OPERATION ANALYTICS AND INVESTIGATING METRIC SPIKE PROJECT:

PROJECT DESCRIPTION:

Operation Analytics is the analysis done for the complete end to end operations of a company. With the help of this, the company then finds the areas in which it must improve upon. This kind of analysis is further used to predict the overall growth or decline of a company's fortune. It means better automation, better understanding between cross-functional teams, and more effective workflows. Why is there a dip in daily engagement? Why have sales taken a dip? Etc. Questions like these must be answered daily and for that it's very important to investigate metric spike.

APPROACH:

The approach toward the project was clearly understanding the instructions, getting a clear view of the data set provided, revisiting all the query statements, checking the query syntax, and applying the theory to answer the given questions.

TECH STACK:

1. MySQL Workbench 8.0 CE
    - It has been used to clone the dataset provided and to perform query operations on the given dataset to draw insights.
2. MS Word
    - It has been used to record the project report in the prescribed format.
3. Tableau
    - This software has been used to represent the insight visually which helps in the easier understanding and grasping of the data.

INSIGHTS:

OPERATION ANALYTICS:

Table creation:

The data given for the 1st project has been created in the SQL database using the following queries.

```sql
create database operation_analytics;
use operation_analytics;

create table job_data (
ds date,
job_id int not null,
actor_id int not null,
event_name varchar(255) not null,
language_specified varchar(300) not null,
timespent float not null,
org varchar(10) not null);

insert into job_data (ds,job_id,actor_id, event_name, language_specified, timespent, org) values('2020-11-30',21,1001,'skip','English',15,'A');
insert into job_data (ds,job_id,actor_id, event_name, language_specified, timespent, org) values('2020-11-30',22,1006,'transfer','Arabic',25,'B');
insert into job_data (ds,job_id,actor_id, event_name, language_specified, timespent, org) values('2020-11-29',23,1003,'decision','Persian',20,'C');
insert into job_data (ds,job_id,actor_id, event_name, language_specified, timespent, org) values('2020-11-28',23,1005,'transfer','Persian',22,'D');
insert into job_data (ds,job_id,actor_id, event_name, language_specified, timespent, org) values('2020-11-28',25,1002,'decision','Hindi',11,'B');
insert into job_data (ds,job_id,actor_id, event_name, language_specified, timespent, org) values('2020-11-27',11,1007,'decision','French',104,'D');
insert into job_data (ds,job_id,actor_id, event_name, language_specified, timespent, org) values('2020-11-26',23,1004,'skip','Persian',56,'A');
insert into job_data (ds,job_id,actor_id, event_name, language_specified, timespent, org) values('2020-11-25',20,1003,'transfer','Italian',45,'C');
```

ds	job_id	actor_id	event_name	language_specified	timespent	org
2020-11-30	21	1001	skip	English	15	A
2020-11-30	22	1006	transfer	Arabic	25	B
2020-11-29	23	1003	decision	Persian	20	C
2020-11-28	23	1005	transfer	Persian	22	D
2020-11-28	25	1002	decision	Hindi	11	B
2020-11-27	11	1007	decision	French	104	D
2020-11-26	23	1004	skip	Persian	56	A
2020-11-25	20	1003	transfer	Italian	45	C

1. Calculate the no.of jobs reviewed per hour per day for November 2020

The total no.of jobs reviewed per hour per day in the month of November 2020 is as follows:

```sql
/*no.of jobs reviewed per hour per day*/
SELECT
    ds AS date,
    (COUNT(job_id) / SUM(timespent) * 3600) AS totaljobs
FROM
    job_data
WHERE
    ds BETWEEN '2020-11-01' AND '2020-11-30'
GROUP BY ds;
```

date	totaljobs
2020-11-30	180
2020-11-29	180
2020-11-28	218.1818181818182
2020-11-27	34.61538461538462
2020-11-26	64.28571428571428
2020-11-25	80

2. Calculate the 7-day rolling average of throughput.

The 7-day rolling average is:

```sql
/*7-day rolling average of throughput*/
SELECT
    (COUNT(event_name) / SUM(timespent)) as weekly_metric
FROM
    job_data;
```

	weekly_metric
▶	0.026845637583892617

a. For throughput, do you prefer daily metric or 7-day rolling? Why?

```
/*daily metric*/
SELECT
    ds AS date, (COUNT(event_name) / SUM(timespent)) as daily_metric
FROM
    job_data
GROUP BY ds order by ds;
```

	date	daily_metric
▶	2020-11-25	0.022222222222222223
	2020-11-26	0.017857142857142856
	2020-11-27	0.009615384615384616
	2020-11-28	0.06060606060606061
	2020-11-29	0.05
	2020-11-30	0.05

3. Calculate the percentage share of each language in the last 30 days.

The percentage share of each language in the last 30 days is displayed below.

```
/*percentage share of each language in the last 30 days*/
SELECT
    language_specified AS languages,
    (100*(COUNT(*) / (SELECT
        COUNT(language_specified)
    FROM
        job_data
    WHERE
        ds BETWEEN '2020-11-01' AND '2020-11-30'))) AS percentage
FROM
    job_data
GROUP BY languages;
```

T

	languages	percentage
▶	English	12.5000
	Arabic	12.5000
	Persian	37.5000
	Hindi	12.5000
	French	12.5000
	Italian	12.5000

4. How will display duplicates from the table?

```
/*displaying duplicates from the table*/
SELECT
    actor_id, COUNT(*) AS Duplicates
FROM
    job_data
GROUP BY actor_id
HAVING COUNT(*) > 1;
```

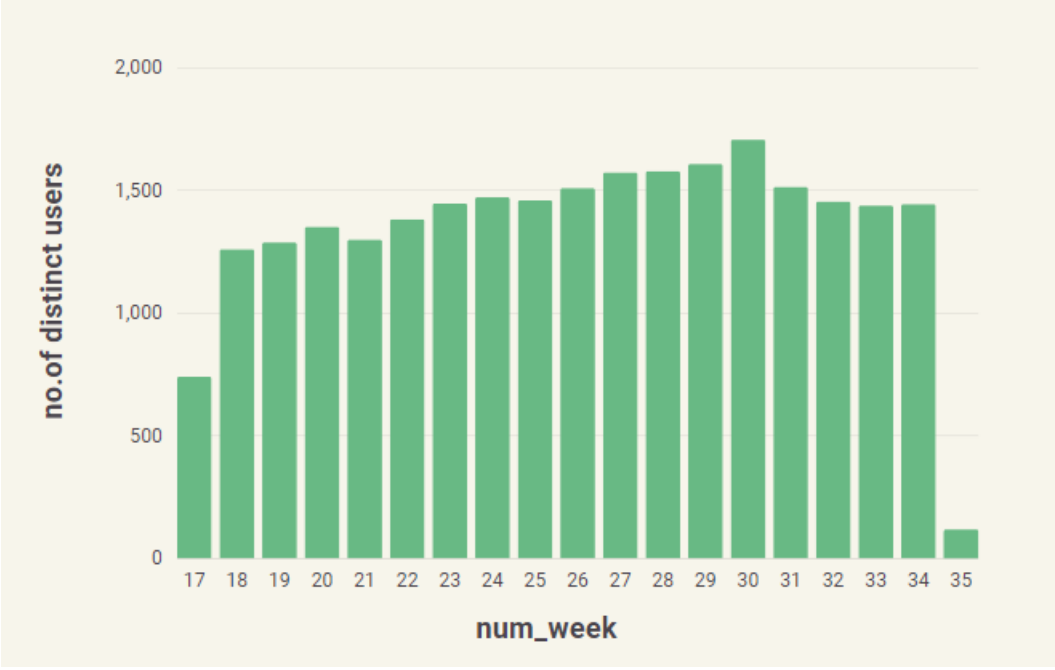
	actor_id	Duplicates
▶	1003	2

INVESTIGATING METRICS:

1. Calculate the weekly user engagement

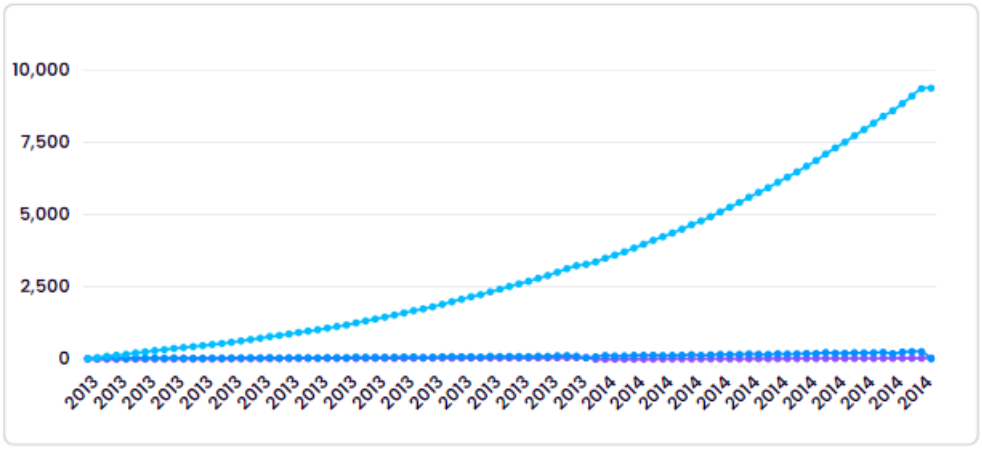
```
SELECT
    EXTRACT(WEEK FROM occurred_at) AS num_week,
    COUNT(DISTINCT user_id) AS no_of_distinct_user
FROM
    events
GROUP BY num_week;
```

	num_week	no_of_distinct_user
▶	17	740
	18	1260
	19	1287
	20	1351
	21	1299
	22	1381
	23	1446
	24	1471
	25	1459
	26	1509
	27	1573
	28	1577
	29	1607
	30	1706
	31	1514
	32	1454
	33	1438
	34	1443
	35	118



2. Calculate the user growth for the product

```sql
/*user growth for the product*/
select year, num_week, num_active_users,
sum(num_active_users) over(order by year, num_week rows between unbounded preceding and current row)
as cumm_active_users
from
(select
    extract(year from a.activated_at) as year,
    extract(week from a.activated_at)as num_week,
    count(distinct user_id) as num_active_users
from users a
where state='active'
group by year, num_week
order by year, num_week
)a;
```



year	num_week	num_active_users	cumm_active_users
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

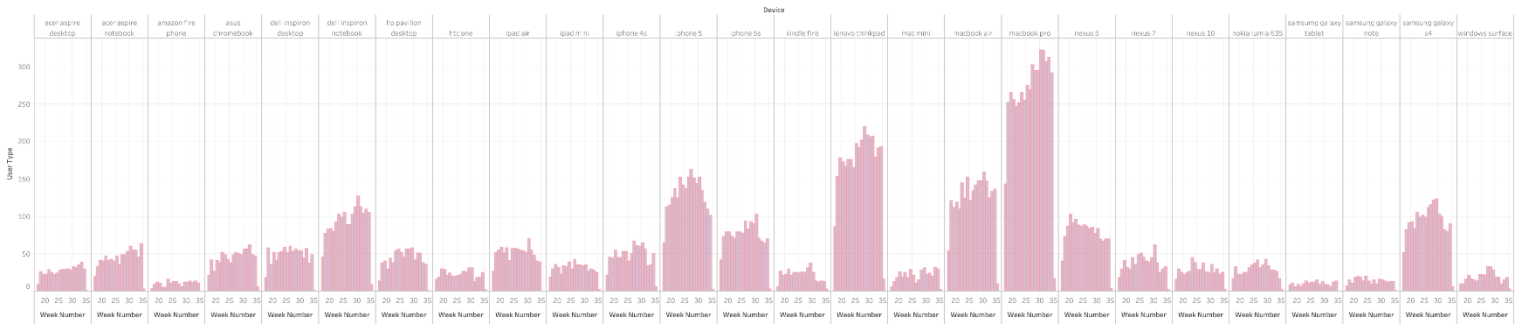
2013	22	54	923
2013	23	50	973
2013	24	45	1018
2013	25	57	1075
2013	26	56	1131
2013	27	52	1183
2013	28	72	1255
2013	29	67	1322
2013	30	67	1389
2013	31	67	1456
2013	32	71	1527
2013	33	73	1600
2013	34	78	1678
2013	35	63	1741
2013	36	72	1813
2013	37	85	1898
2013	38	90	1988
2013	39	84	2072
2013	40	87	2159
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

3. Calculate the weekly retention of the user's signup cohort

```sql
/*weekly retention of users sign up cohort*/
SELECT
    EXTRACT(YEAR FROM OCCURRED_AT) AS YEAR,
    EXTRACT(WEEK FROM OCCURRED_AT) AS WEEK_NUMBER,
    DEVICE,
    COUNT(DISTINCT USER_ID) USER_TYPE
FROM    events
WHERE
    EVENT_TYPE = 'ENGAGEMENT'
GROUP BY 1 , 2 , 3
ORDER BY 1 , 2 , 3;
```

Sheet 1



YEAR	WEEK_NUMBER	DEVICE	USER_TYPE
2014	17	acer aspire desktop	9
2014	17	acer aspire notebook	20
2014	17	amazon fire phone	4
2014	17	asus chromebook	21
2014	17	dell inspiron desktop	18
2014	17	dell inspiron notebook	46
2014	17	hp pavilion desktop	14
2014	17	htc one	16
2014	17	ipad air	27
2014	17	ipad mini	19
2014	17	iphone 4s	21
2014	17	iphone 5	65
2014	17	iphone 5s	42
2014	17	kindle fire	6
2014	17	lenovo thinkpad	86
2014	17	mac mini	6

2014	17	macbook air	54
2014	17	macbook pro	143
2014	17	nexus 10	16
2014	17	nexus 5	40
2014	17	nexus 7	18
2014	17	nokia lumia 635	17
2014	17	samsumg galaxy tablet	8
2014	17	samsung galaxy note	7
2014	17	samsung galaxy s4	52
2014	17	windows surface	10
2014	18	acer aspire desktop	26
2014	18	acer aspire notebook	33
2014	18	amazon fire phone	9
2014	18	asus chromebook	42
2014	18	dell inspiron desktop	58
2014	18	dell inspiron notebook	77
2014	18	hp pavilion desktop	37
2014	18	htc one	19
2014	18	ipad air	52
2014	18	ipad mini	30
2014	18	iphone 4s	46
2014	18	iphone 5	113
2014	18	iphone 5s	73
2014	18	kindle fire	27
2014	18	lenovo thinkpad	153
2014	18	mac mini	13
2014	18	macbook air	121
2014	18	macbook pro	252
2014	18	nexus 10	30
2014	18	nexus 5	73
2014	18	nexus 7	30
2014	18	nokia lumia 635	33
2014	18	samsumg galaxy tablet	11
2014	18	samsung galaxy note	15
2014	18	samsung galaxy s4	82
2014	18	windows surface	10
2014	19	acer aspire desktop	23
2014	19	acer aspire notebook	41
2014	19	amazon fire phone	12
2014	19	asus chromebook	27
2014	19	dell inspiron desktop	36
2014	19	dell inspiron notebook	83
2014	19	hp pavilion desktop	40
2014	19	htc one	30
2014	19	ipad air	55
2014	19	ipad mini	36
2014	19	iphone 4s	44
2014	19	iphone 5	115
2014	19	iphone 5s	79
2014	19	kindle fire	21
2014	19	lenovo thinkpad	178
2014	19	mac mini	18
2014	19	macbook air	112
2014	19	macbook pro	266

2014	19	nexus 10	25
2014	19	nexus 5	87
2014	19	nexus 7	41
2014	19	nokia lumia 635	23
2014	19	samsumg galaxy tablet	6
2014	19	samsung galaxy note	11
2014	19	samsung galaxy s4	91
2014	19	windows surface	16
2014	20	acer aspire desktop	23
2014	20	acer aspire notebook	40
2014	20	amazon fire phone	11
2014	20	asus chromebook	41
2014	20	dell inspiron desktop	52
2014	20	dell inspiron notebook	84
2014	20	hp pavilion desktop	30
2014	20	htc one	29
2014	20	ipad air	59
2014	20	ipad mini	32
2014	20	iphone 4s	55
2014	20	iphone 5	125
2014	20	iphone 5s	79
2014	20	kindle fire	23
2014	20	lenovo thinkpad	173
2014	20	mac mini	26
2014	20	macbook air	119
2014	20	macbook pro	256
2014	20	nexus 10	22
2014	20	nexus 5	103
2014	20	nexus 7	32
2014	20	nokia lumia 635	22
2014	20	samsumg galaxy tablet	9
2014	20	samsung galaxy note	18
2014	20	samsung galaxy s4	93
2014	20	windows surface	21
2014	21	acer aspire desktop	29
2014	21	acer aspire notebook	47
2014	21	amazon fire phone	5
2014	21	asus chromebook	38
2014	21	dell inspiron desktop	41
2014	21	dell inspiron notebook	80
2014	21	hp pavilion desktop	44
2014	21	htc one	21
2014	21	ipad air	51
2014	21	ipad mini	23
2014	21	iphone 4s	45
2014	21	iphone 5	137
2014	21	iphone 5s	74
2014	21	kindle fire	30
2014	21	lenovo thinkpad	167
2014	21	mac mini	18
2014	21	macbook air	110
2014	21	macbook pro	247
2014	21	nexus 10	25
2014	21	nexus 5	91

2014	21	nexus 7	29
2014	21	nokia lumia 635	25
2014	21	samsumg galaxy tablet	6
2014	21	samsung galaxy note	20
2014	21	samsung galaxy s4	84
2014	21	windows surface	17
2014	22	acer aspire desktop	25
2014	22	acer aspire notebook	41
2014	22	amazon fire phone	5
2014	22	asus chromebook	52
2014	22	dell inspiron desktop	52
2014	22	dell inspiron notebook	92
2014	22	hp pavilion desktop	38
2014	22	htc one	24
2014	22	ipad air	58
2014	22	ipad mini	34
2014	22	iphone 4s	45
2014	22	iphone 5	125
2014	22	iphone 5s	71
2014	22	kindle fire	21
2014	22	lenovo thinkpad	176
2014	22	mac mini	25
2014	22	macbook air	145
2014	22	macbook pro	251
2014	22	nexus 10	27
2014	22	nexus 5	96
2014	22	nexus 7	45
2014	22	nokia lumia 635	25
2014	22	samsumg galaxy tablet	10
2014	22	samsung galaxy note	19
2014	22	samsung galaxy s4	105
2014	22	windows surface	15
2014	23	acer aspire desktop	22
2014	23	acer aspire notebook	43
2014	23	amazon fire phone	16
2014	23	asus chromebook	49
2014	23	dell inspiron desktop	53
2014	23	dell inspiron notebook	103
2014	23	hp pavilion desktop	54
2014	23	htc one	20
2014	23	ipad air	41
2014	23	ipad mini	33
2014	23	iphone 4s	53
2014	23	iphone 5	152
2014	23	iphone 5s	79
2014	23	kindle fire	25
2014	23	lenovo thinkpad	176
2014	23	mac mini	18
2014	23	macbook air	124
2014	23	macbook pro	266
2014	23	nexus 10	45
2014	23	nexus 5	88
2014	23	nexus 7	36
2014	23	nokia lumia 635	31

2014	23	samsumg galaxy tablet	14
2014	23	samsung galaxy note	14
2014	23	samsung galaxy s4	99
2014	23	windows surface	14
2014	24	acer aspire desktop	24
2014	24	acer aspire notebook	40
2014	24	amazon fire phone	11
2014	24	asus chromebook	43
2014	24	dell inspiron desktop	59
2014	24	dell inspiron notebook	99
2014	24	hp pavilion desktop	56
2014	24	htc one	20
2014	24	ipad air	57
2014	24	ipad mini	39
2014	24	iphone 4s	53
2014	24	iphone 5	142
2014	24	iphone 5s	79
2014	24	kindle fire	25
2014	24	lenovo thinkpad	165
2014	24	mac mini	29
2014	24	macbook air	152
2014	24	macbook pro	255
2014	24	nexus 10	38
2014	24	nexus 5	87
2014	24	nexus 7	49
2014	24	nokia lumia 635	35
2014	24	samsumg galaxy tablet	11
2014	24	samsung galaxy note	20
2014	24	samsung galaxy s4	101
2014	24	windows surface	22
2014	25	acer aspire desktop	28
2014	25	acer aspire notebook	47
2014	25	amazon fire phone	13
2014	25	asus chromebook	38
2014	25	dell inspiron desktop	52
2014	25	dell inspiron notebook	105
2014	25	hp pavilion desktop	52
2014	25	htc one	21
2014	25	ipad air	57
2014	25	ipad mini	30
2014	25	iphone 4s	40
2014	25	iphone 5	137
2014	25	iphone 5s	78
2014	25	kindle fire	24
2014	25	lenovo thinkpad	197
2014	25	mac mini	21
2014	25	macbook air	121
2014	25	macbook pro	275
2014	25	nexus 10	29
2014	25	nexus 5	89
2014	25	nexus 7	51
2014	25	nokia lumia 635	37
2014	25	samsumg galaxy tablet	12
2014	25	samsung galaxy note	14

2014	25	samsung galaxy s4	99
2014	25	windows surface	22
2014	26	acer aspire desktop	29
2014	26	acer aspire notebook	35
2014	26	amazon fire phone	13
2014	26	asus chromebook	49
2014	26	dell inspiron desktop	60
2014	26	dell inspiron notebook	89
2014	26	hp pavilion desktop	46
2014	26	htc one	23
2014	26	ipad air	56
2014	26	ipad mini	43
2014	26	iphone 4s	50
2014	26	iphone 5	152
2014	26	iphone 5s	94
2014	26	kindle fire	26
2014	26	lenovo thinkpad	192
2014	26	mac mini	11
2014	26	macbook air	134
2014	26	macbook pro	269
2014	26	nexus 10	29
2014	26	nexus 5	87
2014	26	nexus 7	46
2014	26	nokia lumia 635	42
2014	26	samsumg galaxy tablet	12
2014	26	samsung galaxy note	9
2014	26	samsung galaxy s4	112
2014	26	windows surface	21
2014	27	acer aspire desktop	29
2014	27	acer aspire notebook	49
2014	27	amazon fire phone	10
2014	27	asus chromebook	52
2014	27	dell inspiron desktop	53
2014	27	dell inspiron notebook	89
2014	27	hp pavilion desktop	56
2014	27	htc one	27
2014	27	ipad air	55
2014	27	ipad mini	35
2014	27	iphone 4s	67
2014	27	iphone 5	163
2014	27	iphone 5s	83
2014	27	kindle fire	25
2014	27	lenovo thinkpad	202
2014	27	mac mini	15
2014	27	macbook air	142
2014	27	macbook pro	302
2014	27	nexus 10	37
2014	27	nexus 5	84
2014	27	nexus 7	40
2014	27	nokia lumia 635	31
2014	27	samsumg galaxy tablet	15
2014	27	samsung galaxy note	15
2014	27	samsung galaxy s4	116
2014	27	windows surface	33

2014	28	acer aspire desktop	30
2014	28	acer aspire notebook	49
2014	28	amazon fire phone	6
2014	28	asus chromebook	50
2014	28	dell inspiron desktop	56
2014	28	dell inspiron notebook	103
2014	28	hp pavilion desktop	56
2014	28	htc one	26
2014	28	ipad air	54
2014	28	ipad mini	35
2014	28	iphone 4s	61
2014	28	iphone 5	151
2014	28	iphone 5s	93
2014	28	kindle fire	31
2014	28	lenovo thinkpad	220
2014	28	mac mini	28
2014	28	macbook air	148
2014	28	macbook pro	295
2014	28	nexus 10	26
2014	28	nexus 5	85
2014	28	nexus 7	39
2014	28	nokia lumia 635	35
2014	28	samsumg galaxy tablet	9
2014	28	samsung galaxy note	10
2014	28	samsung galaxy s4	122
2014	28	windows surface	33
2014	29	acer aspire desktop	28
2014	29	acer aspire notebook	53
2014	29	amazon fire phone	12
2014	29	asus chromebook	49
2014	29	dell inspiron desktop	54
2014	29	dell inspiron notebook	113
2014	29	hp pavilion desktop	58
2014	29	htc one	31
2014	29	ipad air	52
2014	29	ipad mini	34
2014	29	iphone 4s	60
2014	29	iphone 5	144
2014	29	iphone 5s	90
2014	29	kindle fire	37
2014	29	lenovo thinkpad	209
2014	29	mac mini	31
2014	29	macbook air	148
2014	29	macbook pro	295
2014	29	nexus 10	25
2014	29	nexus 5	77
2014	29	nexus 7	45
2014	29	nokia lumia 635	43
2014	29	samsumg galaxy tablet	13
2014	29	samsung galaxy note	16
2014	29	samsung galaxy s4	123
2014	29	windows surface	28
2014	30	acer aspire desktop	33
2014	30	acer aspire notebook	60

2014	30	amazon fire phone	12
2014	30	asus chromebook	56
2014	30	dell inspiron desktop	54
2014	30	dell inspiron notebook	127
2014	30	hp pavilion desktop	42
2014	30	htc one	31
2014	30	ipad air	70
2014	30	ipad mini	35
2014	30	iphone 4s	65
2014	30	iphone 5	152
2014	30	iphone 5s	103
2014	30	kindle fire	25
2014	30	lenovo thinkpad	206
2014	30	mac mini	23
2014	30	macbook air	159
2014	30	macbook pro	322
2014	30	nexus 10	36
2014	30	nexus 5	84
2014	30	nexus 7	62
2014	30	nokia lumia 635	34
2014	30	samsumg galaxy tablet	9
2014	30	samsung galaxy note	15
2014	30	samsung galaxy s4	103
2014	30	windows surface	19
2014	31	acer aspire desktop	31
2014	31	acer aspire notebook	55
2014	31	amazon fire phone	14
2014	31	asus chromebook	56
2014	31	dell inspiron desktop	44
2014	31	dell inspiron notebook	113
2014	31	hp pavilion desktop	51
2014	31	htc one	13
2014	31	ipad air	55
2014	31	ipad mini	27
2014	31	iphone 4s	56
2014	31	iphone 5	135
2014	31	iphone 5s	71
2014	31	kindle fire	14
2014	31	lenovo thinkpad	207
2014	31	mac mini	24
2014	31	macbook air	147
2014	31	macbook pro	321
2014	31	nexus 10	24
2014	31	nexus 5	69
2014	31	nexus 7	38
2014	31	nokia lumia 635	28
2014	31	samsumg galaxy tablet	8
2014	31	samsung galaxy note	14
2014	31	samsung galaxy s4	100
2014	31	windows surface	19
2014	32	acer aspire desktop	35
2014	32	acer aspire notebook	55
2014	32	amazon fire phone	12
2014	32	asus chromebook	62

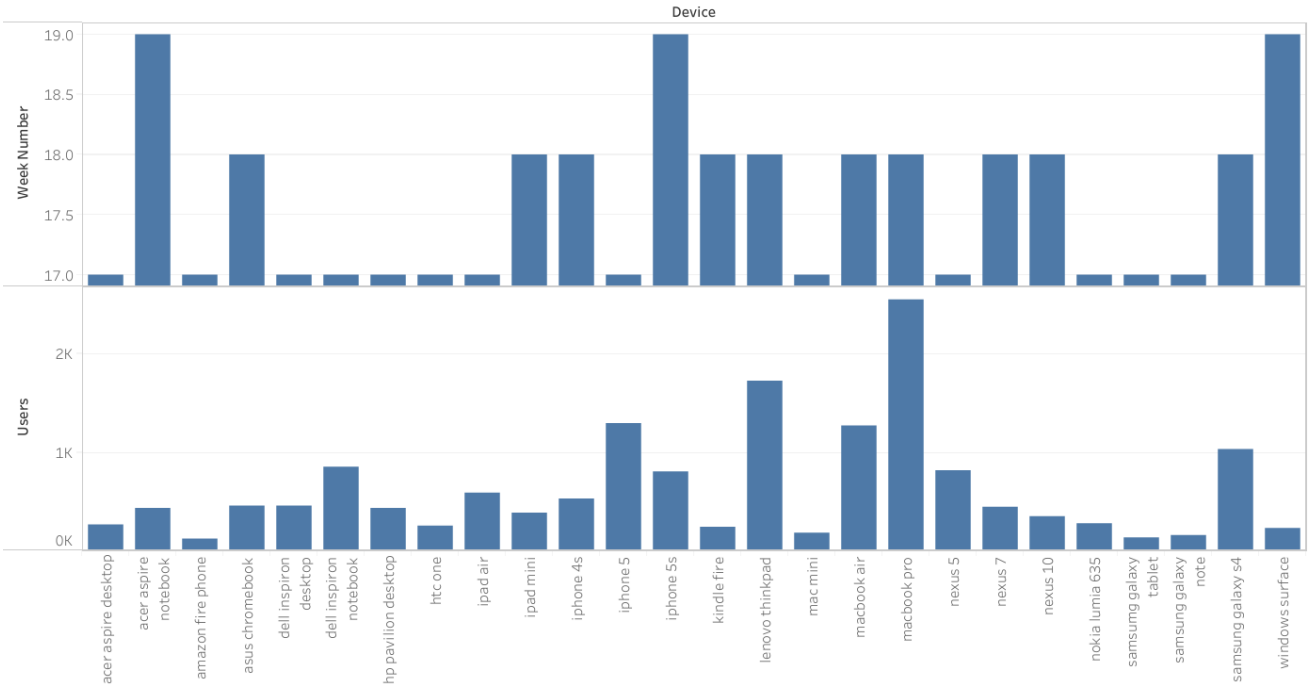
2014	32	dell inspiron desktop	57
2014	32	dell inspiron notebook	104
2014	32	hp pavilion desktop	51
2014	32	htc one	18
2014	32	ipad air	48
2014	32	ipad mini	30
2014	32	iphone 4s	34
2014	32	iphone 5	119
2014	32	iphone 5s	67
2014	32	kindle fire	12
2014	32	lenovo thinkpad	179
2014	32	mac mini	20
2014	32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

2014	34	hp pavilion desktop	36
2014	34	htc one	25
2014	34	ipad air	39
2014	34	ipad mini	25
2014	34	iphone 4s	50
2014	34	iphone 5	101
2014	34	iphone 5s	70
2014	34	kindle fire	13
2014	34	lenovo thinkpad	193
2014	34	mac mini	30
2014	34	macbook air	136
2014	34	macbook pro	292
2014	34	nexus 10	25
2014	34	nexus 5	70
2014	34	nexus 7	33
2014	34	nokia lumia 635	17
2014	34	samsumg galaxy tablet	14
2014	34	samsung galaxy note	13
2014	34	samsung galaxy s4	90
2014	34	windows surface	18
2014	35	acer aspire desktop	1
2014	35	acer aspire notebook	3
2014	35	asus chromebook	6
2014	35	dell inspiron desktop	1
2014	35	dell inspiron notebook	9
2014	35	hp pavilion desktop	1
2014	35	htc one	2
2014	35	ipad mini	2
2014	35	iphone 4s	6
2014	35	iphone 5	2
2014	35	iphone 5s	3
2014	35	kindle fire	3
2014	35	lenovo thinkpad	16
2014	35	mac mini	2
2014	35	macbook air	10
2014	35	macbook pro	17
2014	35	nexus 10	2
2014	35	nexus 5	4
2014	35	nexus 7	2
2014	35	nokia lumia 635	2
2014	35	samsung galaxy note	1
2014	35	samsung galaxy s4	6
2014	35	windows surface	3

4. Calculate the weekly engagement per device

WEEK_NUMBER	USERS	DEVICE
17	259	acer aspire desktop
19	437	acer aspire notebook
17	118	amazon fire phone
18	460	asus chromebook
17	450	dell inspiron desktop
17	848	dell inspiron notebook
17	437	hp pavilion desktop
17	251	htc one
17	590	ipad air
18	378	ipad mini
18	531	iphone 4s
17	1291	iphone 5
19	798	iphone 5s
18	239	kindle fire
18	1727	lenovo thinkpad
17	177	mac mini
18	1268	macbook air
18	2559	macbook pro
18	347	nexus 10
17	819	nexus 5
18	442	nexus 7
17	271	nokia lumia 635
17	135	samsumg galaxy tablet
17	150	samsung galaxy note
18	1027	samsung galaxy s4
19	228	windows surface

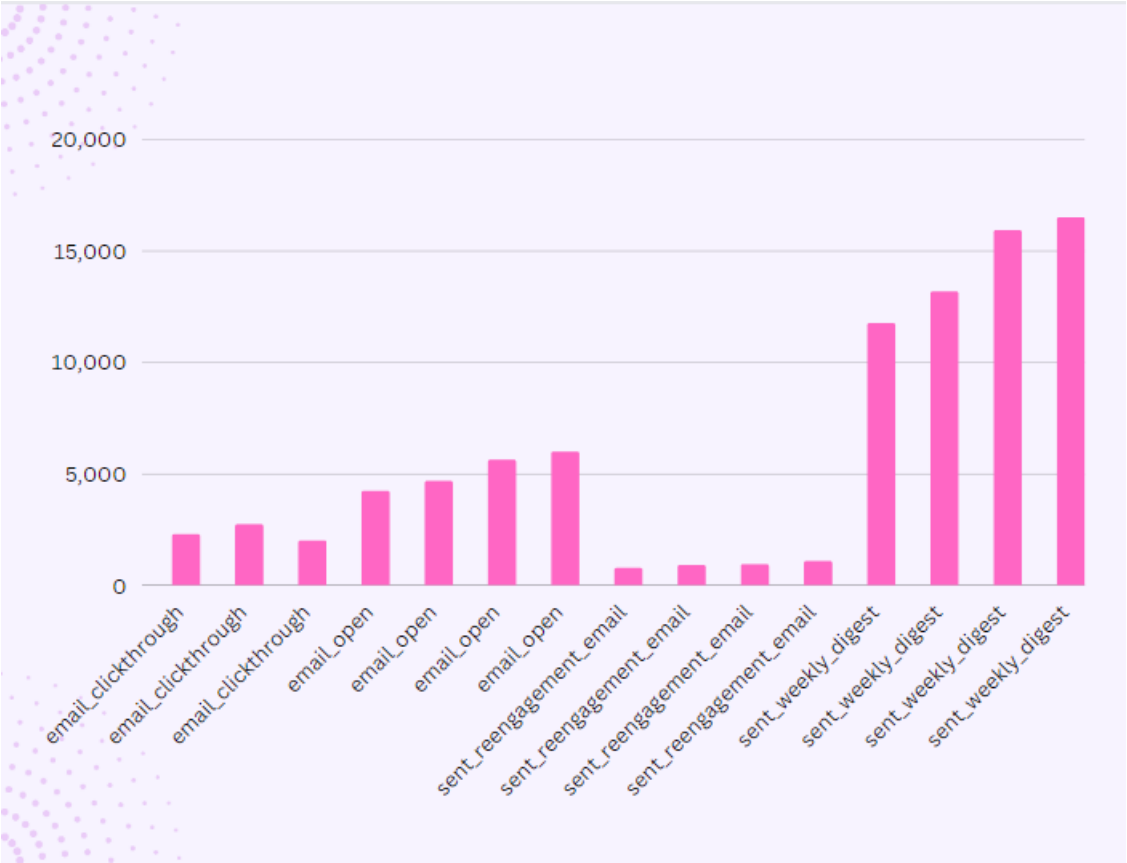
Sheet 2




```sql
/*weekly engagement per device*/
SELECT
    EXTRACT(WEEK FROM occurred_at) AS WEEK_NUMBER,
    COUNT(DISTINCT USER_ID) AS USERS,
    DEVICE
FROM
    events
GROUP BY DEVICE;
```

5. Calculate the email engagement metrics.

```sql
/*email engagement metrics*/
SELECT
    ACTION,
    EXTRACT(MONTH FROM OCCURRED_AT) AS MONTH,
    COUNT(ACTION) AS NUMBER_OF_MAILS
FROM
    email_events
GROUP BY ACTION , MONTH
ORDER BY ACTION , MONTH;
```



ACTION	MONTH	NUMBER_OF_MAILS
email_clickthrough	5	2023
email_clickthrough	6	2274
email_clickthrough	7	2721
email_clickthrough	8	1992
email_open	5	4212
email_open	6	4658
email_open	7	5611
email_open	8	5978
sent_reengagement_email	5	758
sent_reengagement_email	6	889
sent_reengagement_email	7	933
sent_reengagement_email	8	1073
sent_weekly_digest	5	11730
sent_weekly_digest	6	13155
sent_weekly_digest	7	15902
sent_weekly_digest	8	16480

RESULT:

Working on this project gave me deeper understanding of subqueries. I faced certain difficulties while working with MySQL Workbench 8.0 CE (handling with large data) which consumed a much longer time.