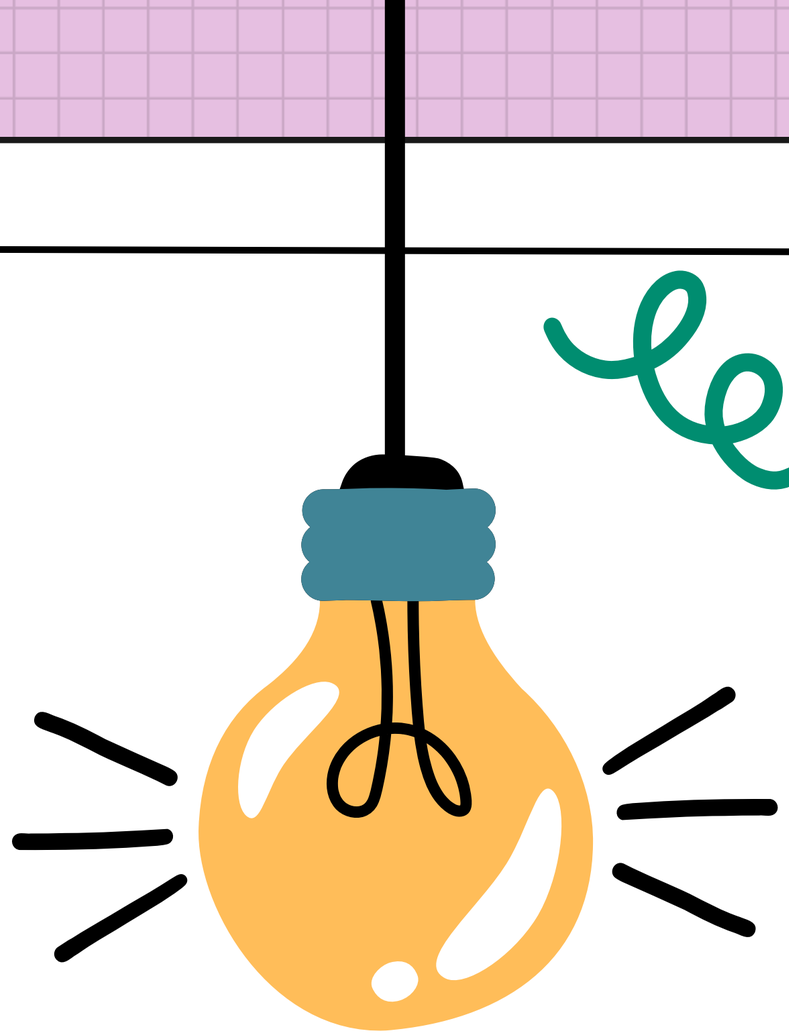
OPERATION ANALYTICS AND INVESTIGATING METRIC SPIKE



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CONTENTS

INTRODUCTION

- 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 on which it must improve upon. You work closely with the ops team, support team, marketing team, etc and help them derive insights out of the data they collect.

- Investigating metric spike is also an important part of operation analytics as being a Data Analyst you must be able to understand or make other teams understand questions like- 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 its very important to investigate metric spike.

APPROACH

(ANALYSIS IS DONE ON FOLLOWING POINTS)

CASE STUDY 1

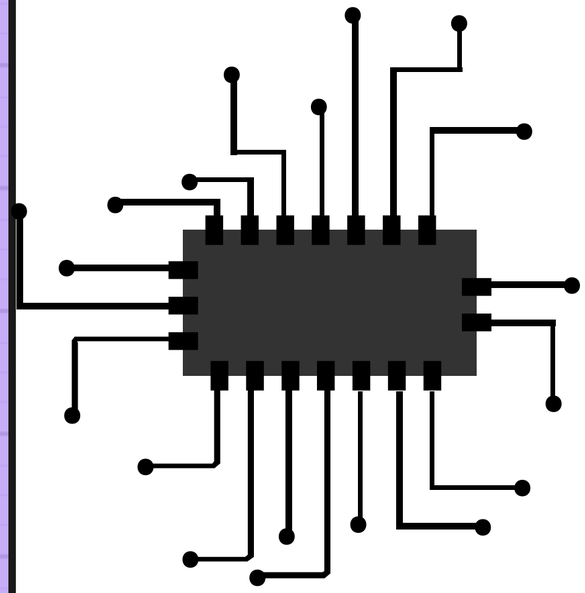
1. Number of jobs reviewed: Amount of jobs reviewed over time.
2. Your task: Calculate the number of jobs reviewed per hour per day for November 2020?
3. Throughput: It is the no. of events happening per second.
4. Your task: Let's say the above metric is called throughput. Calculate 7 day rolling average of throughput? For throughput, do you prefer daily metric or 7-day rolling and why?
5. Percentage share of each language: Share of each language for different contents.
6. Your task: Calculate the percentage share of each language in the last 30 days?
7. Duplicate rows: Rows that have the same value present in them.
8. Your task: Let's say you see some duplicate rows in the data. How will you display duplicates from the table?

CASE STUDY 2

1. User Engagement: To measure the activeness of a user. Measuring if the user finds quality in a product/service.
2. Your task: Calculate the weekly user engagement?
3. User Growth: Amount of users growing over time for a product.
4. Your task: Calculate the user growth for product?
5. Weekly Retention: Users getting retained weekly after signing-up for a product.
6. Your task: Calculate the weekly retention of users-sign up cohort?
7. Weekly Engagement: To measure the activeness of a user. Measuring if the user finds quality in a product/service weekly.
8. Your task: Calculate the weekly engagement per device?
9. Email Engagement: Users engaging with the email service.
10. Your task: Calculate the email engagement metrics?

TECH STACK USED

MySQL WORKBENCH *is used to create the database and tables and perform analysis.MySQL Workbench allows you to create, manage, and configure your connections and connection parameters to MySQL database servers. It also allows you to execute SQL queries on these connections using the in-built editor. The Visual SQL Editor lets you create, edit, and run queries.*



INSIGHTS

CASE STUDY 1(JOB DATA)

Number of jobs reviewed: Amount of jobs reviewed over time.

Calculate the number of jobs reviewed per hour per day for November 2020?

Code:

```
select count(job_id)/(24*30) as Jobs_reviewed_per_hour from job_data;/*non distinct*/
```

Output:

	Jobs_reviewed_per_hour
▶	0.0111

Code:

```
select count(distinct job_id)/(24*30) as Jobs_reviewed_per_hour from job_data;/*distiinct*/
```

Output:

	Jobs_reviewed_per_hour
▶	0.0083

CASE STUDY 1(JOB DATA)

Throughput: It is the no. of events happening per second.

task: Let's say the above metric is called throughput. Calculate 7 day rolling average of throughput? For throughput, do you prefer daily metric or 7-day rolling and why?

Code:

```
select ds as review_date,job_reviewed,round(avg(job_reviewed) over(order by
ds ROWS BETWEEN 6 preceding and current row),2)
as 7_Day_rolling from(
select ds, count(distinct job_id) as job_reviewed from job_data group by ds
order by ds)a;/*distinct*/
```

Output:

review_date	job_reviewed	7_Day_rolling
2020-11-25	1	1.00
2020-11-26	1	1.00
2020-11-27	1	1.00
2020-11-28	2	1.25
2020-11-29	1	1.20
2020-11-30	2	1.33

CASE STUDY 1(JOB DATA)

Percentage share of each language: Share of each language for different contents. Calculate the percentage share of each language in the last 30 days?

Code:

```
select language, count(language) as No_OF_Times,((count(language)*100)/(select
count(*) from
job_data)) as Percentage from job_data group by language;
```

Output:

language	No_OF_Times	Percentage
English	1	12.5000
Arabic	1	12.5000
Persian	3	37.5000
Hindi	1	12.5000
French	1	12.5000
Italian	1	12.5000

CASE STUDY 2 (INVESTIGAING METRICSPIKE)

User Engagement: To measure the activeness of a user. Measuring if the user finds quality in a product/service. Calculate the weekly user engagement?

Code:

```
select week(occurred_at) as
week_of_year,count(user_id)
no_of_users from events group
by week_of_year ;
```

Output:

week_of_year	no_of_users
17	689
18	1661
19	1737
20	1756
21	190
23	65
22	102
24	48
25	4

CASE STUDY 2 (INVESTIGAING METRICSPIKE)

User Growth: Amount of users growing over time for a product.

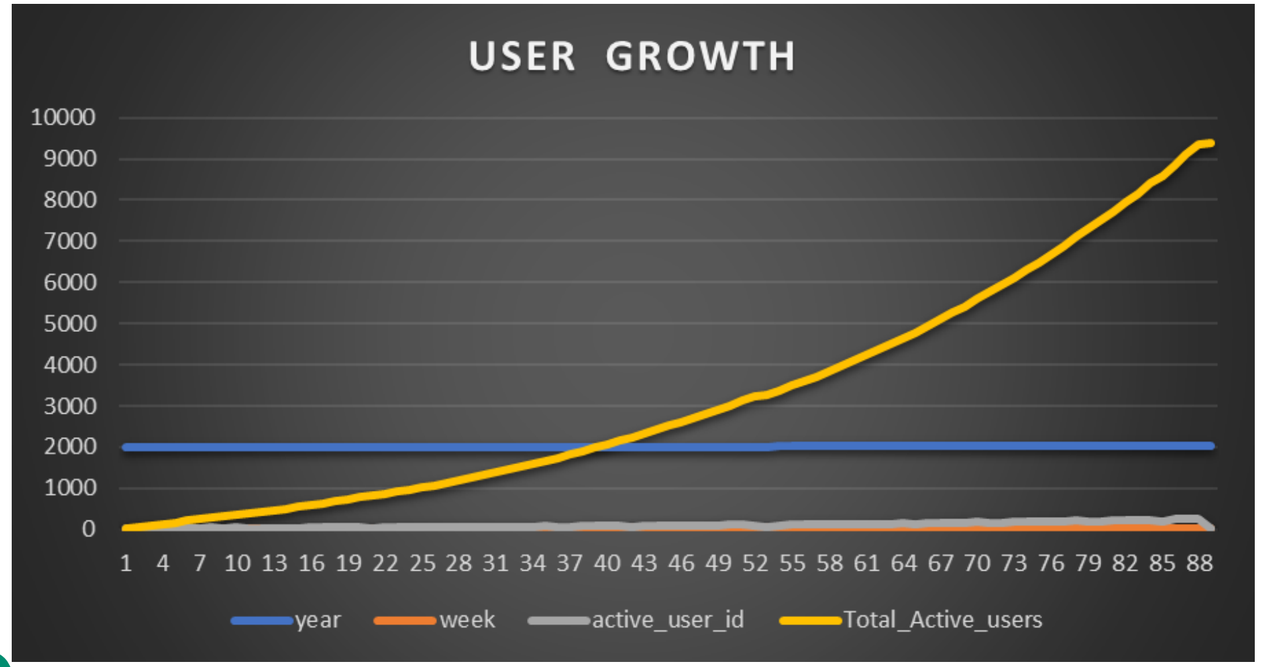
Calculate the user growth for product?

	year	week	active_user_id	Total_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

Code:

```
select year,week,active_user_id,sum(active_user_id) over(order by year,week rows
between unbounded preceding
and current row) as Total_Active_users from(
select week(created_at) as 'week',year(created_at) as 'year', count(distinct user_id)
as active_user_id
from users where state='active' group by year,week order by year,week)a;
```

Output:



CASE STUDY 2 (INVESTIGAING METRICSPIKE)

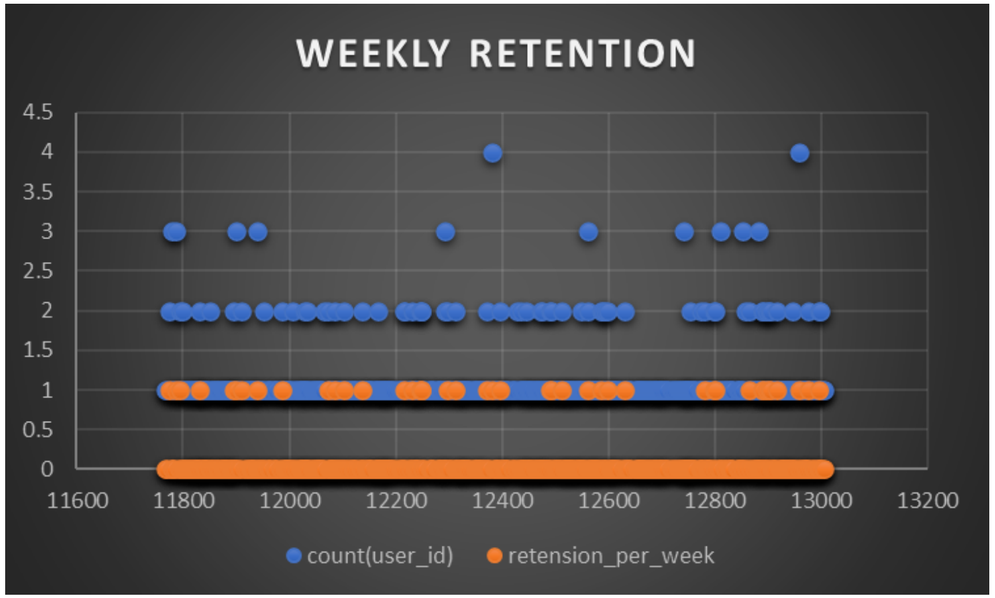
Weekly Retention: Users getting retained weekly after signing-up for a product.

Calculate the weekly retention of users-sign up cohort?

Code:

```
select distinct user_id,count(user_id),sum(case when retension_week=1 then 1 else 0 end) as retension_per_week from(
select distinct a.user_id,a.signup_week,b.week_of_engagement ,( b.week_of_engagement-a.signup_week) as
retension_week
from (select distinct user_id,week(occurred_at) as signup_week
 from events where event_type='signup_flow'and
      event_name='complete_signup') a
    left  join
     (select distinct user_id,week(occurred_at) as week_of_engagement
     from events  where event_type='engagement') b
     on a.user_id=b.user_id
     )d
     group by user_id
     order by user_id
    ;
```

Output:



user_id	count(user_id)	retension_per_week
11768	1	0
11770	1	0
11775	2	1
11778	3	0
11779	1	0
11780	1	0
11785	1	0
11787	3	1
11791	1	0
11793	1	0
11795	2	1
11798	1	0
11799	2	0
11801	1	0
11804	1	0
11806	1	0
11809	1	0
11811	1	0
11813	1	0
11816	1	0

CASE STUDY 2 (INVESTIGAING METRICSPIKE)

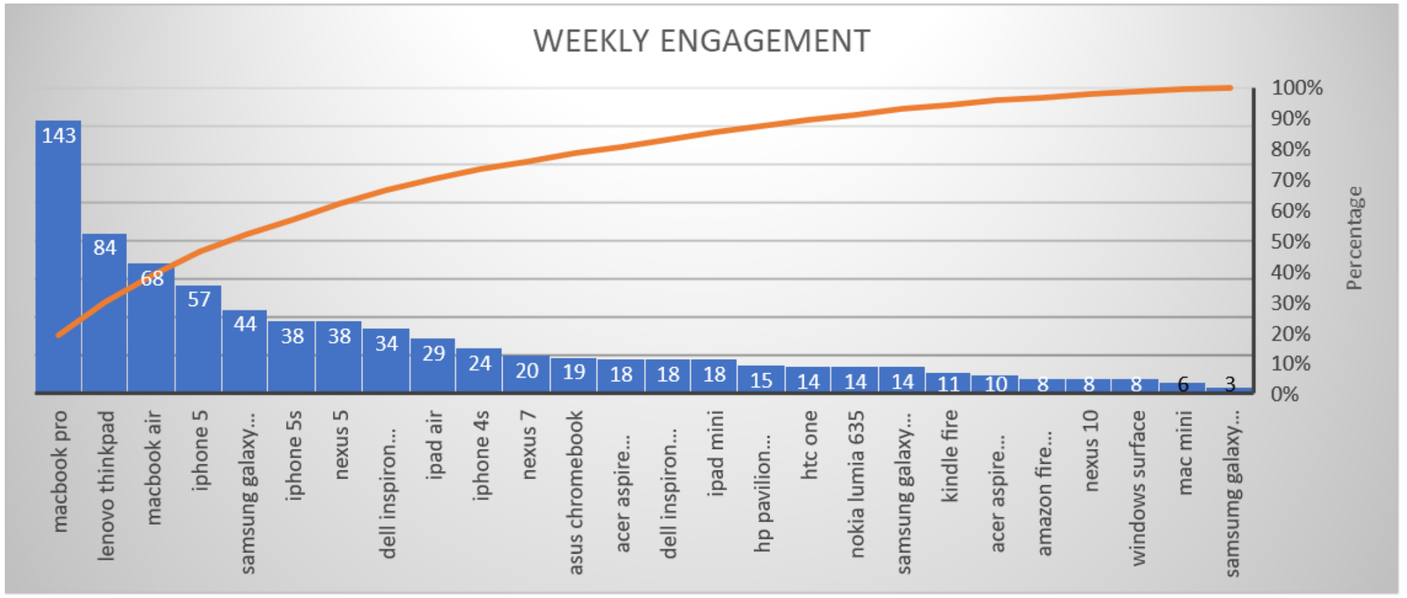
Weekly Engagement: To measure the activeness of a user.
Measuring if the user finds quality in a product/service weekly.
Calculate the weekly engagement per device?

Code:

```
select week(occurred_at) as week,year(occurred_at) as year,
device,count(distinct user_id) as No_Of_Users
 from events where
event_type='engagement'
group by 1,2,3
order by 1,2,3;
```

Output:

week	year	device	No_Of_Users
20	2014	samsung galaxy note	5
20	2014	samsung galaxy s4	9
20	2014	windows surface	2
21	2014	acer aspire desktop	2
21	2014	asus chromebook	1
21	2014	dell inspiron desktop	1
21	2014	dell inspiron notebook	2
21	2014	htc one	1
21	2014	ipad mini	1
21	2014	iphone 4s	2
21	2014	iphone 5	3
21	2014	iphone 5s	1
21	2014	lenovo thinkpad	2
21	2014	macbook air	3
21	2014	macbook pro	7
21	2014	samsumg galaxy tablet	1
22	2014	dell inspiron desktop	1
22	2014	ipad air	1
22	2014	iphone 4s	2
22	2014	iphone 5	1



CASE STUDY 2 (INVESTIGAING METRICSPIKE)

Email Engagement: Users engaging with the email service.
Calculate the email engagement metrics?

Code:

```
select
round(100*sum(case when Email_Inquiry='email opened' then 1 else 0
end)/sum(case when Email_Inquiry='email sent' then 1 else 0 end ),2)
as Email_opening_rate,
round(100*sum(case when Email_Inquiry='email Clicked' then 1 else 0
end)/sum(case when Email_Inquiry='email sent' then 1 else 0  end ),2)
as Email_Clicking_rate,
round((100.0-(100*sum(case when Email_Inquiry='email opened' then 1 else 0
end)/sum(case when Email_Inquiry='email sent' then 1 else 0 end ))),2)
as Email_Not_Opening_Rate
from (
select *,case when action in('sent_weekly_digest') then 'email sent'
when action in('email_clickthrough') then 'email Clicked'
when action in('email_open') then 'email opened' end as Email_Inquiry
from email_events)x ;
```

Output:

	Email_opening_rate	Email_Clicking_rate	Email_Not_Opening_Rate
▶	29.87	10.83	70.13

CONCLUSIONS

CONCLUSION 1

With the use of MySQL insights were gathered based on the job data and investigating metric spike.

CONCLUSION 2

User management and engagement report can be very useful ,growth success metric for the company.

CONCLUSION 3

Duplicates in hob can be tackled and removed effectively.

THANK YOU