# **Operation Analytics and Investing Metric Spike**

# **Description:**

Operation analytics is the subset of data analytics that mainly focuses on the improving efficiency of the operations in the company. It shows how currently different operations are working and how those operations can be improved for better profits. In this project, I have answered such questions which are generally asked by the different departments in a company like the ops team, support team, marketing team, etc. which are required to increase efficiency and streamline.

Investigating metric spikes is an important part of operation analytics. The metric spike shows the anomaly in the trends. It gives the answers to questions like- why there is a dip in daily engagement. why have sales taken a dip? etc. These questions are to be answered daily or weekly basis and should be treated seriously. For this task, different data sets are given.

# Approach:

To start with the project first I understood all the problem statements. Tried to find out what tables will be required to find the best possible result and marked it to use while actual query writing. The queries should be easy to understand. I have written each of the primary and foreign keys for the tables. So, at the time of writing the query, I did have not to check again and again to get those columns. Studied unknown terms like throughput.

### **Tech-Stack used:**

To solve these problems, I have used MYSQL Workbench 8.0 CE. Which is an open software and can be downloaded from <a href="https://www.mysql.com/">https://www.mysql.com/</a>.

# **Insights:**

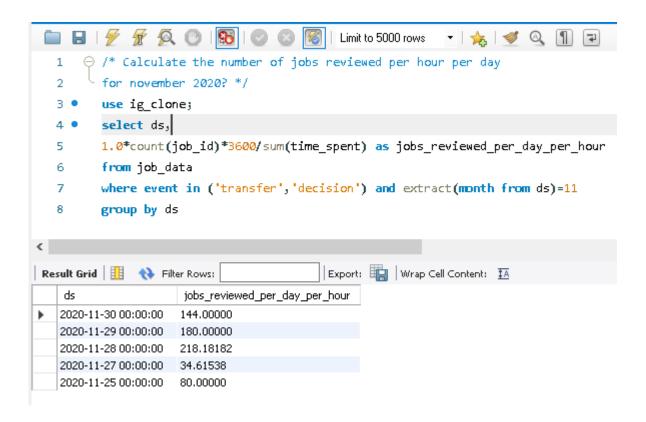
The project is extremely helpful to understand the basics of MySQL. It helped me to learn the structure. It also helped me to learn new keywords like week, day, etc. I have also learned the concept of BETWEEN, GROUP BY, ORDER BY, CASE, Window function, partition by, over, rows between, etc. This project gave me the confidence to work in SQL.

Also, I have learned to import CSV files in the MYSQL workbench. But the files consist of a high number of rows which took a lot of time.

#### **Results:**

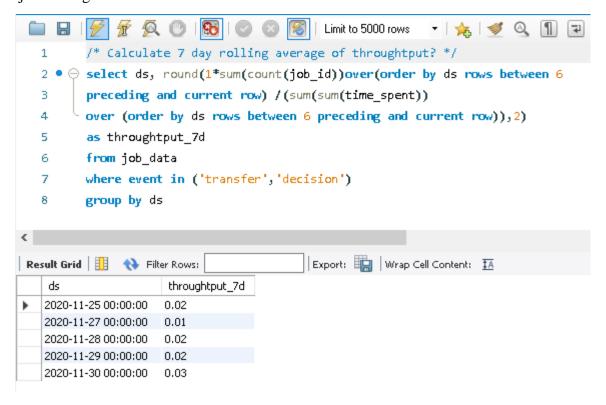
#### Case Study 1 (Job Data):

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

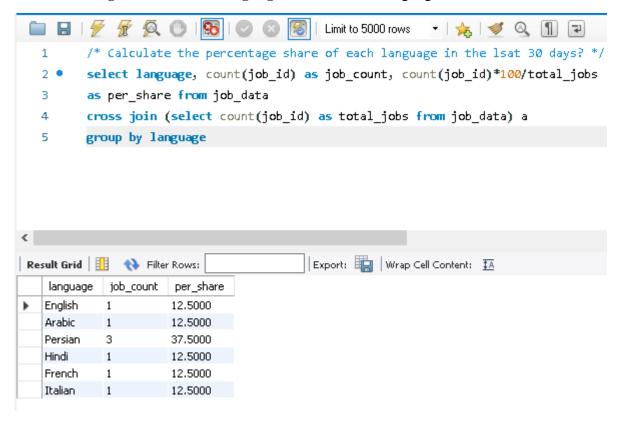


**B.** Throughput: It is the no. of events happening per second. Let's say the above metric is called throughput. For throughput, do you prefer daily metric or 7-day rolling, and why?

If the density of the data is larger, we use the daily metric, and if the density is low the 7-day rolling works well. It also depends upon the anomaly in the data set. Because in 7 days metric the view is broader similar to the daily metric view becomes narrower.

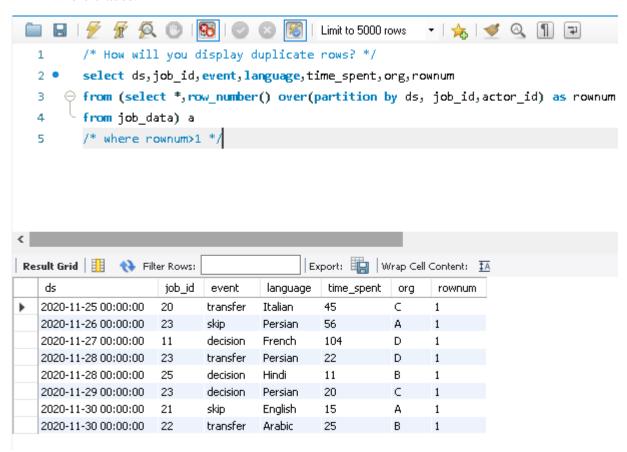


C. Percentage share of each language: Share of each language for different contents.



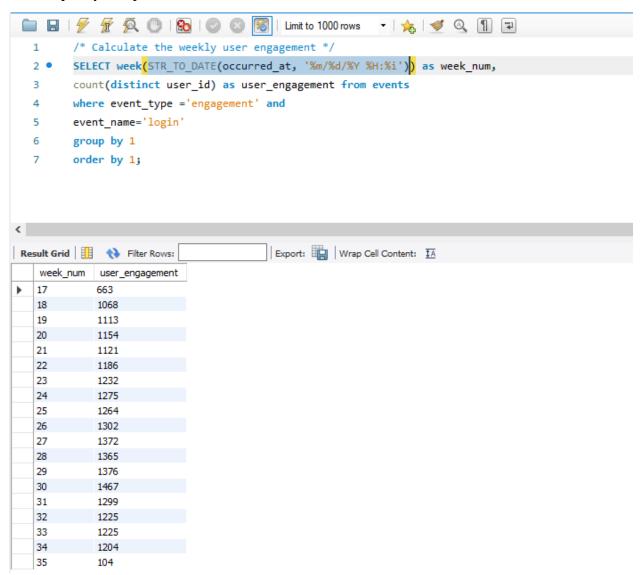
### **D. Duplicate rows:** Rows that have the same value present in them.

When the row has been duplicated the value of the 'rownum' column in the output will be greater than 1. And the duplicate rows can be extracted by removing the comment in the where clause.

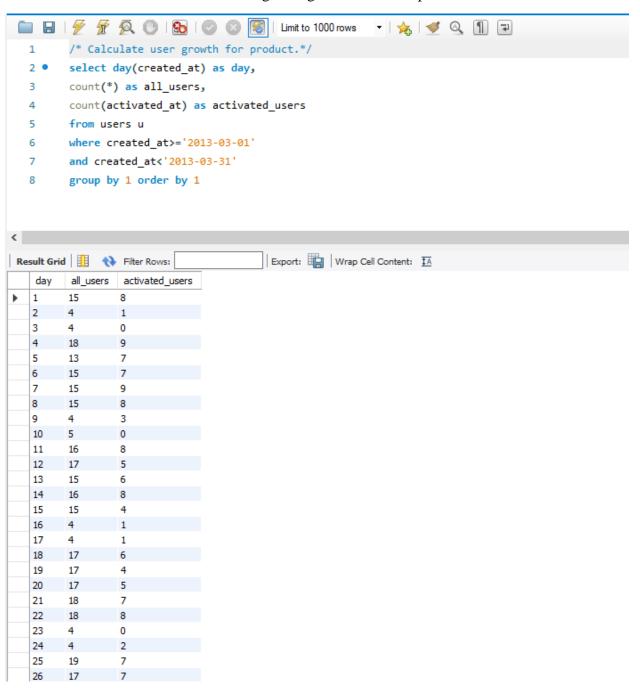


### Case Study 2 (Investigating Metric Spike):

**A.** User Engagement: To measure the activeness of a user. Measuring if the user finds quality in a product/service.



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



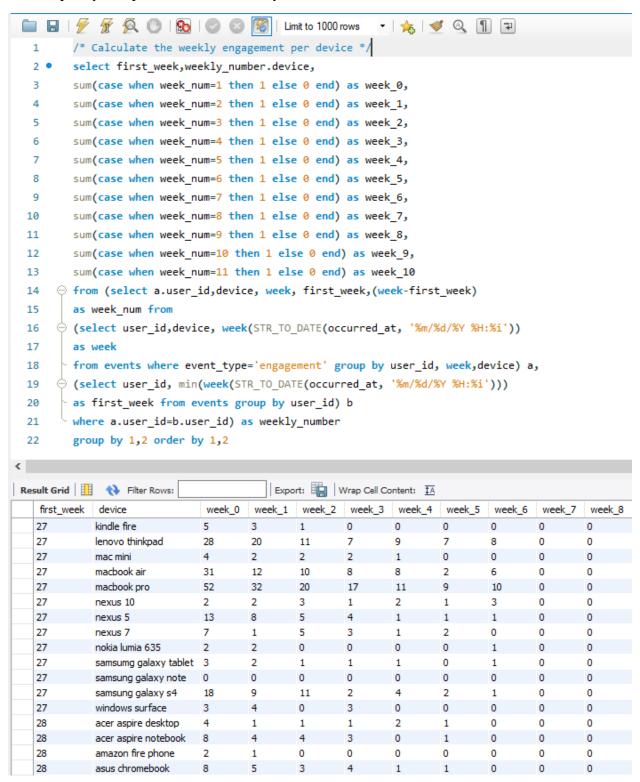
C. Weekly Retention: Users get retained weekly after signing up for a product.

```
Limit to 1000 rows
| 🗲 🖅 👰 🔘 | 🚱 | 📀 |
                                                         - | 🛵 | 🥩 🔍 👖 🗊
        /* Calculate the weekly retention of user=-sign up cohort. */
  1
  2 •
        select first_week,
        sum(case when week_num=1 then 1 else 0 end) as week_0,
  3
  4
        sum(case when week_num=2 then 1 else 0 end) as week_1,
        sum(case when week_num=3 then 1 else 0 end) as week_2,
  5
  6
        sum(case when week_num=4 then 1 else 0 end) as week_3,
  7
        sum(case when week_num=5 then 1 else 0 end) as week_4,
  8
        sum(case when week_num=6 then 1 else 0 end) as week_5,
  9
        sum(case when week num=7 then 1 else 0 end) as week 6,
 10
        sum(case when week_num=8 then 1 else 0 end) as week_7,
        sum(case when week_num=9 then 1 else 0 end) as week_8,
 11
        sum(case when week_num=10 then 1 else 0 end) as week_9,
 12
        sum(case when week_num=11 then 1 else 0 end) as week_10
 13
14

⊖ from (select a.user id, week, first week, (week-first week)

15
        as week_num from
     16
        from events group by user id, week) a,
17
 18
     as first_week
 19
       from events group by user id) b
 20
        where a.user_id=b.user_id) as with_week_number
 21
        group by first_week order by first_week;
 22
Result Grid
            Filter Rows:
                                         Export: Wrap Cell Content: $A
   first_week
            week_0
                                   week_3
                                           week_4
                                                   week_5
                                                           week_6
                                                                  week_7
                                                                          week_8
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                    week_1
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            472
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                           251
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            362
                   261
                           203
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            284
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```

**D.** Weekly Engagement: To measure the activeness of a user. Measuring if the user finds quality in a product/service weekly.



## **E. Email Engagement:** Users engaging with the email service.

