CA675: CLOUD TECHNOLOGIES

ASSIGNMENT 1: DATA ANALYSIS ON GOOGLE CLOUD AND LOCAL HADOOP DEPLOYMENT

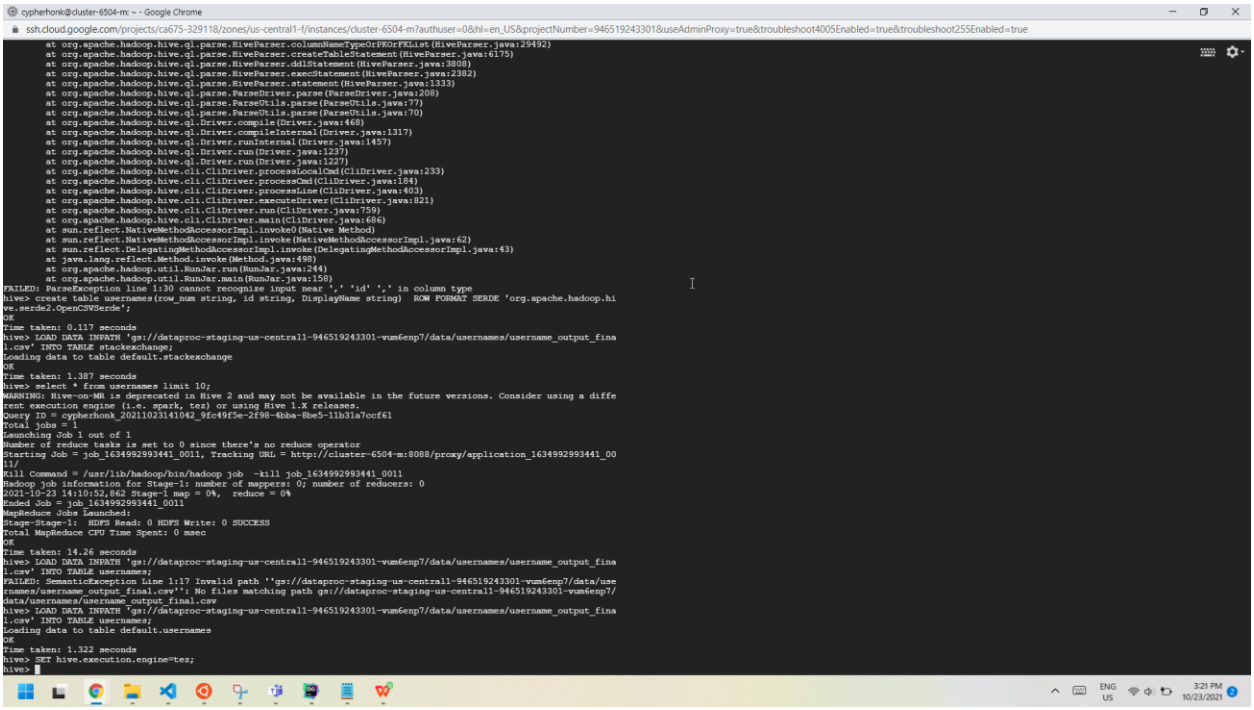
ASSIGNMENT IMPLEMENTED BOTH ON **GOOGLE CLOUD PLATFORM** AND LOCAL MACHINE

Contents

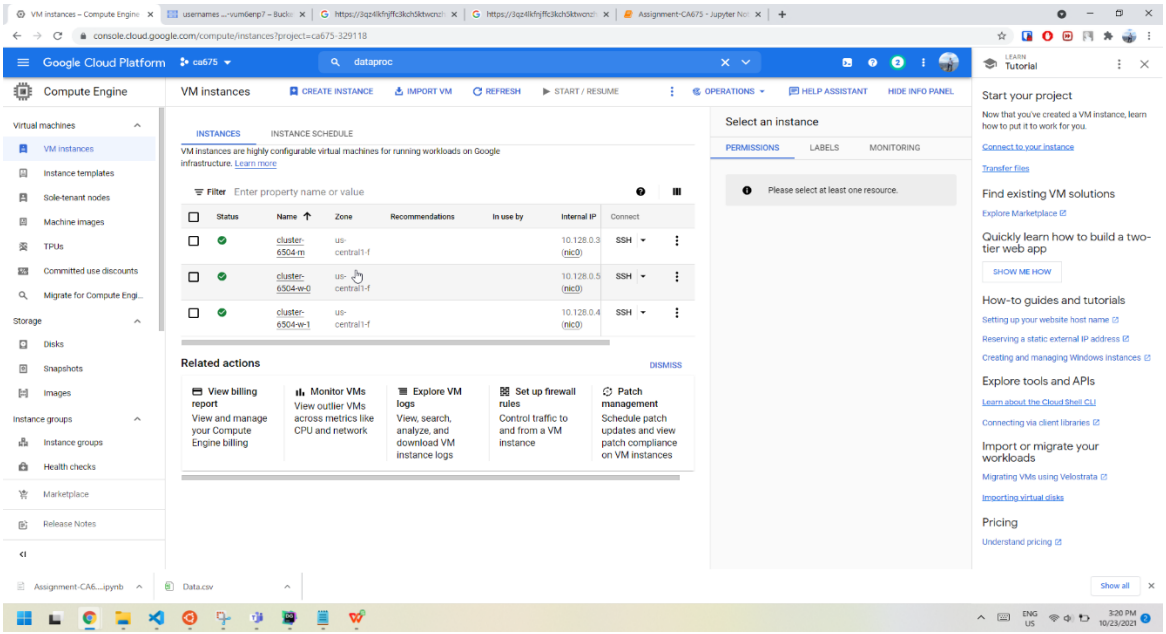
SCREENSHOTS

GCP SCREENSHOTS

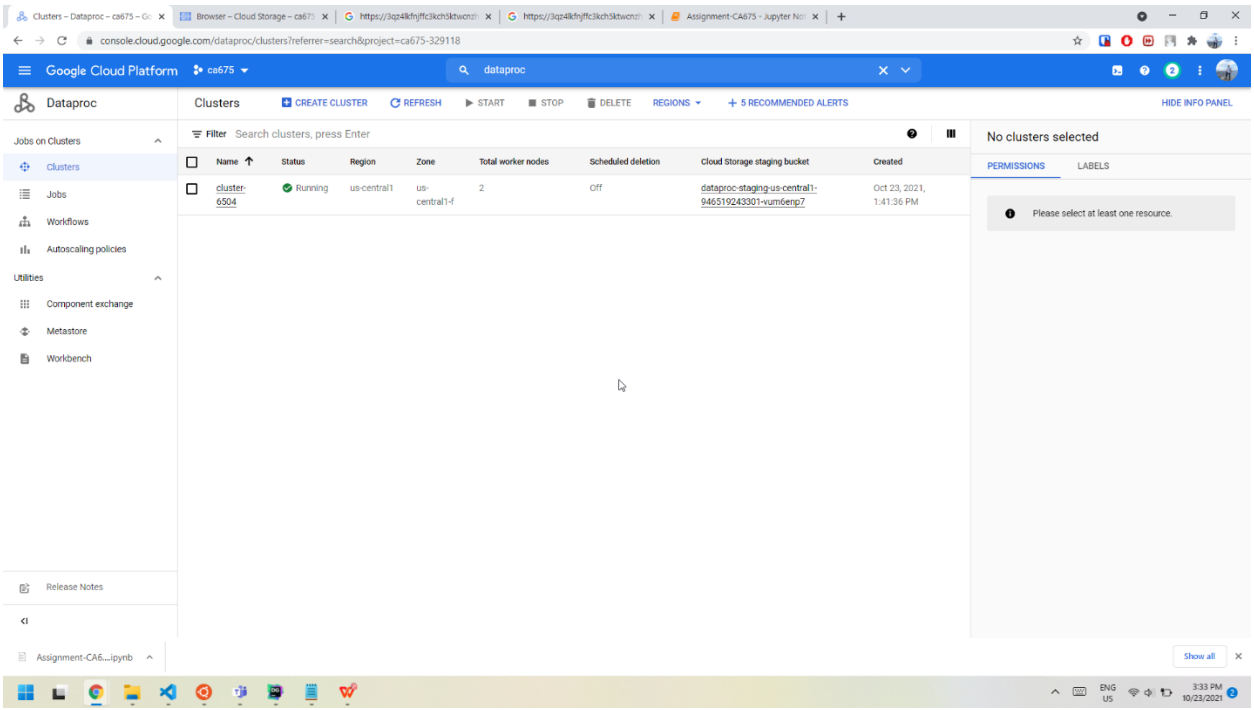
1) Hive shell on GCP shell



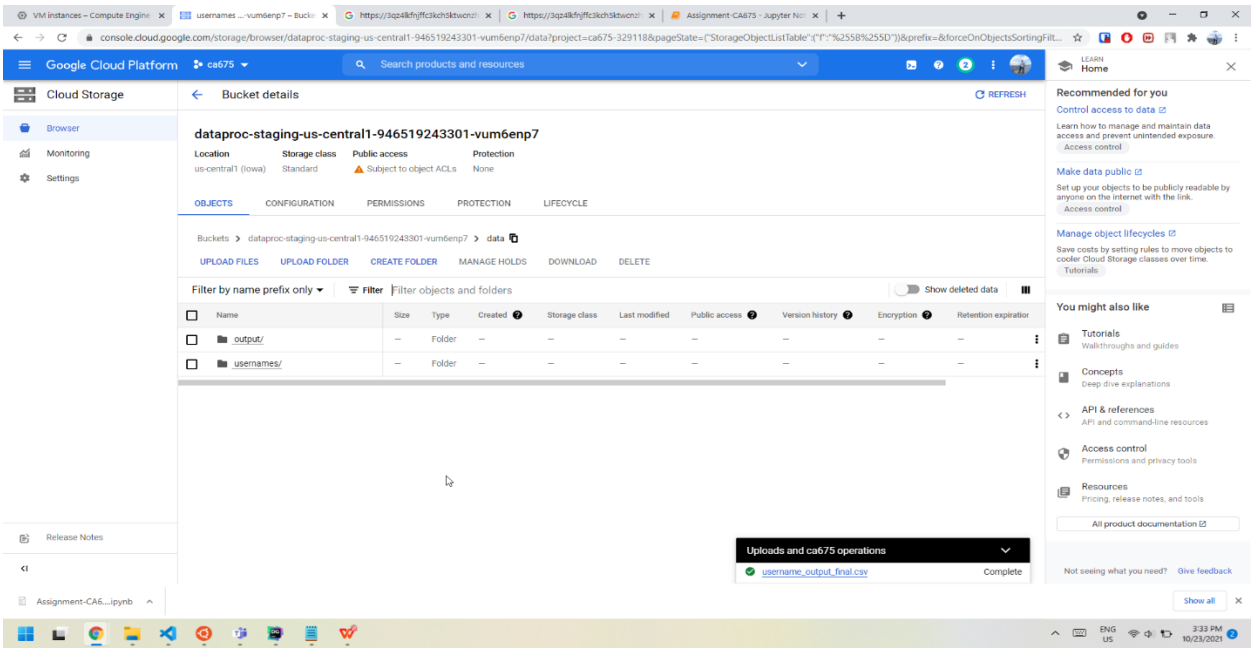
2) VM instances of cluster



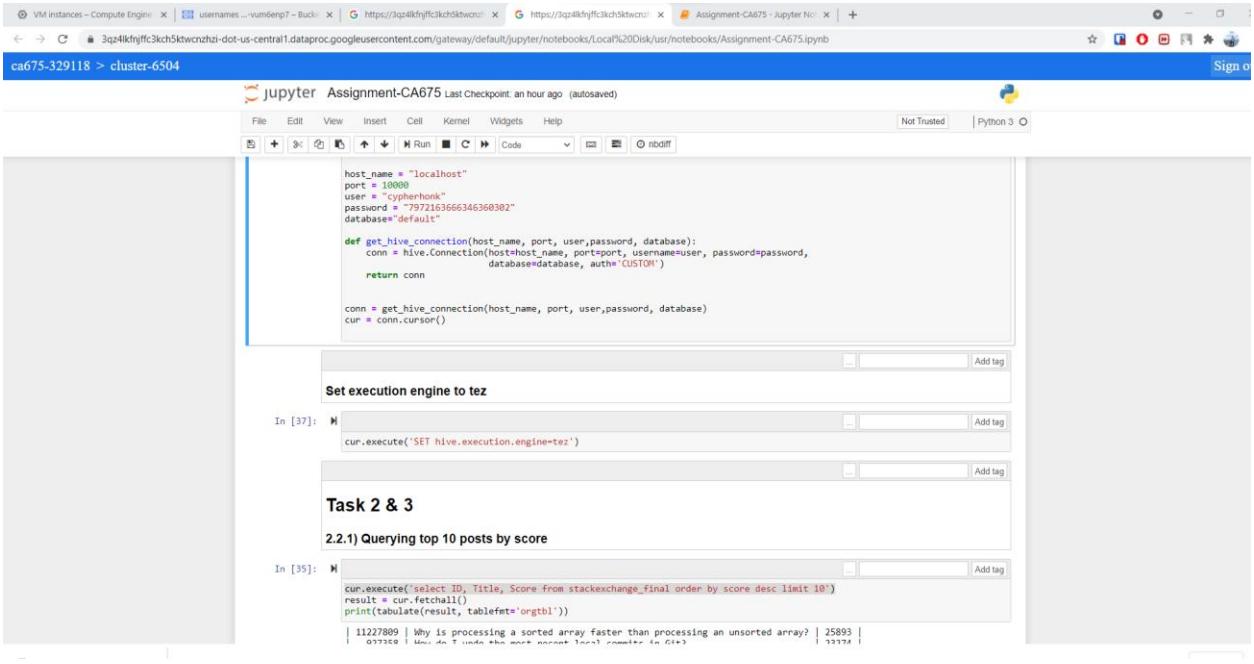
3) Dataproc cluster



4) Storage buckets for data



5) Code execution through Jupyter



LOCAL DEPLOYMENT

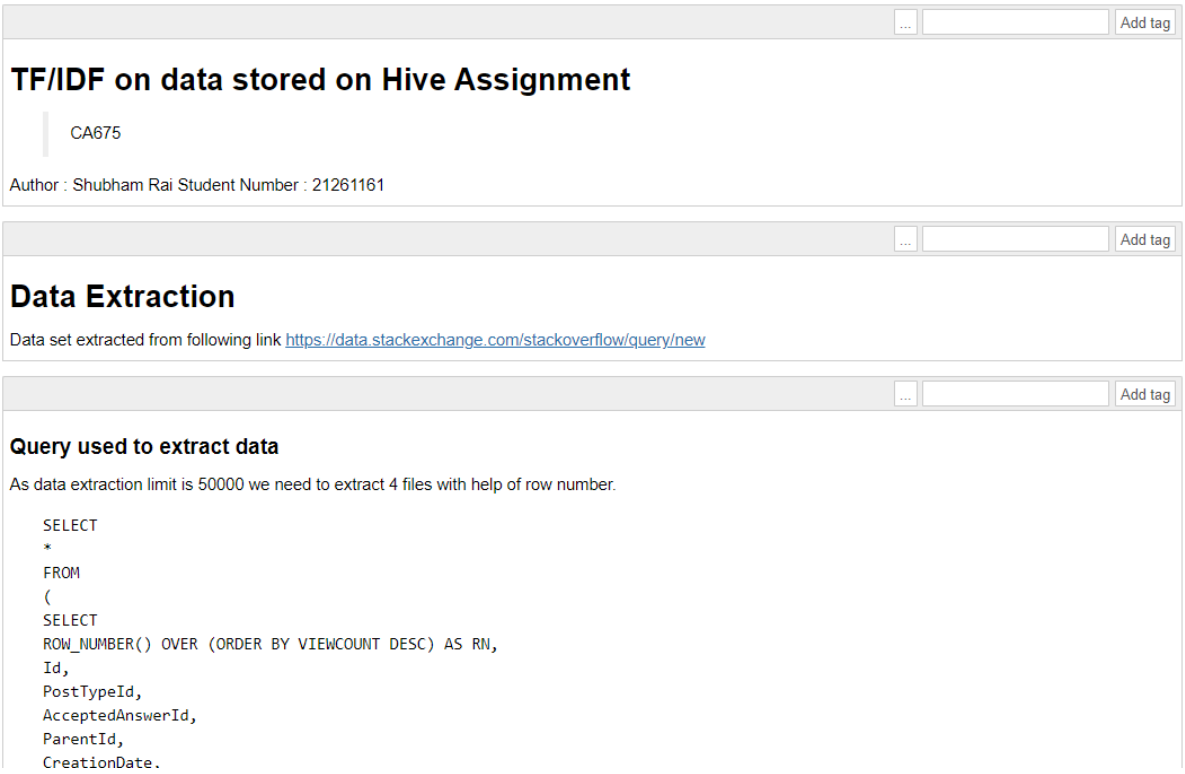
1) Hadoop Services

```
hdoop@Shubham:~$ jps
2336 Jps
1074 NodeManager
706 SecondaryNameNode
914 ResourceManager
1459 RunJar
283 NameNode
479 DataNode
hdoop@Shubham:~$
```

2) Hiveserver2

```
hdoop@Shubham:~/apache-hive-3.1.2-bin$ hiveserver2
2021-10-24 09:44:09: Starting HiveServer2
SLF4J: Class path contains multiple SLF4J bindings.
SLF4J: Found binding in [jar:file:/home/hdoop/apache-hive-3.1.2-bin/lib/log4j-slf4j-impl-2.10.0.jar!/org/slf4j/impl/StaticLoggerBinder.class]
SLF4J: Found binding in [jar:file:/home/hdoop/hadoop-3.3.1/share/hadoop/common/lib/slf4j-log4j12-1.7.30.jar!/org/slf4j/impl/StaticLoggerBinder.class]
SLF4J: See http://www.slf4j.org/codes.html#multiple_bindings for an explanation.
SLF4J: Actual binding is of type [org.apache.logging.slf4j.Log4jLoggerFactory]
Hive Session ID = e0aa9409-6a4d-42e2-b22b-e508a993d1c3
Hive Session ID = 58d804ea-6401-4915-8f7d-18cb8dca1861
Hive Session ID = 6970c933-7fb5-4261-a2ba-5b80ceada7c0
Hive Session ID = 4b9599e0-099e-4752-b8c5-f09a00de016b
OK
```

3) Jupyter Notebook



Assignment-CA675

October 23, 2021

1 Hive Assignment

CA675

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2 Data Extraction

Data set extracted from following link https://data.stackexchange.com/stackoverflow/query/new

2.0.1 Query used to extract data

As data extraction limit is 50000 we need to extract 4 files with help of row number.

```
SELECT
*
FROM
(
SELECT
ROW_NUMBER() OVER (ORDER BY VIEWCOUNT DESC) AS RN,
Id,
PostTypeId,
AcceptedAnswerId,
ParentId,
CreationDate,
DeletionDate,
Score,
ViewCount,
OwnerUserId,
OwnerDisplayName,
LastEditorUserId,
LastEditorDisplayName,
LastEditDate,
LastActivityDate,
Title,
Tags,
AnswerCount,
CommentCount,
FavoriteCount,
```

```
ClosedDate,
CommunityOwnedDate,
ContentLicense
FROM POSTS WHERE VIEWCOUNT IS NOT NULL
) AS T
WHERE RN BETWEEN 150000 AND 200000
```

3 Starting Hive Server

bin/hiveserver2 bin/beeline -n hdoop -u jdbc:hive2://localhost:10000

4 Create Table in HIVE

As delimited file formated has issues while reading quoted characters we are using SERDE format to read CSV and insert data in HIVE

[ ]:
```
create table stackexchange(RN int, Id int, PostTypeId int,AcceptedAnswerId␣
↪int,ParentId int,CreationDate timestamp,DeletionDate timestamp,Score␣
↪BIGINT,ViewCount BIGINT,OwnerUserId varchar(255),OwnerDisplayName␣
↪varchar(255),LastEditorUserId varchar(255),LastEditorDisplayName␣
↪varchar(255),LastEditDate timestamp,LastActivityDate timestamp,Title␣
↪timestamp,Tags varchar(255),AnswerCount int,CommentCount int,FavoriteCount␣
↪int,ClosedDate timestamp,CommunityOwnedDate timestamp,ContentLicense␣
↪varchar(255))  ROW FORMAT SERDE 'org.apache.hadoop.hive.serde2.OpenCSVSerde';
```

5 Put Data on HDFS

hadoop fs -put < local_path to < hdfs_location >

6 Task 2 & 3

6.0.1 2.2.1) Querying top 10 posts by score

[4]:
```
from pyhive import hive
from tabulate import tabulate
import pandas as pd


host_name = "localhost"
port = 10000
user = "hdoop"
password = "a"
database="default"

def hiveconnection(host_name, port, user,password, database):
```

```
    conn = hive.Connection(host=host_name, port=port, username=user,␣
 ↪password=password,
                           database=database, auth='CUSTOM')
    return conn


conn = hiveconnection(host_name, port, user,password, database)
cur = conn.cursor()

## Usage example from https://github.com/dropbox/PyHive
```

[80]:
```
cur.execute('select ID, Title, Score from stackexchange_view order by score␣
 ↪desc limit 10')
result = cur.fetchall()
print(tabulate(result, tablefmt='orgtbl'))
```

```
| 11227809 | Why is processing a sorted array faster than processing an unsorted
array? | 25893 |
|   927358 | How do I undo the most recent local commits in Git?
| 23274 |
|  2003505 | How do I delete a Git branch locally and remotely?
| 18451 |
|   292357 | What is the difference between 'git pull' and 'git fetch'?
| 12796 |
|   231767 | What does the "yield" keyword do?
| 11512 |
|   477816 | What is the correct JSON content type?
| 10894 |
|   348170 | How do I undo 'git add' before commit?
| 10045 |
|  5767325 | How can I remove a specific item from an array?
|  9877 |
|  6591213 | How do I rename a local Git branch?
|  9747 |
|  1642028 | What is the "-->" operator in C/C++?
|  9539 |
```

6.0.2 2.2.2) The top 10 users by post score

[8]:
```
### Join data as usernames data was extracted and added post data pulling

cur.execute("""
SELECT DISTINCT u.displayname,stackexchange.score,stackexchange.owneruserid FROM
(
    select
           OwnerUserId,
           sum(score) as score
```

```
    from stackexchange_view
    group by OwnerUserId
    order by score desc
    LIMIT 11
)stackexchange
LEFT JOIN usernames u
ON stackexchange.owneruserid = u.id
ORDER BY stackexchange.score DESC
""")
result = cur.fetchall()
print(tabulate(result, tablefmt='orgtbl'))
```

```
|                | 448906 |        |
| GManNickG      |  37606 | 87234  |
| readonly       |  28739 | 4883   |
| e-satis        |  26728 | 9951   |
| pupeno         |  25860 | 6068   |
| Hamza Yerlikaya |  23949 | 89904  |
| Joan Venge     |  23632 | 51816  |
| Ali            |  20156 | 49153  |
| TIMEX          |  19454 | 179736 |
| Matthew Rankin |  19413 | 95592  |
| flybywire      |  19295 | 63051  |
```

6.0.3 2.2.3) The number of distinct users, who used the word "cloud" in one of their posts

6.1 – Note : Using Title and Tags field for counting cloud as we are receiving timeout when trying to pull body field from source

[15]:
```
cur.execute("""
SELECT
     COUNT(DISTINCT owneruserid) as user_count
FROM stackexchange_view
WHERE title LIKE '%cloud%' or tags LIKE '%cloud%'
""")
result = cur.fetchall()
print(tabulate(result, tablefmt='orgtbl'))
```

```
| 357 |
```

[77]:
```
### Get data for top 10 users from above list and pull data

df = pd.read_sql("""
SELECT
       owneruserid,
       title
from stackexchange_view
```

```
WHERE owneruserid
IN
      (
            87234,
            4883,
            9951,
            6068,
            89904,
            51816,
            49153,
            179736,
            95592,
            63051
          )
order by owneruserid""", conn)
top_10_user_id = list(df["owneruserid"].unique())
```

[62]:
```
## References taken and custom function created by me.
## Reference : https://medium.com/@cmukesh8688/
 ↪tf-idf-vectorizer-scikit-learn-dbc0244a911a

from sklearn.feature_extraction.text import TfidfVectorizer


# Calculate sum() of TF-IDF and get top 10 words with highest TF-IDF and select␣
 ↪only those columns
def calculate_tf_idf(df):
    vectorizer = TfidfVectorizer(stop_words='english', lowercase=True) # Remove␣
 ↪Stop Words
    response = vectorizer.fit_transform(df["title"]) # Use title field for TF/
 ↪IDF
    df_tfidf_sklearn = pd.DataFrame(response.toarray(),columns=vectorizer.
 ↪get_feature_names_out())
    total_tf_idf = df_tfidf_sklearn.sum(axis = 0) # Remove sum of TF/IDF for␣
 ↪getting top 10 most used words
    top_10_list = total_tf_idf.nlargest(10) # Get top 10 words per user
    top_10_words = list(top_10_list.index) # Get list of top 10 words
    df_tfidf_sklearn[top_10_words] # Select only top 10 words as column
    return df_tfidf_sklearn[top_10_words]
```

6.2 For each of top 10 users and their top 10 words plot TF/IDF table for their correspnding comments

[81]:
```
## For all 10 users create TF-IDF table for each user for their respective␣
↪comments.

for each_user in top_10_user_id: ## Iterate over all top 10 users
    username_id = str(each_user)
    filtered_data = df[(df['owneruserid']==username_id)] # Filter data only for␣
↪selected user
    tf_idf_df = calculate_tf_idf(filtered_data) # pass on to above function
    print("For Username ID TF/IDF table : "+username_id)
    tf_idf_df.insert(0, 'usernameid', username_id)# attach username ID field to␣
↪dataframe
    display(tf_idf_df)
  ␣
↪print("**********************************************************************************\n\n\n
```

```
For Username ID TF/IDF table : 179736
```

	usernameid	python	django	javascript	js	node	use	\
0	179736	0.338128	0.000000	0.0	0.000000	0.000000	0.0	
1	179736	0.000000	0.000000	0.0	0.275686	0.275686	0.0	
2	179736	0.000000	0.000000	0.0	0.350733	0.350733	0.0	
3	179736	0.000000	0.000000	0.0	0.000000	0.000000	0.0	
4	179736	0.000000	0.000000	0.0	0.000000	0.000000	0.0	
..	...	...	...	...	...	...	...	
109	179736	0.000000	0.000000	0.0	0.000000	0.000000	0.0	
110	179736	0.000000	0.000000	0.0	0.000000	0.000000	0.0	
111	179736	0.000000	0.288203	0.0	0.000000	0.000000	0.0	
112	179736	0.000000	0.000000	0.0	0.000000	0.000000	0.0	
113	179736	0.288398	0.000000	0.0	0.000000	0.000000	0.0	

	string	dictionary	query	mysql
0	0.000000	0.0	0.0	0.000000
1	0.000000	0.0	0.0	0.000000
2	0.000000	0.0	0.0	0.000000
3	0.000000	0.0	0.0	0.000000
4	0.394849	0.0	0.0	0.000000
..	...	...	...	...
109	0.000000	0.0	0.0	0.000000
110	0.000000	0.0	0.0	0.000000
111	0.000000	0.0	0.0	0.000000
112	0.000000	0.0	0.0	0.398258
113	0.000000	0.0	0.0	0.000000

[114 rows x 11 columns]

****

For Username ID TF/IDF table : 4883

	usernameid	python	git	ruby	table	process	list	\
0	4883	0.000000	0.000000	0.000000	0.332494	0.000000	0.000000	
1	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
2	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.416967	
3	4883	0.000000	0.000000	0.427544	0.000000	0.000000	0.000000	
4	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5	4883	0.000000	0.000000	0.000000	0.000000	0.350231	0.000000	
6	4883	0.000000	0.000000	0.521156	0.000000	0.000000	0.568902	
7	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
8	4883	0.000000	0.402233	0.000000	0.000000	0.000000	0.000000	
9	4883	0.000000	0.000000	0.000000	0.521156	0.000000	0.000000	
10	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
11	4883	0.000000	0.280138	0.000000	0.000000	0.000000	0.000000	
12	4883	0.249965	0.000000	0.000000	0.000000	0.000000	0.000000	
13	4883	0.000000	0.000000	0.000000	0.330545	0.330545	0.000000	
14	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
15	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
16	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
17	4883	0.000000	0.301298	0.000000	0.000000	0.000000	0.000000	
18	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
19	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
20	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
21	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
22	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
23	4883	0.288276	0.000000	0.000000	0.000000	0.000000	0.000000	
24	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
25	4883	0.288276	0.000000	0.000000	0.000000	0.000000	0.000000	
26	4883	0.000000	0.000000	0.439712	0.000000	0.000000	0.000000	
27	4883	0.362262	0.000000	0.000000	0.000000	0.000000	0.000000	
28	4883	0.429802	0.000000	0.000000	0.000000	0.000000	0.000000	
29	4883	0.234332	0.000000	0.000000	0.000000	0.000000	0.000000	
30	4883	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
31	4883	0.000000	0.473839	0.000000	0.000000	0.000000	0.000000	
32	4883	0.000000	0.000000	0.000000	0.000000	0.350231	0.000000	

	rename	rails	difference	write
0	0.362955	0.362955	0.000000	0.362955
1	0.000000	0.000000	0.000000	0.000000
2	0.000000	0.000000	0.000000	0.000000

```
3   0.000000  0.000000    0.000000  0.000000
4   0.000000  0.000000    0.000000  0.000000
5   0.000000  0.000000    0.000000  0.000000
6   0.000000  0.000000    0.000000  0.000000
7   0.000000  0.000000    0.000000  0.000000
8   0.000000  0.000000    0.000000  0.000000
9   0.568902  0.000000    0.000000  0.000000
10  0.000000  0.000000    0.000000  0.000000
11  0.000000  0.000000    0.000000  0.000000
12  0.000000  0.000000    0.000000  0.000000
13  0.000000  0.000000    0.000000  0.000000
14  0.000000  0.000000    0.000000  0.000000
15  0.000000  0.000000    0.000000  0.000000
16  0.000000  0.000000    0.000000  0.000000
17  0.000000  0.000000    0.000000  0.000000
18  0.000000  0.000000    0.534435  0.000000
19  0.000000  0.000000    0.000000  0.000000
20  0.000000  0.534435    0.000000  0.000000
21  0.000000  0.000000    0.000000  0.000000
22  0.000000  0.000000    0.000000  0.000000
23  0.000000  0.000000    0.000000  0.000000
24  0.000000  0.000000    0.000000  0.000000
25  0.000000  0.000000    0.000000  0.000000
26  0.000000  0.000000    0.000000  0.479997
27  0.000000  0.000000    0.000000  0.000000
28  0.000000  0.000000    0.000000  0.000000
29  0.000000  0.000000    0.311276  0.000000
30  0.000000  0.000000    0.000000  0.000000
31  0.000000  0.000000    0.000000  0.000000
32  0.000000  0.000000    0.000000  0.000000
```

****

For Username ID TF/IDF table : 49153

```
   usernameid  javascript       php     using    jquery  java  array  string  \
0       49153    0.372458  0.000000  0.000000  0.000000   0.0    0.0     0.0
1       49153    0.000000  0.000000  0.000000  0.290805   0.0    0.0     0.0
2       49153    0.000000  0.307253  0.000000  0.000000   0.0    0.0     0.0
3       49153    0.000000  0.000000  0.000000  0.000000   0.0    0.0     0.0
4       49153    0.000000  0.000000  0.000000  0.000000   0.0    0.0     0.0
..        ...         ...       ...       ...       ...   ...    ...     ...
74      49153    0.000000  0.337705  0.337705  0.000000   0.0    0.0     0.0
75      49153    0.000000  0.000000  0.000000  0.000000   0.0    0.0     0.0
76      49153    0.000000  0.000000  0.000000  0.000000   0.0    0.0     0.0
77      49153    0.389987  0.000000  0.000000  0.000000   0.0    0.0     0.0
```

```
78      49153    0.000000  0.000000  0.000000  0.000000   0.0    0.0     0.0

    file     class  select
0    0.0  0.000000     0.0
1    0.0  0.000000     0.0
2    0.0  0.000000     0.0
3    0.0  0.000000     0.0
4    0.0  0.000000     0.0
..   ...       ...     ...
74   0.0  0.000000     0.0
75   0.0  0.000000     0.0
76   0.0  0.000000     0.0
77   0.0  0.577234     0.0
78   0.0  0.000000     0.0

[79 rows x 11 columns]
```

****

For Username ID TF/IDF table : 51816

```
   usernameid    python    string      list       wpf  values     index  \
0       51816  0.000000  0.000000  0.000000  0.000000     0.0  0.000000
1       51816  0.000000  0.000000  0.000000  0.328272     0.0  0.000000
2       51816  0.211868  0.000000  0.000000  0.000000     0.0  0.000000
3       51816  0.000000  0.000000  0.362504  0.000000     0.0  0.000000
4       51816  0.000000  0.000000  0.356142  0.000000     0.0  0.000000
..        ...       ...       ...       ...       ...     ...       ...
59      51816  0.168840  0.000000  0.000000  0.000000     0.0  0.000000
60      51816  0.000000  0.604756  0.000000  0.000000     0.0  0.000000
61      51816  0.000000  0.000000  0.000000  0.000000     0.0  0.490276
62      51816  0.000000  0.000000  0.378230  0.000000     0.0  0.469521
63      51816  0.314929  0.539368  0.000000  0.000000     0.0  0.000000

    function     class       net     value
0        0.0  0.767028  0.000000  0.000000
1        0.0  0.000000  0.000000  0.000000
2        0.0  0.000000  0.000000  0.417964
3        0.0  0.000000  0.478167  0.000000
4        0.0  0.000000  0.000000  0.000000
..       ...       ...       ...       ...
59       0.0  0.000000  0.000000  0.000000
60       0.0  0.000000  0.000000  0.000000
61       0.0  0.000000  0.000000  0.000000
62       0.0  0.000000  0.000000  0.000000
63       0.0  0.000000  0.000000  0.000000
```

[64 rows x 11 columns]

****

For Username ID TF/IDF table : 6068

	usernameid	file	sql	android	java	asp	mvc	\
0	6068	0.000000	0.000000	0.379839	0.000000	0.000000	0.000000	
1	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
2	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
3	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
4	6068	0.404515	0.000000	0.000000	0.000000	0.000000	0.000000	
5	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
6	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
7	6068	0.000000	0.000000	0.000000	0.476325	0.000000	0.000000	
8	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
9	6068	0.379839	0.000000	0.000000	0.000000	0.000000	0.000000	
10	6068	0.000000	0.000000	0.424029	0.000000	0.000000	0.000000	
11	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
12	6068	0.591838	0.000000	0.000000	0.000000	0.000000	0.000000	
13	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
14	6068	0.000000	0.654946	0.000000	0.000000	0.000000	0.000000	
15	6068	0.000000	0.000000	0.000000	0.000000	0.395053	0.395053	
16	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
17	6068	0.000000	0.000000	0.000000	0.000000	0.319194	0.319194	
18	6068	0.000000	0.000000	0.000000	0.000000	0.395053	0.395053	
19	6068	0.000000	0.635499	0.000000	0.000000	0.000000	0.000000	
20	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
21	6068	0.000000	0.000000	0.000000	0.370995	0.000000	0.000000	
22	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
23	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
24	6068	0.000000	0.000000	0.000000	0.000000	0.358590	0.358590	
25	6068	0.000000	0.000000	0.416058	0.000000	0.000000	0.000000	
26	6068	0.000000	0.000000	0.365621	0.000000	0.000000	0.000000	
27	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
28	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
29	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
30	6068	0.000000	0.000000	0.000000	0.318064	0.000000	0.000000	
31	6068	0.000000	0.000000	0.000000	0.365621	0.000000	0.000000	
32	6068	0.000000	0.351563	0.000000	0.000000	0.000000	0.000000	
33	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
34	6068	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
35	6068	0.404515	0.000000	0.000000	0.000000	0.000000	0.000000	

net	git	data	difference

```
0   0.000000  0.000000  0.408078    0.000000
1   0.000000  0.000000  0.000000    0.000000
2   0.000000  0.709227  0.000000    0.354614
3   0.000000  0.000000  0.000000    0.503013
4   0.000000  0.000000  0.000000    0.000000
5   0.000000  0.000000  0.000000    0.000000
6   0.000000  0.000000  0.000000    0.000000
7   0.000000  0.000000  0.000000    0.000000
8   0.000000  0.000000  0.000000    0.000000
9   0.000000  0.000000  0.408078    0.000000
10  0.000000  0.000000  0.000000    0.000000
11  0.000000  0.000000  0.000000    0.000000
12  0.000000  0.317919  0.000000    0.000000
13  0.000000  0.000000  0.000000    0.000000
14  0.000000  0.000000  0.000000    0.000000
15  0.395053  0.000000  0.000000    0.000000
16  0.000000  0.000000  0.000000    0.000000
17  0.319194  0.000000  0.000000    0.000000
18  0.395053  0.000000  0.000000    0.000000
19  0.000000  0.000000  0.000000    0.000000
20  0.000000  0.000000  0.000000    0.000000
21  0.000000  0.000000  0.000000    0.398576
22  0.000000  0.000000  0.000000    0.000000
23  0.000000  0.000000  0.000000    0.000000
24  0.358590  0.000000  0.000000    0.000000
25  0.000000  0.000000  0.000000    0.000000
26  0.000000  0.000000  0.000000    0.000000
27  0.000000  0.000000  0.000000    0.000000
28  0.000000  0.000000  0.000000    0.000000
29  0.000000  0.355684  0.000000    0.000000
30  0.000000  0.000000  0.000000    0.000000
31  0.000000  0.000000  0.000000    0.000000
32  0.000000  0.000000  0.000000    0.000000
33  0.000000  0.000000  0.000000    0.000000
34  0.000000  0.000000  0.441140    0.000000
35  0.000000  0.000000  0.000000    0.000000

**************************************************************************


For Username ID TF/IDF table : 63051

   usernameid        vs      bash      java      list  instance    python  \
0       63051  0.000000  0.334417  0.000000  0.000000  0.000000  0.000000
1       63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
2       63051  0.299971  0.000000  0.000000  0.000000  0.000000  0.000000
3       63051  0.000000  0.322478  0.000000  0.000000  0.000000  0.000000
```

```
4       63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
5       63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
6       63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
7       63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
8       63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
9       63051  0.000000  0.000000  0.000000  0.000000  0.801591  0.000000
10      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
11      63051  0.241678  0.000000  0.546575  0.000000  0.000000  0.000000
12      63051  0.000000  0.322478  0.000000  0.000000  0.000000  0.000000
13      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
14      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
15      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
16      63051  0.000000  0.000000  0.000000  0.434222  0.000000  0.000000
17      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
18      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
19      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
20      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
21      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
22      63051  0.000000  0.000000  0.000000  0.000000  0.474023  0.000000
23      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.457567
24      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
25      63051  0.422192  0.000000  0.000000  0.477411  0.000000  0.000000
26      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
27      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
28      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
29      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
30      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
31      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.434222
32      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
33      63051  0.000000  0.000000  0.355579  0.000000  0.000000  0.000000
34      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
35      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
36      63051  0.000000  0.000000  0.526650  0.000000  0.000000  0.000000
37      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
38      63051  0.000000  0.422192  0.000000  0.000000  0.000000  0.000000
39      63051  0.000000  0.251242  0.000000  0.000000  0.000000  0.000000
40      63051  0.462809  0.000000  0.000000  0.000000  0.000000  0.000000
41      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
42      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.355579
43      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
44      63051  0.000000  0.000000  0.000000  0.445436  0.000000  0.000000
45      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
46      63051  0.000000  0.000000  0.000000  0.000000  0.000000  0.000000
47      63051  0.522192  0.000000  0.000000  0.000000  0.000000  0.000000

       linux  redirect      kill    output
0   0.000000  0.000000  0.000000  0.378156
1   0.000000  0.000000  0.000000  0.000000
```

2	0.000000	0.339204	0.000000	0.000000
3	0.000000	0.000000	0.000000	0.364656
4	0.445436	0.000000	0.481991	0.000000
5	0.000000	0.000000	0.000000	0.000000
6	0.327146	0.000000	0.000000	0.000000
7	0.000000	0.000000	0.000000	0.000000
8	0.000000	0.000000	0.000000	0.000000
9	0.000000	0.000000	0.000000	0.000000
10	0.000000	0.000000	0.000000	0.000000
11	0.000000	0.000000	0.000000	0.000000
12	0.000000	0.000000	0.000000	0.000000
13	0.000000	0.000000	0.000000	0.000000
14	0.000000	0.000000	0.000000	0.000000
15	0.000000	0.000000	0.000000	0.000000
16	0.000000	0.000000	0.000000	0.000000
17	0.000000	0.000000	0.000000	0.000000
18	0.000000	0.000000	0.000000	0.000000
19	0.000000	0.000000	0.000000	0.000000
20	0.000000	0.000000	0.000000	0.000000
21	0.000000	0.000000	0.000000	0.000000
22	0.000000	0.000000	0.000000	0.000000
23	0.000000	0.000000	0.000000	0.000000
24	0.000000	0.000000	0.000000	0.000000
25	0.000000	0.000000	0.000000	0.000000
26	0.331862	0.000000	0.000000	0.000000
27	0.000000	0.000000	0.000000	0.000000
28	0.000000	0.000000	0.000000	0.000000
29	0.000000	0.000000	0.000000	0.000000
30	0.000000	0.000000	0.000000	0.000000
31	0.000000	0.000000	0.000000	0.000000
32	0.000000	0.000000	0.000000	0.000000
33	0.000000	0.000000	0.000000	0.000000
34	0.000000	0.000000	0.000000	0.000000
35	0.000000	0.000000	0.000000	0.000000
36	0.000000	0.000000	0.569869	0.000000
37	0.000000	0.000000	0.000000	0.000000
38	0.000000	0.477411	0.000000	0.000000
39	0.000000	0.284102	0.000000	0.284102
40	0.000000	0.000000	0.000000	0.000000
41	0.000000	0.000000	0.000000	0.000000
42	0.000000	0.000000	0.000000	0.000000
43	0.000000	0.000000	0.000000	0.000000
44	0.000000	0.000000	0.000000	0.000000
45	0.000000	0.000000	0.000000	0.000000
46	0.000000	0.000000	0.000000	0.000000
47	0.000000	0.000000	0.000000	0.000000

```
**************************************************************************



For Username ID TF/IDF table : 87234

  usernameid  operator     array  processing     copy    idiom     swap  \
0      87234       0.0  0.000000    0.000000  0.57735  0.57735  0.57735
1      87234       1.0  0.000000    0.000000  0.00000  0.00000  0.00000
2      87234       0.0  0.603023    0.603023  0.00000  0.00000  0.00000

     faster    sorted  unsorted
0  0.000000  0.000000  0.000000
1  0.000000  0.000000  0.000000
2  0.301511  0.301511  0.301511

**************************************************************************



For Username ID TF/IDF table : 89904

  usernameid      java       git      undo       jar  appending  \
0      89904  0.000000  0.403194  0.403194  0.000000   0.000000
1      89904  0.000000  0.000000  0.000000  0.391176   0.000000
2      89904  0.000000  0.000000  0.000000  0.000000   0.000000
3      89904  0.313903  0.000000  0.000000  0.000000   0.000000
4      89904  0.000000  0.457985  0.457985  0.000000   0.000000
5      89904  0.356655  0.000000  0.000000  0.000000   0.000000
6      89904  0.000000  0.000000  0.000000  0.440595   0.000000
7      89904  0.000000  0.000000  0.000000  0.000000   0.707107
8      89904  0.423549  0.000000  0.000000  0.000000   0.000000
9      89904  0.313903  0.000000  0.000000  0.000000   0.000000

   objectoutputstream     swing     timer      open  profilers
0            0.000000  0.000000  0.000000  0.000000   0.000000
1            0.000000  0.000000  0.000000  0.000000   0.000000
2            0.000000  0.000000  0.000000  0.000000   0.000000
3            0.000000  0.000000  0.000000  0.000000   0.000000
4            0.000000  0.000000  0.000000  0.000000   0.000000
5            0.000000  0.000000  0.000000  0.539382   0.539382
6            0.000000  0.000000  0.000000  0.000000   0.000000
7            0.707107  0.000000  0.000000  0.000000   0.000000
8            0.000000  0.640549  0.640549  0.000000   0.000000
9            0.000000  0.000000  0.000000  0.000000   0.000000

**************************************************************************
```

For Username ID TF/IDF table : 95592

	usernameid	install	pip	installed	python	virtualenv	cache	\
0	95592	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
1	95592	0.000000	0.000000	0.360493	0.000000	0.360493	0.000000	
2	95592	0.000000	0.000000	0.435556	0.000000	0.000000	0.000000	
3	95592	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
4	95592	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
5	95592	0.347708	0.347708	0.000000	0.347708	0.347708	0.000000	
6	95592	0.454195	0.454195	0.000000	0.000000	0.000000	0.541948	
7	95592	0.000000	0.000000	0.000000	0.386479	0.000000	0.000000	

	local	determining	flask	version
0	0.000000	0.000000	0.000000	0.000000
1	0.000000	0.000000	0.000000	0.000000
2	0.000000	0.519708	0.519708	0.519708
3	0.000000	0.000000	0.000000	0.000000
4	0.000000	0.000000	0.000000	0.000000
5	0.000000	0.000000	0.000000	0.000000
6	0.541948	0.000000	0.000000	0.000000
7	0.000000	0.000000	0.000000	0.000000

****

For Username ID TF/IDF table : 9951

	usernameid	git	javascript	python	string	file	callable	\
0	9951	0.000000	0.000000	0.000000	0.000000	0.000000	0.0	
1	9951	0.000000	0.000000	0.000000	0.455000	0.000000	0.0	
2	9951	0.541841	0.000000	0.000000	0.000000	0.000000	0.0	
3	9951	0.000000	0.493950	0.000000	0.000000	0.000000	0.0	
4	9951	0.000000	0.000000	0.000000	0.000000	0.000000	0.0	
5	9951	0.000000	0.000000	0.000000	0.000000	0.000000	1.0	
6	9951	0.000000	0.000000	0.000000	0.000000	0.000000	0.0	
7	9951	0.000000	0.000000	0.000000	0.000000	0.000000	0.0	
8	9951	0.360453	0.000000	0.000000	0.000000	0.000000	0.0	
9	9951	0.000000	0.000000	0.000000	0.000000	0.000000	0.0	
10	9951	0.258934	0.000000	0.000000	0.000000	0.000000	0.0	
11	9951	0.000000	0.000000	0.000000	0.662735	0.000000	0.0	
12	9951	0.000000	0.372751	0.000000	0.000000	0.000000	0.0	
13	9951	0.000000	0.372751	0.000000	0.000000	0.000000	0.0	
14	9951	0.000000	0.000000	0.000000	0.000000	0.530479	0.0	
15	9951	0.000000	0.000000	0.483550	0.000000	0.000000	0.0	
16	9951	0.288828	0.000000	0.000000	0.000000	0.000000	0.0	

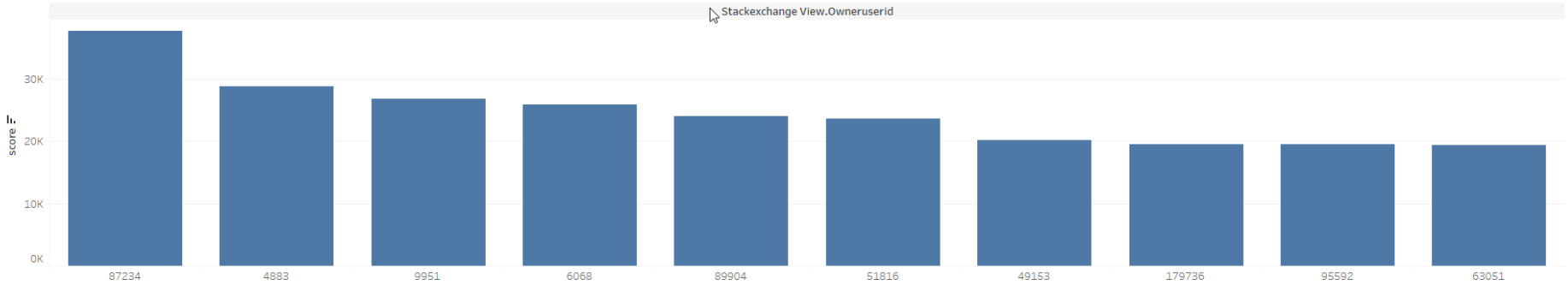
17	9951	0.000000	0.000000	0.000000	0.000000	0.000000	0.0
18	9951	0.000000	0.000000	0.662735	0.000000	0.000000	0.0
19	9951	0.000000	0.000000	0.000000	0.000000	0.000000	0.0
20	9951	0.000000	0.000000	0.000000	0.000000	0.000000	0.0
21	9951	0.000000	0.000000	0.000000	0.000000	0.000000	0.0
22	9951	0.306795	0.000000	0.000000	0.000000	0.000000	0.0
23	9951	0.213534	0.000000	0.000000	0.000000	0.586267	0.0

	android	dictionary	url	way
0	0.00000	0.000000	0.000000	0.000000
1	0.00000	0.000000	0.000000	0.000000
2	0.00000	0.000000	0.000000	0.000000
3	0.00000	0.000000	0.000000	0.000000
4	0.00000	0.000000	0.000000	0.000000
5	0.00000	0.000000	0.000000	0.000000
6	0.00000	0.530479	0.000000	0.000000
7	0.00000	0.000000	0.468624	0.000000
8	0.00000	0.000000	0.000000	0.000000
9	0.00000	0.000000	0.000000	0.000000
10	0.00000	0.000000	0.000000	0.000000
11	0.00000	0.000000	0.000000	0.000000
12	0.00000	0.000000	0.000000	0.000000
13	0.00000	0.000000	0.000000	0.000000
14	0.00000	0.000000	0.000000	0.000000
15	0.48355	0.000000	0.000000	0.483550
16	0.00000	0.000000	0.396495	0.000000
17	0.00000	0.000000	0.000000	0.000000
18	0.00000	0.000000	0.000000	0.000000
19	0.00000	0.000000	0.000000	0.000000
20	0.45500	0.000000	0.000000	0.000000
21	0.00000	0.375106	0.000000	0.375106
22	0.00000	0.000000	0.000000	0.000000
23	0.00000	0.000000	0.000000	0.000000

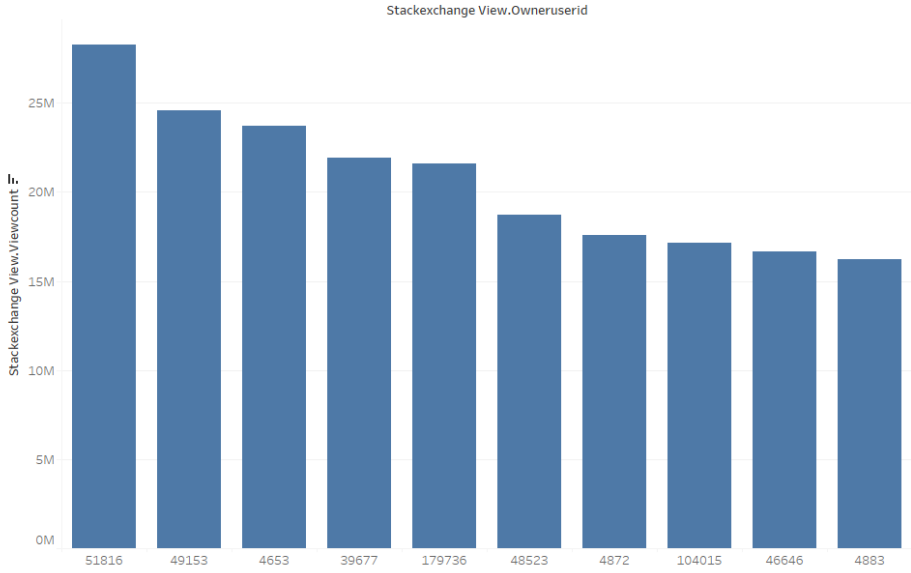
****

Analytics to verify query output

Top 10 user ID with highest score.



Top 10 user ID with highest view count



Top 10 user ID with highest comment count