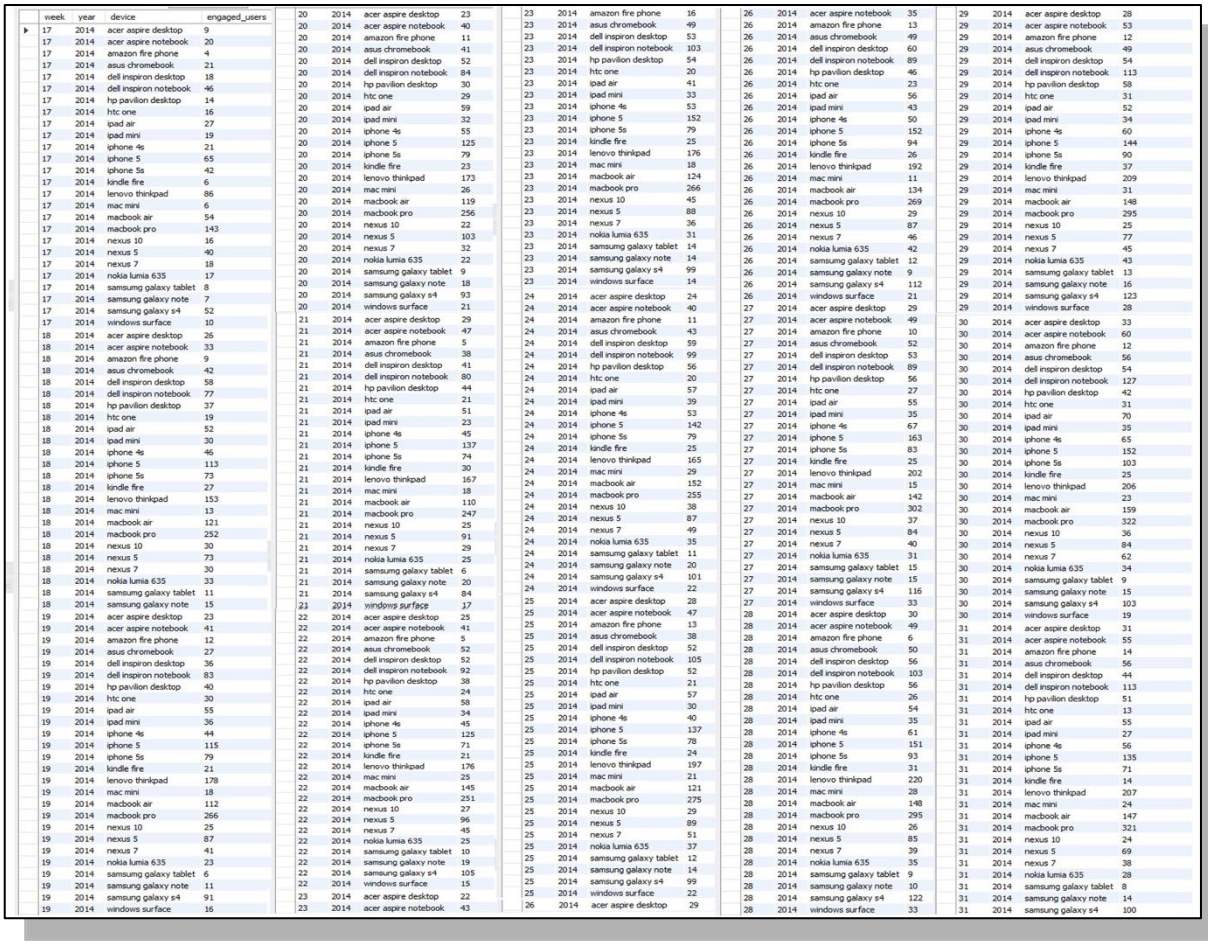
Insight : After the sign-up, the weekly retention varies over time with the highest being 14 users at one time.

D. **Weekly Engagement Per Device:**

- Objective: Measure the activeness of users on a weekly basis per device.
- Your Task: Write an SQL query to calculate the weekly engagement per device.

```sql
/*4. Weekly Engagement Per Device:
Objective: Measure the activeness of users on a weekly basis per device.
Your Task: Write an SQL query to calculate the weekly engagement per device.*/


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



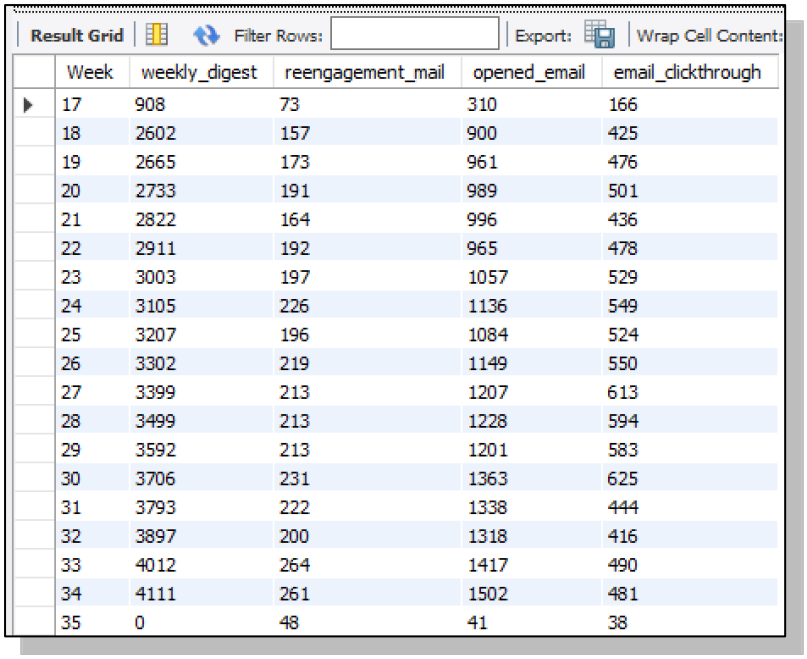
week	year	device	engaged_users
17	2014	acer aspire desktop	9
17	2014	acer aspire notebook	20
17	2014	amazon fire phone	4
17	2014	asus chromebook	21
17	2014	dell inspiron desktop	18
17	2014	dell inspiron notebook	46
17	2014	hp pavilion desktop	14
17	2014	htc one	16
17	2014	ipad air	27
17	2014	ipad mini	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	samsung galaxy tablet	8
17	2014	samsung galaxy note	7
17	2014	samsung galaxy s4	52
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	samsung galaxy tablet	11
18	2014	samsung galaxy note	15
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	samsung galaxy tablet	6
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	samsung galaxy tablet	9
20	2014	samsung galaxy note	18
20	2014	samsung galaxy s4	93
20	2014	windows surface	21
21	2014	acer aspire desktop	29
21	2014	acer aspire notebook	47
21	2014	amazon fire phone	5
21	2014	asus chromebook	38
21	2014	dell inspiron desktop	41
21	2014	dell inspiron notebook	80
21	2014	hp pavilion desktop	44
21	2014	htc one	21
21	2014	ipad air	51
21	2014	ipad mini	23
21	2014	iphone 4s	45
21	2014	iphone 5	137
21	2014	iphone 5s	74
21	2014	kindle fire	30
21	2014	lenovo thinkpad	167
21	2014	mac mini	18
21	2014	macbook air	110
21	2014	macbook pro	247
21	2014	nexus 10	25
21	2014	nexus 5	91
21	2014	nexus 7	29
21	2014	nokia lumia 635	25
21	2014	samsung 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	nokia lumia 635	25
22	2014	samsung 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 7	36
23	2014	nokia lumia 635	31
23	2014	samsung 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 5	87
24	2014	nexus 7	49
24	2014	nokia lumia 635	35
24	2014	samsung 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	nexus 10	29
25	2014	nexus 5	89
25	2014	nexus 7	51
25	2014	nokia lumia 635	37
25	2014	samsung 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 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	samsung 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	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	samsung 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	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	samsung 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
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	samsung galaxy tablet	13
29	2014	samsung galaxy note	16
29	2014	samsung galaxy s4	123
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
30	2014	kindle fire	25
30	2014	lenovo thinkpad	206
30	2014	mac mini	23
30	2014	macbook air	159
30	2014	macbook pro	322
30	2014	nexus 10	36
30	2014	nexus 5	84
30	2014	nexus 7	62
30	2014	nokia lumia 635	34
30	2014	samsung galaxy tablet	9
30	2014	samsung galaxy note	15
30	2014	samsung galaxy s4	103
30	2014	windows surface	19
31	2014	acer aspire desktop	31
31	2014	acer aspire notebook	55
31	2014	amazon fire phone	14
31	2014	asus chromebook	56
31	2014	dell inspiron desktop	44
31	2014	dell inspiron notebook	113
31	2014	hp pavilion desktop	51
31	2014	htc one	13
31	2014	ipad air	55
31	2014	ipad mini	27
31	2014	iphone 4s	56
31	2014	iphone 5	135
31	2014	iphone 5s	71
31	2014	kindle fire	14
31	2014	lenovo thinkpad	207
31	2014	mac mini	24
31	2014	macbook air	147
31	2014	macbook pro	321
31	2014	nexus 10	24
31	2014	nexus 5	69
31	2014	nexus 7	38
31	2014	nokia lumia 635	28
31	2014	samsung galaxy tablet	8
31	2014	samsung galaxy note	14
31	2014	samsung galaxy s4	100

31	2014	windows surface	19
32	2014	acer aspire desktop	35
32	2014	acer aspire notebook	55
32	2014	amazon fire phone	12
32	2014	asus chromebook	62
32	2014	dell inspiron desktop	57
32	2014	dell inspiron notebook	104
32	2014	hp pavilion desktop	51
32	2014	htc one	18
32	2014	ipad air	48
32	2014	ipad mini	30
32	2014	iphone 4s	34
32	2014	iphone 5	119
32	2014	iphone 5s	67
32	2014	kindle fire	12
32	2014	lenovo thinkpad	179
32	2014	mac mini	20
32	2014	macbook air	125
32	2014	macbook pro	307
32	2014	nexus 10	30
32	2014	nexus 5	67
32	2014	nexus 7	25
32	2014	nokia lumia 635	28
32	2014	samsumg galaxy tablet	6
32	2014	samsung galaxy note	12
32	2014	samsung galaxy s4	82
32	2014	windows surface	10
33	2014	acer aspire desktop	39
33	2014	acer aspire notebook	46
33	2014	amazon fire phone	14
33	2014	asus chromebook	49
33	2014	dell inspiron desktop	37
33	2014	dell inspiron notebook	110
33	2014	hp pavilion desktop	38
33	2014	htc one	19
33	2014	ipad air	40
33	2014	ipad mini	28
33	2014	iphone 4s	35
33	2014	iphone 5	110
33	2014	iphone 5s	65
33	2014	kindle fire	14
33	2014	lenovo thinkpad	191
33	2014	mac mini	32
33	2014	macbook air	133
33	2014	macbook pro	312
33	2014	nexus 10	23
33	2014	nexus 5	70
33	2014	nexus 7	30
33	2014	nokia lumia 635	27
33	2014	samsumg galaxy tablet	12
33	2014	samsung galaxy note	13
33	2014	samsung galaxy s4	80
33	2014	windows surface	15
34	2014	acer aspire desktop	30
34	2014	acer aspire notebook	63
34	2014	amazon fire phone	11
34	2014	asus chromebook	47
34	2014	dell inspiron desktop	49
34	2014	dell inspiron notebook	105
34	2014	hp pavilion desktop	36
34	2014	htc one	25
34	2014	ipad air	39
34	2014	ipad mini	25
34	2014	iphone 4s	50
34	2014	iphone 5	101
34	2014	iphone 5s	70
34	2014	kindle fire	13
34	2014	lenovo thinkpad	193
34	2014	mac mini	30
34	2014	macbook air	136
34	2014	macbook pro	292
34	2014	nexus 10	25
34	2014	nexus 5	70
34	2014	nexus 7	33
34	2014	nokia lumia 635	17
34	2014	samsumg galaxy tablet	14
34	2014	samsung galaxy note	13
34	2014	samsung galaxy s4	90
34	2014	windows surface	18

Insight: Macbook pro is the preferred device having the highest weekly user engagement.

E. **Email Engagement Analysis:**
   - Objective: Analyse how users are engaging with the email service.
   - Your Task: Write an SQL query to calculate the email engagement metrics.

```
168
169   /*5. Email Engagement Analysis:
170   Objective: Analyze how users are engaging with the email service.
171   Your Task: Write an SQL query to calculate the email engagement metrics.*/
172
173 • SELECT week(occurred_at) as Week,
174   count( DISTINCT ( CASE WHEN action = "sent_weekly_digest"
175   THEN user_id end )) as weekly_digest,
176   count( distinct ( CASE WHEN action = "sent_reengagement_email"
177   THEN user_id end )) as reengagement_mail,
178   count( distinct ( CASE WHEN action = "email_open"
179   THEN user_id end )) as opened_email,
180   count( distinct ( CASE WHEN action = "email_clickthrough"
181   THEN user_id end )) as email_clickthrough
182   FROM email_events
183   GROUP BY week
184   ORDER BY week;
185
```



Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Week	weekly_digest	reengagement_mail	opened_email	email_clickthrough
17	908	73	310	166
18	2602	157	900	425
19	2665	173	961	476
20	2733	191	989	501
21	2822	164	996	436
22	2911	192	965	478
23	3003	197	1057	529
24	3105	226	1136	549
25	3207	196	1084	524
26	3302	219	1149	550
27	3399	213	1207	613
28	3499	213	1228	594
29	3592	213	1201	583
30	3706	231	1363	625
31	3793	222	1338	444
32	3897	200	1318	416
33	4012	264	1417	490
34	4111	261	1502	481
35	0	48	41	38

Insight:

Based on the query result, it is apparent that most of the email activity pertains to the ‘sent_weekly_digest’.

Result:

Throughout this project, I embarked on a journey of exploration into the depths of advanced SQL concepts, gaining invaluable insights into their application and significance. Delving into the intricacies of the given dataset, I honed my skills in extracting meaningful insights that hold the potential to significantly benefit the company's operations and strategic decision-making processes. Moreover, this project served as a platform for me to delve into the intriguing realm of investigating metric spikes, uncovering hidden patterns and anomalies that could hold pivotal implications for optimizing operational efficiency and driving organizational growth. Through this immersive experience, I not only expanded my technical prowess but also cultivated a deeper understanding of the profound impact that proficient SQL utilization can have on empowering data-driven transformations within a dynamic business landscape.