In [1]:

```
import warnings
warnings.filterwarnings("ignore")
import pandas as pd
import sqlite3
import csv
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
from wordcloud import WordCloud
import re
import os
from sqlalchemy import create_engine # database connection
import datetime as dt
from nltk.corpus import stopwords
from nltk.tokenize import word_tokenize
from nltk.stem.snowball import SnowballStemmer
from sklearn.feature_extraction.text import CountVectorizer
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.multiclass import OneVsRestClassifier
from sklearn.linear_model import SGDClassifier
from sklearn import metrics
from sklearn.metrics import f1_score,precision_score,recall_score
from sklearn import svm
from sklearn.linear_model import LogisticRegression
from skmultilearn.adapt import mlknn
from skmultilearn.problem_transform import ClassifierChain
from skmultilearn.problem_transform import BinaryRelevance
from skmultilearn.problem_transform import LabelPowerset
from sklearn.naive_bayes import GaussianNB
from datetime import datetime
```

Stack Overflow: Tag Prediction

1. Business Problem

1.1 Description

Description

Stack Overflow is the largest, most trusted online community for developers to learn, share their programming knowledge, and build their careers.

Stack Overflow is something which every programmer use one way or another. Each month, over 50 million developers come to Stack Overflow to learn, share their knowledge, and build their careers. It features questions and answers on a wide range of topics in computer programming. The website serves as a platform for users to ask and answer questions, and, through membership and active participation, to vote questions and answers up or down and edit questions and answers in a fashion similar to a wiki or Digg. As of April 2014 Stack Overflow has over 4,000,000 registered users, and it exceeded 10,000,000 questions in late August 2015. Based on the type of tags assigned to questions, the top eight most discussed topics on the site are: Java, JavaScript, C#, PHP, Android, jQuery, Python and HTML.

Problem Statemtent

Suggest the tags based on the content that was there in the question posted on Stackoverflow.

Source: https://www.kaggle.com/c/facebook-recruiting-iii-keyword-extraction/

1.2 Source / useful links

Data Source : https://www.kaggle.com/c/facebook-recruiting-iii-keyword-extraction/data
Youtube : https://youtu.be/nNDqbUhtIRg
Research paper : https://www.microsoft.com/en-us/research/wp-content/uploads/2016/02/tagging-1.pdf
Research paper : https://dl.acm.org/citation.cfm?id=2660970&dl=ACM&coll=DL

1.3 Real World / Business Objectives and Constraints

1. Predict as many tags as possible with high precision and recall.
2. Incorrect tags could impact customer experience on StackOverflow.
3. No strict latency constraints.

2. Machine Learning problem

2.1 Data

2.1.1 Data Overview

Refer: https://www.kaggle.com/c/facebook-recruiting-iii-keyword-extraction/data
All of the data is in 2 files: Train and Test.

Train.csv contains 4 columns: Id,Title,Body,Tags.

Test.csv contains the same columns but without the Tags, which you are to predict.

Size of Train.csv - 6.75GB

Size of Test.csv - 2GB

Number of rows in Train.csv = 6034195

The questions are randomized and contains a mix of verbose text sites as well as sites related to math and programming. The number of questions from each site may vary, and no filtering has been performed on the questions (such as closed questions).

Data Field Explaination

Dataset contains 6,034,195 rows. The columns in the table are:

Id - Unique identifier for each question

Title - The question's title

Body - The body of the question

Tags - The tags associated with the question in a space-seperated format (all lowercase, should not contain tabs '\t' or ampersands '&')

2.1.2 Example Data point

Title: Implementing Boundary Value Analysis of Software Testing in a C++ program?
Body :

```
#include<
```

```
#include<
iostream>\n
#include<
stdlib.h>\n\n
using namespace std;\n\n
int main()\n
{\n
         int n,a[n],x,c,u[n],m[n],e[n][4];\n
         cout<<"Enter the number of variables";\n         cin>>n;\n\n
         cout<<"Enter the Lower, and Upper Limits of the variables";\n

         for(int y=1; y<n+1; y++)\n
         {\n
            cin>>m[y];\n
            cin>>u[y];\n
         }\n
         for(x=1; x<n+1; x++)\n
         {\n
            a[x] = (m[x] + u[x])/2;\n
         }\n
         c=(n*4)-4;\n
         for(int a1=1; a1<n+1; a1++)\n
         {\n\n
            e[a1][0] = m[a1];\n
            e[a1][1] = m[a1]+1;\n
            e[a1][2] = u[a1]-1;\n
            e[a1][3] = u[a1];\n
         }\n
         for(int i=1; i<n+1; i++)\n
         {\n
            for(int l=1; l<=i; l++)\n
            {\n
                if(l!=1)\n
                {\n
                    cout<<a[l]<<"\\t";\n
                }\n
            }\n
            for(int j=0; j<4; j++)\n
            {\n
                cout<<e[i][j];\n
                for(int k=0; k<n-(i+1); k++)\n
                {\n
                    cout<<a[k]<<"\\t";\n
                }\n
                cout<<"\\n";\n
            }\n
         }    \n\n
         system("PAUSE");\n
         return 0;    \n
}\n
```

\n\n

The answer should come in the form of a table like
\n\n

```
         1          50          50\n
         2          50          50\n
         99         50          50\n
         100        50          50\n
         50         1           50\n
         50         2           50\n
```

```
            50          99              50\n
            50          100             50\n
            50          50              1\n
            50          50              2\n
            50          50              99\n
            50          50              100\n


\n\n


if the no of inputs is 3 and their ranges are\n
        1,100\n
        1,100\n
        1,100\n
        (could be varied too)
\n\n


The output is not coming,can anyone correct the code or tell me what\'s wrong?
\n'
Tags : 'c++ c'
```

2.2 Mapping the real-world problem to a Machine Learning Problem

2.2.1 Type of Machine Learning Problem

It is a multi-label classification problem
Multi-label Classification: Multilabel classification assigns to each sample a set of target labels. This can be thought as predicting properties of a data-point that are not mutually exclusive, such as topics that are relevant for a document. A question on Stackoverflow might be about any of C, Pointers, FileIO and/or memory-management at the same time or none of these.
__Credit__: http://scikit-learn.org/stable/modules/multiclass.html

2.2.2 Performance metric

Micro-Averaged F1-Score (Mean F Score) : The F1 score can be interpreted as a weighted average of the precision and recall, where an F1 score reaches its best value at 1 and worst score at 0. The relative contribution of precision and recall to the F1 score are equal. The formula for the F1 score is:

*F1 = 2 * (precision * recall) / (precision + recall)*

In the multi-class and multi-label case, this is the weighted average of the F1 score of each class.

'Micro f1 score':
Calculate metrics globally by counting the total true positives, false negatives and false positives. This is a better metric when we have class imbalance.

'Macro f1 score':
Calculate metrics for each label, and find their unweighted mean. This does not take label imbalance into account.

https://www.kaggle.com/wiki/MeanFScore
http://scikit-learn.org/stable/modules/generated/sklearn.metrics.f1_score.html

Hamming loss : The Hamming loss is the fraction of labels that are incorrectly predicted.
https://www.kaggle.com/wiki/HammingLoss

3. Exploratory Data Analysis

3.1 Data Loading and Cleaning

3.1.1 Using Pandas with SQLite to Load the data

3.1.1 Using Pandas with SQLite to Load the data

In [7]:

```
#Creating db file from csv
#Learn SQL: https://www.w3schools.com/sql/default.asp
if not os.path.isfile('train.db'):
    start = datetime.now()
    disk_engine = create_engine('sqlite:///train.db')
    start = dt.datetime.now()
    chunksize = 180000
    j = 0
    index_start = 1
    for df in pd.read_csv('Train.csv', names=['Id', 'Title', 'Body', 'Tags'], chunksize=chunksize,
iterator=True, encoding='utf-8', ):
        df.index += index_start
        j+=1
        print('{} rows'.format(j*chunksize))
        df.to_sql('data', disk_engine, if_exists='append')
        index_start = df.index[-1] + 1
    print("Time taken to run this cell :", datetime.now() - start)
```

3.1.2 Counting the number of rows

In [8]:

```
if os.path.isfile('train.db'):
    start = datetime.now()
    con = sqlite3.connect('train.db')
    num_rows = pd.read_sql_query("""SELECT count(*) FROM data""", con)
    #Always remember to close the database
    print("Number of rows in the database :","\n",num_rows['count(*)'].values[0])
    con.close()
    print("Time taken to count the number of rows :", datetime.now() - start)
else:
    print("Please download the train.db file from drive or run the above cell to genarate train.db
file")
```

```
Number of rows in the database :
 6034196
Time taken to count the number of rows : 0:00:06.962854
```

3.1.3 Checking for duplicates

In [2]:

```
#Learn SQl: https://www.w3schools.com/sql/default.asp
if os.path.isfile('train.db'):
    start = datetime.now()
    con = sqlite3.connect('train.db')
    df_no_dup = pd.read_sql_query('SELECT Title, Body, Tags, COUNT(*) as cnt_dup FROM data GROUP
BY Title, Body, Tags', con)
    con.close()
    print("Time taken to run this cell :", datetime.now() - start)
else:
    print("Please download the train.db file from drive or run the first to genarate train.db file
")
```

```
Time taken to run this cell : 0:19:45.972268
```

In [4]:

```
df_no_dup.head()
# we can observe that there are duplicates
```

Out[4]:

	Title	Body	Tags	cnt_dup
0	Implementing Boundary Value Analysis of S...	<pre><code>#include<iostream>\n#include&...	c++ c	1

	Title	Body	Tags	cnt_dup
1	Dynamic Datagrid Binding in Silverlight?	I should do binding for datagrid dynamicall...	c# silverlight data-binding	1
2	Dynamic Datagrid Binding in Silverlight?	I should do binding for datagrid dynamicall...	c# silverlight data-binding columns	1
3	java.lang.NoClassDefFoundError: javax/serv...	I followed the guide in <a href="http://sta...	jsp jstl	1
4	java.sql.SQLException:[Microsoft][ODBC Dri...	I use the following code \n\n<pre><code>...	java jdbc	2

In [9]:

```
print("number of duplicate questions :", num_rows['count(*)'].values[0]- df_no_dup.shape[0], "(",(1
-((df_no_dup.shape[0])/(num_rows['count(*)'].values[0])))*100,"% )")
```

```
number of duplicate questions : 1827881 ( 30.292038906260256 % )
```

In [10]:

```
# number of times each question appeared in our database
df_no_dup.cnt_dup.value_counts()
```

Out[10]:

```
1    2656284
2    1272336
3     277575
4         90
5         25
6          5
Name: cnt_dup, dtype: int64
```

In [23]:

```
df_no_dup["Tags"].apply(lambda text)
```

Out[23]:

```
1
```

In [31]:

```
start = datetime.now()
df_no_dup["tag_count"] = df_no_dup["Tags"].apply(lambda text: len(text.split(" ")) if text is not N
one else 0)
# adding a new feature number of tags per question
print("Time taken to run this cell :", datetime.now() - start)
df_no_dup.head()
```

```
Time taken to run this cell : 0:00:05.730153
```

Out[31]:

	Title	Body	Tags	cnt_dup	tag_count
0	Implementing Boundary Value Analysis of S...	<pre> <code>#include<iostream>\n#include&...	c++ c	1	2
1	Dynamic Datagrid Binding in Silverlight?	I should do binding for datagrid dynamicall...	c# silverlight data-binding	1	3
2	Dynamic Datagrid Binding in Silverlight?	I should do binding for datagrid dynamicall...	c# silverlight data-binding columns	1	4
3	java.lang.NoClassDefFoundError: javax/serv...	I followed the guide in <a href="http://sta...	jsp jstl	1	2
4	java.sql.SQLException:[Microsoft][ODBC Dri...	I use the following code \n\n<pre> <code>...	java jdbc	2	2

In [32]:

```
# distribution of number of tags per question
df_no_dup.tag_count.value_counts()
```

```
df_no_dup.tag_count.value_counts()
```

Out[32]:

```
3    1206157
2    1111706
4     814996
1     568291
5     505158
0          7
Name: tag_count, dtype: int64
```

In [33]:

```
#Creating a new database with no duplicates
if not os.path.isfile('train_no_dup.db'):
    disk_dup = create_engine("sqlite:///train_no_dup.db")
    no_dup = pd.DataFrame(df_no_dup, columns=['Title', 'Body', 'Tags'])
    no_dup.to_sql('no_dup_train',disk_dup)
```

In [34]:

```
#This method seems more appropriate to work with this much data.
#creating the connection with database file.
if os.path.isfile('train_no_dup.db'):
    start = datetime.now()
    con = sqlite3.connect('train_no_dup.db')
    tag_data = pd.read_sql_query("""SELECT Tags FROM no_dup_train""", con)
    #Always remember to close the database
    con.close()

    # Let's now drop unwanted column.
    tag_data.drop(tag_data.index[0], inplace=True)
    #Printing first 5 columns from our data frame
    tag_data.head()
    print("Time taken to run this cell :", datetime.now() - start)
else:
    print("Please download the train.db file from drive or run the above cells to genarate train.d
b file")
```

```
Time taken to run this cell : 0:02:00.628861
```

3.2 Analysis of Tags

3.2.1 Total number of unique tags

In [43]:

```
tag_data = tag_data.dropna(how='any',axis=0)
```

In [39]:

```
tag_data.head()
```

Out[39]:

	Tags
1	c# silverlight data-binding
2	c# silverlight data-binding columns
3	jsp jstl
4	java jdbc
5	facebook api facebook-php-sdk

In [44]:

In [44]:

```
# Importing & Initializing the "CountVectorizer" object, which
#is scikit-learn's bag of words tool.

#by default 'split()' will tokenize each tag using space.
vectorizer = CountVectorizer(tokenizer = lambda x: x.split())
# fit_transform() does two functions: First, it fits the model
# and learns the vocabulary; second, it transforms our training data
# into feature vectors. The input to fit_transform should be a list of strings.
tag_dtm = vectorizer.fit_transform(tag_data['Tags'])
```

In [45]:

```
print("Number of data points :", tag_dtm.shape[0])
print("Number of unique tags :", tag_dtm.shape[1])
```

```
Number of data points : 4206307
Number of unique tags : 42048
```

In [46]:

```
#'get_feature_name()' gives us the vocabulary.
tags = vectorizer.get_feature_names()
#Lets look at the tags we have.
print("Some of the tags we have :", tags[:10])
```

```
Some of the tags we have : ['.a', '.app', '.asp.net-mvc', '.aspxauth', '.bash-profile', '.class-fi
le', '.cs-file', '.doc', '.drv', '.ds-store']
```

3.2.3 Number of times a tag appeared

In [47]:

```
# https://stackoverflow.com/questions/15115765/how-to-access-sparse-matrix-elements
#Lets now store the document term matrix in a dictionary.
freqs = tag_dtm.sum(axis=0).A1
result = dict(zip(tags, freqs))
```

In [48]:

```
#Saving this dictionary to csv files.
if not os.path.isfile('tag_counts_dict_dtm.csv'):
    with open('tag_counts_dict_dtm.csv', 'w') as csv_file:
        writer = csv.writer(csv_file)
        for key, value in result.items():
            writer.writerow([key, value])
tag_df = pd.read_csv("tag_counts_dict_dtm.csv", names=['Tags', 'Counts'])
tag_df.head()
```

Out[48]:

	Tags	Counts
0	.a	18
1	.app	37
2	.asp.net-mvc	1
3	.aspxauth	21
4	.bash-profile	138

In [49]:

```
tag_df_sorted = tag_df.sort_values(['Counts'], ascending=False)
tag_counts = tag_df_sorted['Counts'].values
```

In [60]:

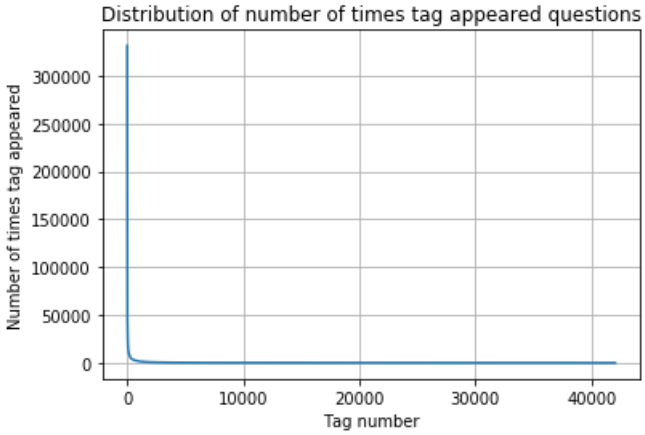
```
tag_df_sorted.head()
```

Out[60]:

	Tags	Counts
4337	c#	331505
18069	java	299414
27249	php	284103
18157	javascript	265423
1234	android	235436

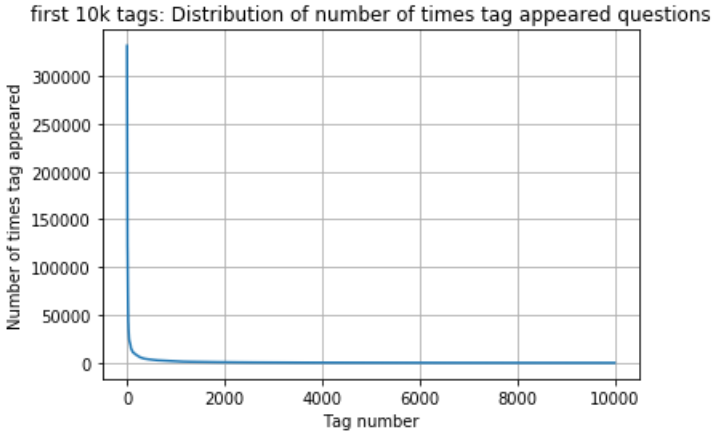
In [50]:

```
plt.plot(tag_counts)
plt.title("Distribution of number of times tag appeared questions")
plt.grid()
plt.xlabel("Tag number")
plt.ylabel("Number of times tag appeared")
plt.show()
```



In [51]:

```
plt.plot(tag_counts[0:10000])
plt.title('first 10k tags: Distribution of number of times tag appeared questions')
plt.grid()
plt.xlabel("Tag number")
plt.ylabel("Number of times tag appeared")
plt.show()
print(len(tag_counts[0:10000:25]), tag_counts[0:10000:25])
```

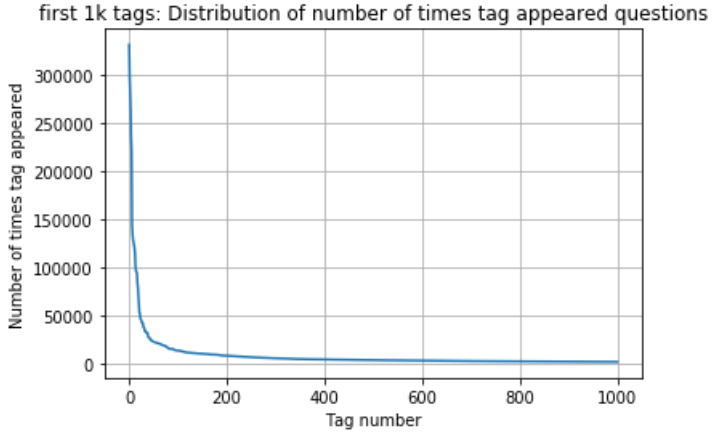



```
400 [331505  44829  22429  17728  13364  11162  10029   9148   8054   7151
   6466   5865   5370   4983   4526   4281   4144   3929   3750   3593
   3453   3299   3123   2989   2891   2738   2647   2527   2431   2331
   2259   2186   2097   2020   1959   1900   1828   1770   1723   1673
   1631   1574   1532   1479   1448   1406   1365   1328   1300   1266
```

```
 1245   1222   1197   1181   1158   1139   1121   1101   1076   1056
 1038   1023   1006    983    966    952    938    926    911    891
  882    869    856    841    830    816    804    789    779    770
  752    743    733    725    712    702    688    678    671    658
  650    643    634    627    616    607    598    589    583    577
  568    559    552    545    540    533    526    518    512    506
  500    495    490    485    480    477    469    465    457    450
  447    442    437    432    426    422    418    413    408    403
  398    393    388    385    381    378    374    370    367    365
  361    357    354    350    347    344    342    339    336    332
  330    326    323    319    315    312    309    307    304    301
  299    296    293    291    289    286    284    281    278    276
  275    272    270    268    265    262    260    258    256    254
  252    250    249    247    245    243    241    239    238    236
  234    233    232    230    228    226    224    222    220    219
  217    215    214    212    210    209    207    205    204    203
  201    200    199    198    196    194    193    192    191    189
  188    186    185    183    182    181    180    179    178    177
  175    174    172    171    170    169    168    167    166    165
  164    162    161    160    159    158    157    156    156    155
  154    153    152    151    150    149    149    148    147    146
  145    144    143    142    142    141    140    139    138    137
  137    136    135    134    134    133    132    131    130    130
  129    128    128    127    126    126    125    124    124    123
  123    122    122    121    120    120    119    118    118    117
  117    116    116    115    115    114    113    113    112    111
  111    110    109    109    108    108    107    106    106    106
  105    105    104    104    103    103    102    102    101    101
  100    100     99     99     98     98     97     97     96     96
   95     95     94     94     93     93     93     92     92     91
   91     90     90     89     89     88     88     87     87     86
   86     86     85     85     84     84     83     83     83     82
   82     82     81     81     80     80     80     79     79     78
   78     78     78     77     77     76     76     76     75     75
   75     74     74     74     73     73     73     73     72     72]
```

In [52]:

```
plt.plot(tag_counts[0:1000])
plt.title('first 1k tags: Distribution of number of times tag appeared questions')
plt.grid()
plt.xlabel("Tag number")
plt.ylabel("Number of times tag appeared")
plt.show()
print(len(tag_counts[0:1000:5]), tag_counts[0:1000:5])
```

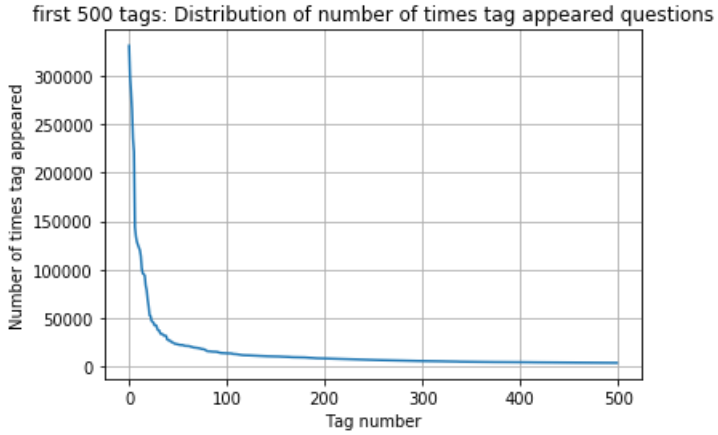



```
200 [331505 221533 122769  95160  62023  44829  37170  31897  26925  24537
  22429  21820  20957  19758  18905  17728  15533  15097  14884  13703
  13364  13157  12407  11658  11228  11162  10863  10600  10350  10224
  10029   9884   9719   9411   9252   9148   9040   8617   8361   8163
   8054   7867   7702   7564   7274   7151   7052   6847   6656   6553
   6466   6291   6183   6093   5971   5865   5760   5577   5490   5411
   5370   5283   5207   5107   5066   4983   4891   4785   4658   4549
   4526   4487   4429   4335   4310   4281   4239   4228   4195   4159
   4144   4088   4050   4002   3957   3929   3874   3849   3818   3797
   3750   3703   3685   3658   3615   3593   3564   3521   3505   3483
   3453   3427   3396   3363   3326   3299   3272   3232   3196   3168
   3123   3094   3073   3050   3012   2989   2984   2953   2934   2903
   2891   2844   2819   2784   2754   2738   2726   2708   2681   2669
```

```
 2647   2621   2604   2594   2556   2527   2510   2482   2460   2444
 2431   2409   2395   2380   2363   2331   2312   2297   2290   2281
 2259   2246   2222   2211   2198   2186   2162   2142   2132   2107
 2097   2078   2057   2045   2036   2020   2011   1994   1971   1965
 1959   1952   1940   1932   1912   1900   1879   1865   1855   1841
 1828   1821   1813   1801   1782   1770   1760   1747   1741   1734
 1723   1707   1697   1688   1683   1673   1665   1656   1646   1639]
```

In [53]:

```
plt.plot(tag_counts[0:500])
plt.title('first 500 tags: Distribution of number of times tag appeared questions')
plt.grid()
plt.xlabel("Tag number")
plt.ylabel("Number of times tag appeared")
plt.show()
print(len(tag_counts[0:500:5]), tag_counts[0:500:5])
```



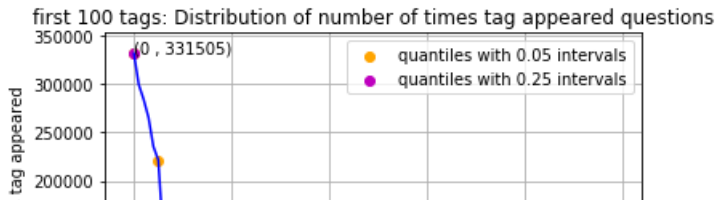

```
100 [331505 221533 122769  95160  62023  44829  37170  31897  26925  24537
  22429  21820  20957  19758  18905  17728  15533  15097  14884  13703
  13364  13157  12407  11658  11228  11162  10863  10600  10350  10224
  10029   9884   9719   9411   9252   9148   9040   8617   8361   8163
   8054   7867   7702   7564   7274   7151   7052   6847   6656   6553
   6466   6291   6183   6093   5971   5865   5760   5577   5490   5411
   5370   5283   5207   5107   5066   4983   4891   4785   4658   4549
   4526   4487   4429   4335   4310   4281   4239   4228   4195   4159
   4144   4088   4050   4002   3957   3929   3874   3849   3818   3797
   3750   3703   3685   3658   3615   3593   3564   3521   3505   3483]
```

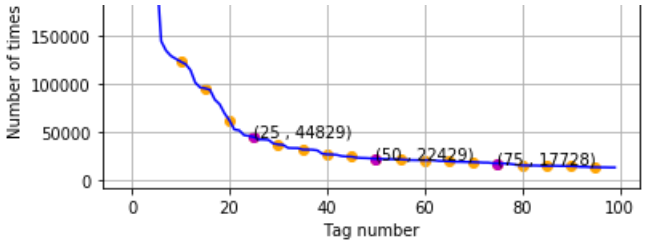
In [62]:

```
plt.plot(tag_counts[0:100], c='b')
plt.scatter(x=list(range(0,100,5)), y=tag_counts[0:100:5], c='orange', label="quantiles with 0.05 i
ntervals")
# quantiles with 0.25 difference
plt.scatter(x=list(range(0,100,25)), y=tag_counts[0:100:25], c='m', label = "quantiles with 0.25 in
tervals")

for x,y in zip(list(range(0,100,25)), tag_counts[0:100:25]):
    plt.annotate(s="({} , {})".format(x,y), xy=(x,y), xytext=(x-0.05, y+500))

plt.title('first 100 tags: Distribution of number of times tag appeared questions')
plt.grid()
plt.xlabel("Tag number")
plt.ylabel("Number of times tag appeared")
plt.legend()
plt.show()
print(len(tag_counts[0:100:5]), tag_counts[0:100:5])
```






```
20 [331505 221533 122769  95160  62023  44829  37170  31897  26925  24537
  22429  21820  20957  19758  18905  17728  15533  15097  14884  13703]
```

In [55]:

```
# Store tags greater than 10K in one list
lst_tags_gt_10k = tag_df[tag_df.Counts>10000].Tags
#Print the length of the list
print ('{} Tags are used more than 10000 times'.format(len(lst_tags_gt_10k)))
# Store tags greater than 100K in one list
lst_tags_gt_100k = tag_df[tag_df.Counts>100000].Tags
#Print the length of the list.
print ('{} Tags are used more than 100000 times'.format(len(lst_tags_gt_100k)))
```

```
153 Tags are used more than 10000 times
14 Tags are used more than 100000 times
```

Observations:

1. There are total 153 tags which are used more than 10000 times.
2. 14 tags are used more than 100000 times.
3. Most frequent tag (i.e. c#) is used 331505 times.
4. Since some tags occur much more frequenctly than others, Micro-averaged F1-score is the appropriate metric for this probelm.

3.2.4 Tags Per Question

In [64]:

```
#Storing the count of tag in each question in list 'tag_count'
tag_quest_count = tag_dtm.sum(axis=1).tolist()
#Converting list of lists into single list, we will get [[3], [4], [2], [2], [3]] and we are conve
rting this to [3, 4, 2, 2, 3]
tag_quest_count=[int(j) for i in tag_quest_count for j in i]
print ('We have total {} datapoints.'.format(len(tag_quest_count)))

print(tag_quest_count[:5])
```

```
We have total 4206307 datapoints.
[3, 4, 2, 2, 3]
```

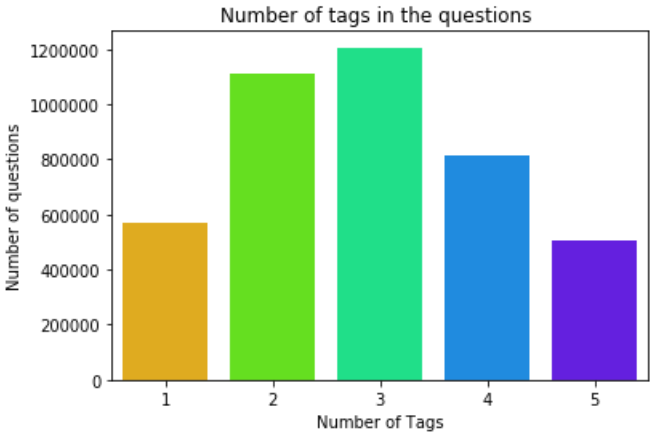
In [57]:

```
print( "Maximum number of tags per question: %d"%max(tag_quest_count))
print( "Minimum number of tags per question: %d"%min(tag_quest_count))
print( "Avg. number of tags per question: %f"% ((sum(tag_quest_count)*1.0)/len(tag_quest_count)))
```

```
Maximum number of tags per question: 5
Minimum number of tags per question: 1
Avg. number of tags per question: 2.899443
```

In [58]:

```
sns.countplot(tag_quest_count, palette='gist_rainbow')
plt.title("Number of tags in the questions ")
plt.xlabel("Number of Tags")
plt.ylabel("Number of questions")
plt.show()
```



Observations:

1. Maximum number of tags per question: 5
2. Minimum number of tags per question: 1
3. Avg. number of tags per question: 2.899
4. Most of the questions are having 2 or 3 tags

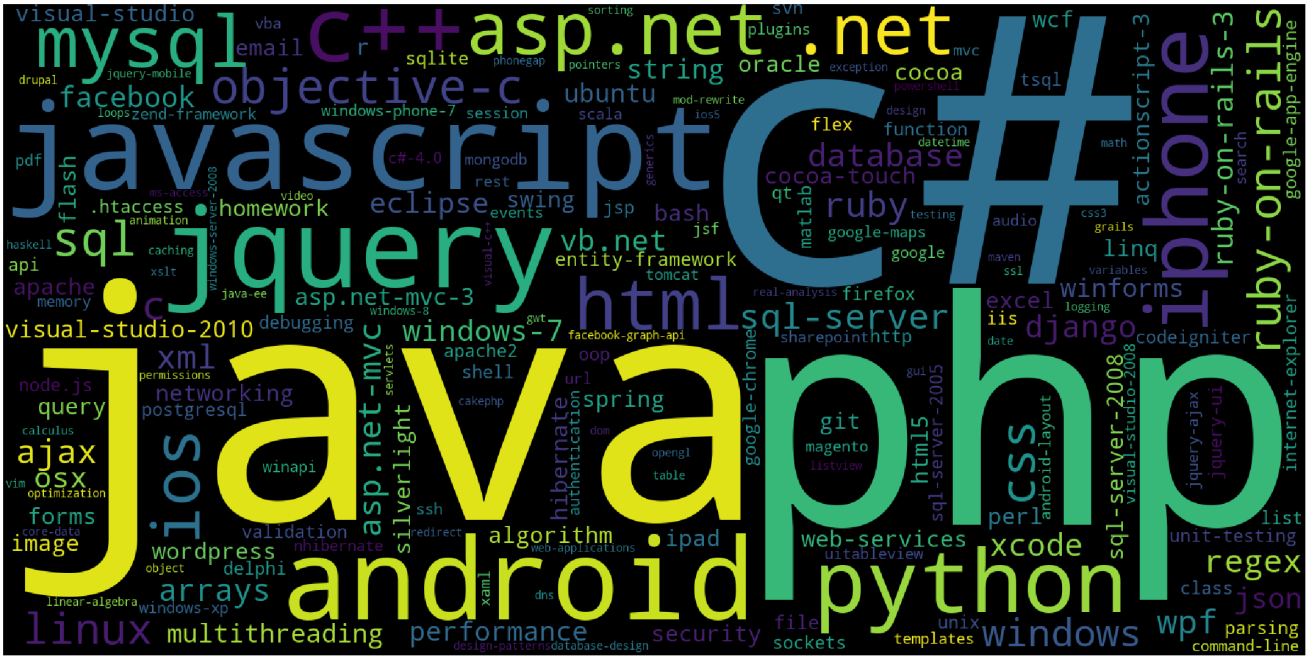
3.2.5 Most Frequent Tags

In [59]:

```
# Ploting word cloud
start = datetime.now()

# Lets first convert the 'result' dictionary to 'list of tuples'
tup = dict(result.items())
#Initializing WordCloud using frequencies of tags.
wordcloud = WordCloud(    background_color='black',
                          width=1600,
                          height=800,
                    ).generate_from_frequencies(tup)

fig = plt.figure(figsize=(30,20))
plt.imshow(wordcloud)
plt.axis('off')
plt.tight_layout(pad=0)
fig.savefig("tag.png")
plt.show()
print("Time taken to run this cell :", datetime.now() - start)
```



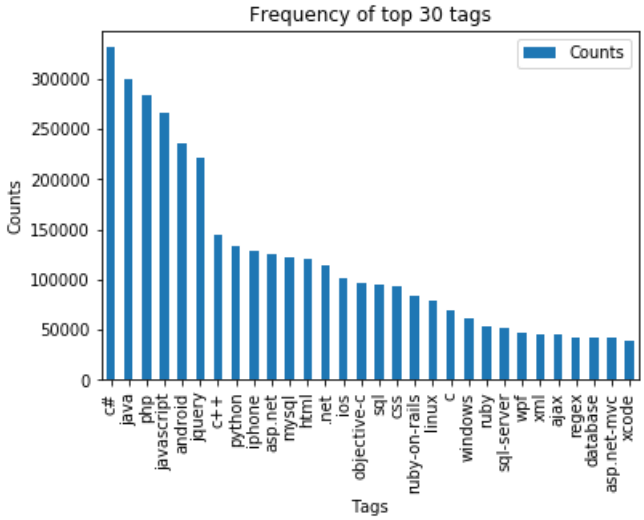
```
Time taken to run this cell : 0:00:08.262460
```

Observations:
A look at the word cloud shows that "c#", "java", "php", "asp.net", "javascript", "c++" are some of the most frequent tags.

3.2.6 The top 20 tags

In [65]:

```
i=np.arange(30)
tag_df_sorted.head(30).plot(kind='bar')
plt.title('Frequency of top 30 tags')
plt.xticks(i, tag_df_sorted['Tags'])
plt.xlabel('Tags')
plt.ylabel('Counts')
plt.show()
```



Observations:

1. Majority of the most frequent tags are programming language.
2. C# is the top most frequent programming language.
3. Android, IOS, Linux and windows are among the top most frequent operating systems.

3.3 Cleaning and preprocessing of Questions

3.3.1 Preprocessing

1. Sample 1M data points
2. Separate out code-snippets from Body
3. Remove Spcial characters from Question title and description (not in code)
4. Remove stop words (Except 'C')
5. Remove HTML Tags
6. Convert all the characters into small letters
7. Use SnowballStemmer to stem the words

In [2]:

```
def striphtml(data):
    cleanr = re.compile('<.*?>')
    cleantext = re.sub(cleanr, ' ', str(data))
    return cleantext
stop_words = set(stopwords.words('english'))
stemmer = SnowballStemmer("english")
```

In [ ]:

In [3]:

```
#http://www.sqlitetutorial.net/sqlite-python/create-tables/
def create_connection(db_file):
    """ create a database connection to the SQLite database
        specified by db_file
    :param db_file: database file
    :return: Connection object or None
    """
    try:
        conn = sqlite3.connect(db_file)
        return conn
    except Error as e:
        print(e)

    return None

def create_table(conn, create_table_sql):
    """ create a table from the create_table_sql statement
    :param conn: Connection object
    :param create_table_sql: a CREATE TABLE statement
    :return:
    """
    try:
        c = conn.cursor()
        c.execute(create_table_sql)
    except Error as e:
        print(e)

def checkTableExists(dbcon):
    cursr = dbcon.cursor()
    str = "select name from sqlite_master where type='table'"
    table_names = cursr.execute(str)
    print("Tables in the databse:")
    tables =table_names.fetchall()
    print(tables[0][0])
    return(len(tables))

def create_database_table(database, query):
    conn = create_connection(database)
    if conn is not None:
        create_table(conn, query)
        checkTableExists(conn)
    else:
        print("Error! cannot create the database connection.")
    conn.close()

sql_create_table = """CREATE TABLE IF NOT EXISTS QuestionsProcessed (question text NOT NULL, code
text, tags text, words_pre integer, words_post integer, is_code integer);"""
create_database_table("Processed.db", sql_create_table)
```

```
Tables in the databse:
QuestionsProcessed
```

In [4]:

```
# http://www.sqlitetutorial.net/sqlite-delete/
# https://stackoverflow.com/questions/2279706/select-random-row-from-a-sqlite-table
start = datetime.now()
read_db = 'train_no_dup.db'
write_db = 'Processed.db'
if os.path.isfile(read_db):
    conn_r = create_connection(read_db)
    if conn_r is not None:
        reader =conn_r.cursor()
        reader.execute("SELECT Title, Body, Tags From no_dup_train ORDER BY RANDOM() LIMIT 10;")

if os.path.isfile(write_db):
    conn_w = create_connection(write_db)
    if conn_w is not None:
        tables = checkTableExists(conn_w)
        writer =conn_w.cursor()
```

```
        if tables != 0:
            writer.execute("DELETE FROM QuestionsProcessed WHERE 1")
            print("Cleared All the rows")
print("Time taken to run this cell :", datetime.now() - start)
```

```
Tables in the databse:
QuestionsProcessed
Cleared All the rows
Time taken to run this cell : 0:02:00.391599
```

In [4]:

```
for row in reader:
    print(row[0])
    print(row[1])
    print(row[2])
    print('='*100)
```

```
Obtaining more than 20 results with Google Places API
<p>I want to develop a map application which will display the banks near a given place.</p>

<p>I use the Places library to search and everytime it just return 20 results. What should I do if
I want more results?</p>

google-maps-api-3 google-places-api
====================================================================================================

Single model - multiple filtered views
<p>I have data model (dataProvider as ArrayCollection) i want to display in few views , each view
should show filtered data.</p>

<p>As you probably know, filterFunction  is property of ArrayCollection,so I can't use this
solution (unless creating new instance of ArrayCollection for each view on top original and impeme
nting filterFunction).</p>

<p>Are there better approaches ?</p>

<p>Thanks</p>

flex actionscript-3 flex3
====================================================================================================

In Ember, Using Router, how do I load the Application View into existing html element (like div)
<blockquote>
  <p><strong>Possible Duplicate:</strong><br>
  <a href="http://stackoverflow.com/questions/12321145/how-do-i-control-where-ember-js-appends-
the-rendered-application-template">How do I control where Ember.js appends the rendered
application template?</a>  </p>
</blockquote>



<p>I have an existing application (not in ember) and I am converting it page by page.
so for the transition period, I need to be able to load the ember application into some container
on the existing app, and have it function normally , like accept events, etc.</p>

<p><a href="http://jsfiddle.net/xFWgj/" rel="nofollow">made up a small demo</a></p>

ember.js ember-router
====================================================================================================

The 'ModifiedOn' property on 'WareHouse' could not be set to a 'DateTime' value. You must set this
property to a non-null value of type 'String'
<p>This is my controller class.</p>

<pre><code>namespace CalcoWOMS.Controllers
{
    public class AdminController : Controller
    {
        private WOMSEntities db = new WOMSEntities();

        public ViewResult WareHouseIndex()
        {
            return View(db.WareHouse.ToList());
```

```
        }


        public ViewResult WareHouseDetails(int id)
        {
            WareHouse wareHouse = db.WareHouse.Single(m =&gt; m.ID == id);
            return View(wareHouse);
        }

        public ActionResult WareHouseCreate()
        {
            return View();
        }


        [HttpPost]
        public ActionResult Create(WareHouse wareHouse)
        {
            if (ModelState.IsValid)
            {
                db.WareHouse.AddObject(wareHouse);
                db.SaveChanges();
                return RedirectToAction("WareHouseIndex");
            }

            return View(wareHouse);
        }

        //
        // GET: /Admin/Edit/5

        public ActionResult WareHouseEdit(int id)
        {
            WareHouse wareHouse = db.WareHouse.Single(m =&gt; m.ID == id);
            return View(wareHouse);
        }



        [HttpPost]
        public ActionResult WareHouseEdit(WareHouse wareHouse)
        {
            if (ModelState.IsValid)
            {
                db.WareHouse.Attach(wareHouse);
                db.ObjectStateManager.ChangeObjectState(wareHouse, EntityState.Modified);
                db.SaveChanges();
                return RedirectToAction("WareHouseIndex");
            }
            return View(wareHouse);
        }

        //
        // GET: /Admin/Delete/5

        public ActionResult WareHouseDelete(int id)
        {
            WareHouse wareHouse = db.WareHouse.Single(m =&gt; m.ID == id);
            return View(wareHouse);
        }


        [HttpPost, ActionName("WareHouseDelete")]
        public ActionResult WareHouseDeleteConfirmed(int id)
        {
            WareHouse wareHouse = db.WareHouse.Single(m =&gt; m.ID == id);
            db.WareHouse.DeleteObject(wareHouse);
            db.SaveChanges();
            return RedirectToAction("WareHouseIndex");
        }
    }
}
</code></pre>

<p>and this is my table design..</p>
```

<img src="http://i.stack.imgur.com/6oYV3.png" alt="this is image of my table design">

whenever i want to run "Admin/WareHouseIndex" action there is a problem occured is
"The 'ModifiedOn' property on 'WareHouse' could not be set to a 'DateTime' value. You must set thi
s property to a non-null value of type 'String'."

even i there is no null entry in modifiedOn field. Please check it and suggest me what mistake
i have done.

asp.net-mvc-3
==========

managing trac users
There is a legacy <code>trac</code> - a
web bug tracking software - installed in my company, and I have started to maintain it. Although I
have Googled the subject thoroughly, and I have full admin access, I couldn't figure out how to ad
d or remove users from the system.

Any ideas?

user-accounts trac
==========

Is it possible to send a 401 Unauthorized AND redirect (with a Location)?
I'd like to send a <code>401 Unauthorized</code> AND redirect the client somewhere. However:</p
>

if I do it like this:

<pre><code>header('HTTP/1.1 401 Unauthorized');
header('Location: /');
</code></pre>

the server sends a <code>302 Found</code> with <code>Location</code>, so not a <code>401
Unauthorized</code>.

If I do it like this:

<pre><code>header('Location: /');
header('HTTP/1.1 401 Unauthorized');
</code></pre>

the browser receives both a <code>401 Unauthorized</code> and a <code>Location</code>, but does
not redirect.

(IE 9 and Chrome 16 behave the same, so I'm guessing it's correct)

Maybe I'm misusing HTTP? I'd like my app interface to be exactly the same for all clients: text
browser, modern browser, API calls etc. The 401 + response text would tell an API user what's what
. The redirect is useful for a browser.

Is there a (good) way?

php http-headers http-status-code-401 http-redirect
==========

How do I share printer from ubuntu 9.10 to windows, to Mac OS X, and to other Ubuntu hosts?
I have a printer installed on an Ubuntu 9.10 desktop, and I wish to share the printer to a wind
ows machine, a Mac OS X machine, and to some other Ubuntu hosts over the network. Two related ques
tions come to mind:

 How do you share a printer from an Ubuntu host to other hosts?
 Is it better to use different methods of sharing for each type of client vs. trying to get
all the clients to talk, for example, SMB, to the printer?

The primary concern is quality of print results and reliability of printing. I had some
problems printing from Mac and Ubuntu clients when the printer was attached to a Win XP desktop <
/li>

windows ubuntu mac network-printer
==========

Style when mixing arguments/methods from a computer program with text and math

I'm working on a document that is a cross of user's guide and a technical manual. I describe a system which has variables that I handle normally, then introduce an R package that I've written w hich deals with some of the same variable. My question is how to deal with the computer package-re lated components. For (1) the name of the package, (2) function (method) names, and (3) variable/p arameter/argument names: Should they be set in a <code>\texttt</code>/<code>\verb</code> style inl ine and in equations? Should they be capitalized at the beginning of a sentence? Or should I avoid using them at the beginnings of sentences?

Essentially, I'm asking a broader version of <a
href="http://tex.stackexchange.com/q/36517/10371">How to typeset variables and other code?.</p
>

best-practices code
==========

Datetimepicker with fullCalendar preset hour
I have bin searching around alot after to preset a hour and minutes in <a
href="http://trentrichardson.com/examples/timepicker/"
rel="nofollow">http://trentrichardson.com/examples/timepicker/ datetimepicker, but still I can t get it working.

<pre><code>var start = $('#eventStart').datetimepicker({

     dateFormat: "yy-mm-dd",
     hour: 12,
     minute: 15,
     stepMinute: 15
});
</code></pre>

and my inputfeald is an ordenary

My question is how to set a time like 12:15 with the current selected date from my
fullCalendar

<pre><code>select: function(start, end, allvDay) {

     $('#eventStart').datepicker("setDate", new Date(start));
     $('#eventEnd').datepicker("setDate", new Date(end));
     $myCalendar.fullCalendar('unselect');
     $("#calEventDialog").dialog("option", "title", "Add Event");
     $('#calEventDialog').dialog('open');

  },
</code></pre>

I getthis print in firebug "Error parsing the date string: Extra/unparsed characters found in d ate: 12:15"

anyone that can help me out,

//Tobias

jquery fullcalendar datetimepicker
==========

How can I workaround this CSS anomaly?
I have what I think is some pretty basic css, and it behaves differently in FF4 and IE8.

The CSS in question is like this:

<pre><code> div.showme {
     border: 1px dotted blue;
     position: absolute;
     top :10px;
     bottom :10px;
     left: 1%;
     right: 33%;
     overflow: auto;
     padding: 0.8em 1em 0.8em 1em;
     line-height:1.75em;
  }

  div.showme a {
     padding: 0em 5px 0em 5px;
     margin: 0;
     white-space: nowrap;

```
     color: #FF00FF;
     background-color:#E6E6FA;
     border: 1px solid grey;
     padding: 0em 4px 0em 4px; }

  div.showme a:link       { color: blue; }
  div.showme a:visited    { color: #1E90FF; }
  div.showme a:active     { color: red; }
</code></pre>

<p>The relevant HTML looks like this: </p>

<pre><code>&lt;div class='showme'&gt;
  &lt;a href='one'&gt;one&lt;/a&gt;
  &lt;a href='two'&gt;two&lt;/a&gt;
   ...
&lt;/div&gt;
</code></pre>

<p>The problem is, the padding is not consistently displayed, in IE8.</p>

<p><img src="http://i.stack.imgur.com/46khf.png" alt="enter image description here"></p>

<p>In Firefox, it works as I would expect.</p>

<p>working example:<br>
<a href="http://jsbin.com/ogosa4" rel="nofollow">http://jsbin.com/ogosa4</a></p>

<p>Using the above working demonstration, if you resize the window you will see the padding on the
"leading" element on each line within the div, change from zero to non-zero. </p>

<p>How can I fix this? </p>

css
==========================================================================================================
```

we create a new data base to store the sampled and preprocessed questions

In [0]:

```
#http://www.bernzilla.com/2008/05/13/selecting-a-random-row-from-an-sqlite-table/

start = datetime.now()
preprocessed_data_list=[]
reader.fetchone()
questions_with_code=0
len_pre=0
len_post=0
questions_proccesed = 0
for row in reader:

    is_code = 0

    title, question, tags = row[0], row[1], row[2]

    if '<code>' in question:
        questions_with_code+=1
        is_code = 1
    x = len(question)+len(title)
    len_pre+=x

    code = str(re.findall(r'<code>(.*?)</code>', question, flags=re.DOTALL))

    question=re.sub('<code>(.*?)</code>', '', question, flags=re.MULTILINE|re.DOTALL)
    question=striphtml(question.encode('utf-8'))

    title=title.encode('utf-8')

    question=str(title)+" "+str(question)
    question=re.sub(r'[^A-Za-z]+',' ',question)
    words=word_tokenize(str(question.lower()))

    #Removing all single letter and and stopwords from question exceptt for the letter 'c'
    question=' '.join(str(stemmer.stem(j)) for j in words if j not in stop_words and (len(j)!=1 or
```

```
j=='c'))

    len_post+=len(question)
    tup = (question,code,tags,x,len(question),is_code)
    questions_proccesed += 1
    writer.execute("insert into
QuestionsProcessed(question,code,tags,words_pre,words_post,is_code) values (?,?,?,?,?,?)",tup)
    if (questions_proccesed%100000==0):
        print("number of questions completed=",questions_proccesed)

no_dup_avg_len_pre=(len_pre*1.0)/questions_proccesed
no_dup_avg_len_post=(len_post*1.0)/questions_proccesed

print( "Avg. length of questions(Title+Body) before processing: %d"%no_dup_avg_len_pre)
print( "Avg. length of questions(Title+Body) after processing: %d"%no_dup_avg_len_post)
print ("Percent of questions containing code: %d"%((questions_with_code*100.0)/questions_proccesed)
)

print("Time taken to run this cell :", datetime.now() - start)
```

```
number of questions completed= 100000
number of questions completed= 200000
number of questions completed= 300000
number of questions completed= 400000
number of questions completed= 500000
number of questions completed= 600000
number of questions completed= 700000
number of questions completed= 800000
number of questions completed= 900000
Avg. length of questions(Title+Body) before processing: 1169
Avg. length of questions(Title+Body) after processing: 327
Percent of questions containing code: 57
Time taken to run this cell : 0:47:05.946582
```

In [6]:

```
# dont forget to close the connections, or else you will end up with locks
conn_r.commit()
conn_w.commit()
conn_r.close()
conn_w.close()
```

In [0]:

```
if os.path.isfile(write_db):
    conn_r = create_connection(write_db)
    if conn_r is not None:
        reader =conn_r.cursor()
        reader.execute("SELECT question From QuestionsProcessed LIMIT 10")
        print("Questions after preprocessed")
        print('='*100)
        reader.fetchone()
        for row in reader:
            print(row)
            print('-'*100)
conn_r.commit()
conn_r.close()
```

```
Questions after preprocessed
====================================================================================================

('ef code first defin one mani relationship differ key troubl defin one zero mani relationship ent
iti ef object model look like use fluent api object composit pk defin batch id batch detail id use
fluent api object composit pk defin batch detail id compani id map exist databas tpt basic idea su
bmittedtransact zero mani submittedsplittransact associ navig realli need one way
submittedtransact submittedsplittransact need dbcontext class onmodelcr overrid map class lazi loa
d occur submittedtransact submittedsplittransact help would much appreci edit taken advic made
follow chang dbcontext class ad follow onmodelcr overrid must miss someth get follow except thrown
submittedtransact key batch id batch detail id zero one mani submittedsplittransact key batch deta
il id compani id rather assum convent creat relationship two object configur requir sinc obvious w
rong',)
----------------------------------------------------------------------------------------------------
('explan new statement review section c code came accross statement block come accross new oper us
e way someon explain new call way',)
```

```
--------------------------------------------------------------------------------------------------------------
('error function notat function solv logic riddl iloczyni list structur list possibl candid solut
list possibl coordin matrix wan na choos one candid compar possibl candid element equal wan na del
et coordin call function skasuj look like ni knowledg haskel cant see what wrong',)
--------------------------------------------------------------------------------------------------------------
('step plan move one isp anoth one work busi plan switch isp realli soon need chang lot inform dns
wan wan wifi question guy help mayb peopl plan correct chang current isp new one first dns know re
ceiv new ip isp major chang need take consider exchang server owa vpn two site link wireless conne
ct km away citrix server vmware exchang domain control link place import server crucial step infor
m need know avoid downtim busi regard ndavid',)
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('use ef migrat creat databas googl migrat tutori af first run applic creat databas ef enabl
migrat way creat databas migrat rune applic tri',)
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('magento unit test problem magento site recent look way check integr magento site given point uni
t test jump one method would assum would big job write whole lot test check everyth site work
anyon involv unit test magento advis follow possibl test whole site custom modul nis exampl test w
ould amaz given site heavili link databas would nbe possibl fulli test site without disturb
databas better way automaticlli check integr magento site say integr realli mean fault site ship p
ayment etc work correct',)
--------------------------------------------------------------------------------------------------------------
('find network devic without bonjour write mac applic need discov mac pcs iphon ipad connect wifi
network bonjour seem reason choic turn problem mani type router mine exampl work block bonjour ser
vic need find ip devic tri connect applic specif port determin process run best approach
accomplish task without violat app store sandbox',)
--------------------------------------------------------------------------------------------------------------
('send multipl row mysql databas want send user mysql databas column user skill time nnow want abl
add one row user differ time etc would code send databas nthen use help schema',)
--------------------------------------------------------------------------------------------------------------
('insert data mysql php powerpoint event powerpoint present run continu way updat slide present
automat data mysql databas websit',)
--------------------------------------------------------------------------------------------------------------
```

In [7]:

```
#Taking 1 Million entries to a dataframe.
write_db = 'Processed.db'
if os.path.isfile(write_db):
    conn_r = create_connection(write_db)
    if conn_r is not None:
        preprocessed_data = pd.read_sql_query("""SELECT question, Tags FROM QuestionsProcessed""",
conn_r)
conn_r.commit()
conn_r.close()
```

In [8]:

```
preprocessed_data.head()
```

Out[8]:

	question	tags

In [9]:

```
print("number of data points in sample :", preprocessed_data.shape[0])
print("number of dimensions :", preprocessed_data.shape[1])
```

```
number of data points in sample : 0
number of dimensions : 2
```

4. Machine Learning Models

4.1 Converting tags for multilabel problems

X	y1	y2	y3	y4

x1	0	1	1	0
x1	1	0	0	0
x1	0	1	0	0

In [7]:

```
# binary='true' will give a binary vectorizer
vectorizer = CountVectorizer(tokenizer = lambda x: x.split(), binary='true')
multilabel_y = vectorizer.fit_transform(preprocessed_data['tags'])
```

We will sample the number of tags instead considering all of them (due to limitation of computing power)

In [5]:

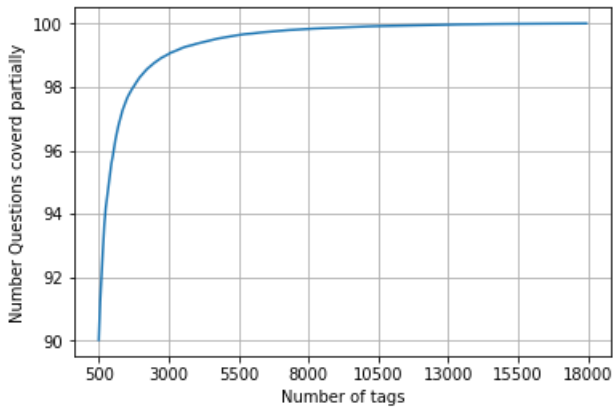
```
def tags_to_choose(n):
    t = multilabel_y.sum(axis=0).tolist()[0]
    sorted_tags_i = sorted(range(len(t)), key=lambda i: t[i], reverse=True)
    multilabel_yn=multilabel_y[:,sorted_tags_i[:n]]
    return multilabel_yn

def questions_explained_fn(n):
    multilabel_yn = tags_to_choose(n)
    x= multilabel_yn.sum(axis=1)
    return (np.count_nonzero(x==0))
```

In [13]:

```
questions_explained = []
total_tags=multilabel_y.shape[1]
total_qs=preprocessed_data.shape[0]
for i in range(500, total_tags, 100):
    questions_explained.append(np.round(((total_qs-questions_explained_fn(i))/total_qs)*100,3))
```

In [14]:

```
fig, ax = plt.subplots()
ax.plot(questions_explained)
xlabel = list(500+np.array(range(-50,450,50))*50)
ax.set_xticklabels(xlabel)
plt.xlabel("Number of tags")
plt.ylabel("Number Questions coverd partially")
plt.grid()
plt.show()
# you can choose any number of tags based on your computing power, minimun is 50(it covers 90% of
the tags)
print("with ",5500,"tags we are covering ",questions_explained[50],"% of questions")
```




```
with  5500 tags we are covering  99.035 % of questions
```

In [15]:

```
multilabel_yx = tags_to_choose(5500)
print("number of questions that are not covered :", questions_explained_fn(5500),"out of ", total_
qs)
```

```
number of questions that are not covered : 9645 out of  999999
```

In [16]:

```
print("Number of tags in sample :", multilabel_y.shape[1])
print("number of tags taken :", multilabel_yx.shape[1],"(",(multilabel_yx.shape[1]/multilabel_y.sha
pe[1])*100,"%)")
```

```
Number of tags in sample : 35422
number of tags taken : 5500 ( 15.527073570097679 %)
```

We consider top 15% tags which covers 99% of the questions

4.2 Split the data into test and train (80:20)

In [17]:

```
total_size=preprocessed_data.shape[0]
train_size=int(0.80*total_size)

x_train=preprocessed_data.head(train_size)
x_test=preprocessed_data.tail(total_size - train_size)

y_train = multilabel_yx[0:train_size,:]
y_test = multilabel_yx[train_size:total_size,:]
```

In [18]:

```
print("Number of data points in train data :", y_train.shape)
print("Number of data points in test data :", y_test.shape)
```

```
Number of data points in train data : (799999, 5500)
Number of data points in test data : (200000, 5500)
```

4.3 Featurizing data

In [ ]:

```
start = datetime.now()
vectorizer = TfidfVectorizer(min_df=0.00009, max_features=200000, smooth_idf=True, norm="l2", \
                             tokenizer = lambda x: x.split(), sublinear_tf=False, ngram_range=(1,3))
x_train_multilabel = vectorizer.fit_transform(x_train['question'])
x_test_multilabel = vectorizer.transform(x_test['question'])
print("Time taken to run this cell :", datetime.now() - start)
```

In [ ]:

```
print("Dimensions of train data X:",x_train_multilabel.shape, "Y :",y_train.shape)
print("Dimensions of test data X:",x_test_multilabel.shape,"Y:",y_test.shape)
```

In [0]:

```
# https://www.analyticsvidhya.com/blog/2017/08/introduction-to-multi-label-classification/
#https://stats.stackexchange.com/questions/117796/scikit-multi-label-classification
# classifier = LabelPowerset(GaussianNB())
"""
from skmultilearn.adapt import MLkNN
classifier = MLkNN(k=21)

# train
classifier.fit(x_train_multilabel, y_train)

# predict
predictions = classifier.predict(x_test_multilabel)
```

```
print(accuracy_score(y_test,predictions))
print(metrics.f1_score(y_test, predictions, average = 'macro'))
print(metrics.f1_score(y_test, predictions, average = 'micro'))
print(metrics.hamming_loss(y_test,predictions))

"""
# we are getting memory error because the multilearn package
# is trying to convert the data into dense matrix
# ----------------------------------------------------------------------
#MemoryError                               Traceback (most recent call last)
#<ipython-input-170-f0e7c7f3e0be> in <module>()
#----> classifier.fit(x_train_multilabel, y_train)
```

Out[0]:

```
"\nfrom skmultilearn.adapt import MLkNN\nclassifier = MLkNN(k=21)\n\n#
train\nclassifier.fit(x_train_multilabel, y_train)\n\n# predict\npredictions =
classifier.predict(x_test_multilabel)\nprint(accuracy_score(y_test,predictions))\nprint(metrics.f1_
e(y_test, predictions, average = 'macro'))\nprint(metrics.f1_score(y_test, predictions, average =
'micro'))\nprint(metrics.hamming_loss(y_test,predictions))\n\n"
```

4.4 Applying Logistic Regression with OneVsRest Classifier

In [0]:

```
# this will be taking so much time try not to run it, download the lr_with_equal_weight.pkl file a
nd use to predict
# This takes about 6-7 hours to run.
classifier = OneVsRestClassifier(SGDClassifier(loss='log', alpha=0.00001, penalty='l1'), n_jobs=-1)
classifier.fit(x_train_multilabel, y_train)
predictions = classifier.predict(x_test_multilabel)

print("accuracy :",metrics.accuracy_score(y_test,predictions))
print("macro f1 score :",metrics.f1_score(y_test, predictions, average = 'macro'))
print("micro f1 scoore :",metrics.f1_score(y_test, predictions, average = 'micro'))
print("hamming loss :",metrics.hamming_loss(y_test,predictions))
print("Precision recall report :\n",metrics.classification_report(y_test, predictions))
```

```
accuracy : 0.081965
macro f1 score : 0.0963020140154
micro f1 scoore : 0.374270748817
hamming loss : 0.00041225090909090907
Precision recall report :
              precision    recall  f1-score   support

           0       0.62      0.23      0.33     15760
           1       0.79      0.43      0.56     14039
           2       0.82      0.55      0.66     13446
           3       0.76      0.42      0.54     12730
           4       0.94      0.76      0.84     11229
           5       0.85      0.64      0.73     10561
           6       0.70      0.30      0.42      6958
           7       0.87      0.61      0.72      6309
           8       0.70      0.40      0.50      6032
           9       0.78      0.43      0.55      6020
          10       0.86      0.62      0.72      5707
          11       0.52      0.17      0.25      5723
          12       0.55      0.10      0.16      5521
          13       0.59      0.25      0.35      4722
          14       0.61      0.22      0.32      4468
          15       0.79      0.52      0.63      4536
          16       0.58      0.27      0.37      4545
          17       0.80      0.53      0.64      4069
          18       0.61      0.24      0.35      3638
          19       0.57      0.18      0.27      3218
          20       0.33      0.06      0.10      3000
          21       0.73      0.34      0.46      2585
          22       0.59      0.29      0.38      2439
          23       0.88      0.61      0.72      2199
          24       0.64      0.39      0.48      2157
          25       0.67      0.39      0.49      2123
          26       0.86      0.65      0.74      1948
          27       0.35      0.07      0.12      2027
          28       0.59      0.29      0.39      2013
```

29	0.61	0.20	0.30	1801
30	0.48	0.24	0.32	1728
31	0.94	0.75	0.84	1725
32	0.60	0.26	0.36	1581
33	0.49	0.14	0.22	1533
34	0.81	0.33	0.47	1565
35	0.75	0.62	0.68	1568
36	0.76	0.50	0.60	1542
37	0.74	0.50	0.59	1536
38	0.37	0.12	0.19	1524
39	0.40	0.12	0.19	1345
40	0.65	0.38	0.48	1292
41	0.41	0.11	0.17	1264
42	0.69	0.25	0.37	1265
43	0.59	0.29	0.38	1171
44	0.41	0.15	0.22	1173
45	0.38	0.10	0.16	1137
46	0.62	0.12	0.20	1125
47	0.26	0.07	0.11	1116
48	0.44	0.15	0.22	1042
49	0.40	0.02	0.03	1096
50	0.63	0.38	0.48	1031
51	0.47	0.14	0.22	1033
52	0.87	0.68	0.76	1042
53	0.32	0.09	0.14	1027
54	0.53	0.14	0.22	1063
55	0.63	0.34	0.44	1048
56	0.78	0.42	0.54	1054
57	0.91	0.77	0.83	1058
58	0.37	0.10	0.16	1000
59	0.26	0.03	0.05	973
60	0.76	0.42	0.54	978
61	0.74	0.43	0.54	977
62	0.27	0.06	0.10	957
63	0.81	0.22	0.34	958
64	0.88	0.63	0.73	944
65	0.76	0.49	0.60	923
66	0.67	0.36	0.47	959
67	0.55	0.15	0.24	951
68	0.38	0.13	0.20	924
69	0.71	0.25	0.37	897
70	0.78	0.47	0.59	900
71	0.82	0.40	0.54	893
72	0.21	0.01	0.01	836
73	0.74	0.16	0.26	850
74	0.58	0.37	0.45	838
75	0.88	0.64	0.74	855
76	0.47	0.28	0.35	837
77	0.68	0.41	0.52	824
78	0.14	0.01	0.01	793
79	0.34	0.09	0.14	751
80	0.31	0.08	0.13	793
81	0.71	0.33	0.45	758
82	0.60	0.28	0.38	764
83	0.82	0.59	0.69	710
84	0.82	0.48	0.61	734
85	0.79	0.42	0.55	723
86	0.44	0.23	0.30	708
87	0.93	0.58	0.72	714
88	0.91	0.53	0.67	683
89	0.58	0.20	0.30	711
90	0.71	0.42	0.53	699
91	0.44	0.03	0.06	725
92	0.71	0.47	0.57	676
93	0.47	0.10	0.16	672
94	0.66	0.40	0.50	645
95	0.86	0.66	0.75	691
96	0.57	0.09	0.15	664
97	0.91	0.59	0.72	633
98	0.64	0.38	0.48	615
99	0.53	0.19	0.29	667
100	0.89	0.71	0.79	656
101	0.22	0.03	0.05	648
102	0.64	0.13	0.22	654
103	0.92	0.63	0.75	653
104	0.87	0.52	0.65	656
105	0.20	0.02	0.04	607

106	0.68	0.34	0.45	635
107	0.23	0.03	0.05	594
108	0.40	0.18	0.25	592
109	0.32	0.07	0.12	604
110	0.46	0.21	0.29	606
111	0.70	0.39	0.50	567
112	0.68	0.27	0.38	571
113	0.61	0.36	0.45	578
114	0.47	0.18	0.26	564
115	0.35	0.13	0.19	537
116	0.93	0.66	0.77	583
117	0.59	0.09	0.15	534
118	0.66	0.35	0.46	566
119	0.20	0.04	0.07	567
120	0.48	0.16	0.24	497
121	0.55	0.19	0.29	536
122	0.24	0.05	0.08	528
123	0.81	0.53	0.64	550
124	0.50	0.21	0.29	563
125	0.35	0.06	0.10	545
126	0.49	0.18	0.27	544
127	0.95	0.76	0.84	549
128	0.63	0.34	0.44	495
129	0.94	0.59	0.73	509
130	0.34	0.11	0.16	501
131	0.28	0.04	0.07	524
132	0.48	0.26	0.34	485
133	0.55	0.37	0.45	515
134	0.32	0.04	0.08	536
135	0.77	0.38	0.51	526
136	0.67	0.34	0.45	493
137	0.40	0.08	0.14	501
138	0.31	0.05	0.09	501
139	0.29	0.02	0.04	523
140	0.88	0.64	0.74	508
141	0.33	0.11	0.16	490
142	0.77	0.50	0.60	482
143	0.49	0.25	0.33	461
144	0.74	0.48	0.58	496
145	0.62	0.17	0.26	521
146	0.39	0.13	0.19	481
147	0.00	0.00	0.00	486
148	0.37	0.09	0.14	497
149	0.54	0.09	0.16	470
150	0.37	0.11	0.17	459
151	0.74	0.45	0.56	464
152	0.50	0.24	0.32	482
153	0.46	0.09	0.15	507
154	0.29	0.04	0.07	503
155	0.90	0.59	0.71	456
156	0.50	0.27	0.35	480
157	0.54	0.26	0.35	443
158	0.92	0.70	0.80	457
159	0.57	0.08	0.13	478
160	0.16	0.03	0.05	470
161	0.37	0.18	0.24	468
162	0.24	0.05	0.09	428
163	0.40	0.08	0.13	462
164	0.73	0.32	0.45	493
165	0.93	0.68	0.79	437
166	0.40	0.20	0.26	435
167	0.30	0.02	0.03	448
168	0.53	0.16	0.25	436
169	0.36	0.10	0.15	437
170	0.38	0.09	0.15	410
171	0.59	0.32	0.41	450
172	0.69	0.39	0.50	435
173	0.91	0.67	0.77	427
174	0.45	0.16	0.24	427
175	0.43	0.17	0.24	424
176	0.64	0.43	0.52	410
177	0.67	0.29	0.40	426
178	0.74	0.49	0.59	459
179	0.52	0.13	0.20	433
180	0.71	0.36	0.48	452
181	0.91	0.62	0.74	427
182	0.46	0.13	0.20	410

183	0.28	0.02	0.04	404
184	0.69	0.42	0.52	406
185	0.68	0.41	0.52	411
186	0.22	0.02	0.03	394
187	0.90	0.65	0.75	414
188	0.64	0.10	0.18	430
189	0.16	0.04	0.06	389
190	0.28	0.03	0.05	418
191	0.36	0.16	0.22	371
192	0.83	0.57	0.68	363
193	0.91	0.55	0.69	389
194	0.44	0.04	0.07	411
195	0.49	0.22	0.31	383
196	0.95	0.74	0.83	423
197	0.91	0.54	0.68	378
198	0.69	0.38	0.49	382
199	0.12	0.01	0.02	344
200	0.71	0.31	0.44	383
201	0.77	0.34	0.47	390
202	0.18	0.02	0.04	405
203	0.43	0.07	0.11	365
204	0.42	0.14	0.21	346
205	0.21	0.05	0.08	378
206	0.67	0.27	0.39	390
207	0.33	0.07	0.11	379
208	0.39	0.11	0.17	386
209	0.42	0.15	0.22	339
210	0.27	0.07	0.12	382
211	0.37	0.05	0.08	374
212	0.62	0.38	0.47	364
213	0.94	0.76	0.84	372
214	0.96	0.63	0.76	350
215	0.76	0.38	0.50	352
216	0.00	0.00	0.00	351
217	0.64	0.29	0.40	329
218	0.72	0.31	0.44	341
219	0.94	0.71	0.81	331
220	0.49	0.27	0.35	342
221	0.76	0.39	0.52	339
222	0.29	0.04	0.06	332
223	0.43	0.12	0.18	327
224	0.31	0.06	0.11	324
225	0.51	0.21	0.30	352
226	0.65	0.30	0.41	317
227	0.54	0.12	0.20	355
228	0.57	0.19	0.29	341
229	0.58	0.37	0.46	334
230	0.64	0.49	0.56	304
231	0.43	0.04	0.07	321
232	0.77	0.50	0.61	311
233	0.32	0.10	0.15	312
234	0.09	0.01	0.02	306
235	0.03	0.00	0.01	305
236	0.16	0.02	0.04	340
237	0.58	0.30	0.40	316
238	0.65	0.23	0.34	297
239	0.35	0.13	0.19	305
240	0.73	0.44	0.55	310
241	0.67	0.36	0.47	307
242	0.58	0.16	0.25	316
243	0.26	0.07	0.11	314
244	0.51	0.12	0.19	316
245	0.67	0.46	0.55	313
246	0.79	0.46	0.58	325
247	0.60	0.36	0.45	291
248	0.33	0.01	0.02	311
249	0.57	0.24	0.33	314
250	0.38	0.05	0.09	309
251	0.30	0.08	0.13	300
252	0.55	0.27	0.36	325
253	0.76	0.51	0.61	316
254	0.43	0.09	0.15	306
255	0.54	0.19	0.28	289
256	0.49	0.11	0.18	304
257	0.16	0.02	0.04	268
258	0.85	0.58	0.69	266
259	0.06	0.00	0.01	298

260	0.55	0.36	0.43	292
261	0.25	0.05	0.08	289
262	0.50	0.01	0.01	305
263	0.00	0.00	0.00	281
264	0.59	0.25	0.35	295
265	0.16	0.02	0.04	281
266	0.83	0.52	0.64	269
267	0.45	0.12	0.19	312
268	0.75	0.40	0.52	294
269	0.34	0.05	0.09	285
270	0.56	0.33	0.42	279
271	0.50	0.28	0.36	269
272	0.59	0.38	0.46	277
273	0.69	0.31	0.43	272
274	0.36	0.01	0.03	285
275	0.94	0.69	0.80	295
276	0.46	0.19	0.27	283
277	0.65	0.29	0.40	250
278	0.57	0.20	0.30	281
279	0.86	0.58	0.69	270
280	0.62	0.35	0.44	272
281	0.32	0.07	0.11	278
282	0.00	0.00	0.00	264
283	0.85	0.59	0.70	281
284	0.78	0.53	0.63	261
285	0.33	0.09	0.14	283
286	0.00	0.00	0.00	275
287	0.29	0.03	0.05	274
288	0.37	0.04	0.06	284
289	0.00	0.00	0.00	260
290	0.54	0.24	0.34	245
291	0.07	0.00	0.01	267
292	0.33	0.07	0.11	263
293	0.30	0.09	0.14	268
294	0.33	0.11	0.16	270
295	0.48	0.06	0.10	261
296	0.84	0.59	0.69	240
297	0.43	0.22	0.29	250
298	0.81	0.51	0.63	245
299	0.11	0.01	0.01	283
300	0.51	0.21	0.30	236
301	0.78	0.51	0.62	267
302	0.19	0.02	0.04	243
303	0.26	0.04	0.06	276
304	0.89	0.71	0.79	280
305	0.37	0.14	0.20	249
306	0.24	0.02	0.04	258
307	0.00	0.00	0.00	262
308	0.53	0.20	0.29	248
309	0.58	0.25	0.35	244
310	0.33	0.06	0.09	254
311	0.41	0.10	0.16	263
312	0.52	0.25	0.33	232
313	0.75	0.55	0.63	235
314	0.61	0.11	0.19	248
315	0.49	0.16	0.25	263
316	0.33	0.08	0.12	264
317	0.61	0.06	0.12	216
318	0.05	0.00	0.01	230
319	0.53	0.27	0.36	230
320	0.00	0.00	0.00	239
321	0.45	0.08	0.13	265
322	0.69	0.32	0.44	253
323	0.23	0.04	0.06	238
324	0.72	0.37	0.49	232
325	0.22	0.05	0.08	239
326	0.49	0.18	0.26	261
327	0.64	0.14	0.23	261
328	0.67	0.47	0.55	231
329	0.46	0.13	0.20	264
330	0.18	0.02	0.03	242
331	0.80	0.37	0.50	231
332	0.63	0.28	0.39	234
333	0.50	0.32	0.39	212
334	0.26	0.05	0.09	221
335	0.15	0.03	0.05	242
336	0.57	0.30	0.40	211

336	0.57	0.30	0.40	211
337	0.20	0.01	0.03	212
338	0.00	0.00	0.00	222
339	0.22	0.02	0.04	227
340	0.66	0.30	0.41	216
341	0.57	0.26	0.36	231
342	0.45	0.22	0.29	233
343	0.17	0.03	0.04	232
344	0.28	0.02	0.04	209
345	0.37	0.11	0.17	216
346	0.27	0.09	0.13	222
347	0.48	0.19	0.28	243
348	0.51	0.26	0.35	222
349	0.57	0.12	0.20	228
350	0.44	0.12	0.18	205
351	0.58	0.30	0.39	177
352	0.77	0.39	0.52	234
353	0.96	0.57	0.71	230
354	0.47	0.21	0.29	195
355	0.90	0.42	0.57	209
356	0.06	0.00	0.01	205
357	0.50	0.11	0.18	211
358	0.43	0.16	0.23	230
359	0.27	0.08	0.12	211
360	0.39	0.09	0.14	221
361	0.24	0.04	0.08	200
362	0.82	0.15	0.25	219
363	0.36	0.07	0.12	222
364	0.62	0.27	0.38	213
365	0.94	0.36	0.52	199
366	0.80	0.37	0.51	200
367	0.76	0.29	0.42	199
368	0.57	0.26	0.36	212
369	0.93	0.71	0.80	214
370	0.10	0.02	0.03	197
371	0.20	0.03	0.05	212
372	0.41	0.14	0.21	210
373	0.43	0.03	0.05	211
374	0.41	0.15	0.22	213
375	0.00	0.00	0.00	216
376	0.87	0.53	0.66	195
377	0.95	0.67	0.79	187
378	0.15	0.03	0.04	191
379	0.17	0.02	0.04	178
380	0.79	0.48	0.60	193
381	0.13	0.02	0.04	187
382	0.67	0.03	0.06	193
383	0.17	0.04	0.06	204
384	0.28	0.15	0.19	193
385	0.12	0.02	0.04	207
386	0.84	0.45	0.59	211
387	0.06	0.00	0.01	210
388	0.31	0.04	0.06	223
389	0.24	0.09	0.13	203
390	0.72	0.24	0.36	199
391	0.40	0.08	0.13	200
392	0.22	0.05	0.09	183
393	0.62	0.31	0.41	189
394	0.96	0.66	0.78	194
395	0.53	0.18	0.27	183
396	0.43	0.21	0.28	189
397	0.71	0.34	0.46	191
398	0.34	0.06	0.11	206
399	0.33	0.01	0.03	221
400	0.28	0.04	0.07	196
401	0.28	0.09	0.14	179
402	0.28	0.08	0.12	187
403	0.51	0.22	0.31	203
404	0.46	0.12	0.19	205
405	0.35	0.08	0.13	218
406	0.19	0.04	0.06	196
407	0.72	0.35	0.47	206
408	0.31	0.06	0.10	203
409	0.70	0.43	0.53	187
410	0.85	0.54	0.66	208
411	0.83	0.45	0.58	193
412	0.33	0.02	0.03	192
413	0.66	0.36	0.46	182

413	0.66	0.36	0.46	182
414	0.45	0.19	0.27	175
415	0.64	0.49	0.55	181
416	0.00	0.00	0.00	202
417	0.92	0.44	0.60	202
418	0.17	0.01	0.02	195
419	0.78	0.25	0.38	177
420	0.26	0.07	0.11	168
421	0.80	0.45	0.58	187
422	0.92	0.46	0.62	209
423	0.66	0.16	0.26	177
424	0.35	0.06	0.10	182
425	0.52	0.14	0.23	187
426	0.22	0.04	0.07	185
427	0.43	0.13	0.20	185
428	0.42	0.18	0.25	185
429	0.92	0.46	0.61	175
430	0.90	0.49	0.64	190
431	0.31	0.03	0.05	185
432	0.71	0.03	0.05	189
433	0.60	0.20	0.30	184
434	0.79	0.36	0.49	200
435	0.20	0.01	0.01	167
436	0.21	0.01	0.03	209
437	0.50	0.07	0.12	200
438	0.29	0.09	0.14	169
439	0.44	0.15	0.23	170
440	0.25	0.04	0.07	182
441	0.62	0.34	0.44	156
442	0.20	0.02	0.03	170
443	0.00	0.00	0.00	189
444	0.00	0.00	0.00	172
445	0.33	0.11	0.16	180
446	0.21	0.06	0.10	175
447	0.48	0.12	0.19	187
448	0.00	0.00	0.00	170
449	0.41	0.24	0.30	170
450	0.35	0.10	0.16	176
451	0.62	0.15	0.24	194
452	0.61	0.31	0.41	175
453	0.19	0.04	0.07	187
454	0.11	0.01	0.01	181
455	0.62	0.14	0.23	177
456	0.50	0.18	0.26	170
457	0.24	0.03	0.05	182
458	0.68	0.37	0.48	172
459	0.00	0.00	0.00	190
460	0.43	0.16	0.23	183
461	0.94	0.63	0.75	182
462	0.35	0.16	0.22	173
463	0.91	0.69	0.79	171
464	0.58	0.27	0.37	173
465	0.77	0.41	0.53	184
466	0.72	0.22	0.34	175
467	0.43	0.19	0.26	162
468	0.12	0.01	0.02	176
469	0.91	0.46	0.61	177
470	0.52	0.07	0.13	167
471	0.27	0.06	0.10	192
472	0.50	0.32	0.39	168
473	0.32	0.05	0.09	188
474	0.31	0.05	0.08	163
475	0.44	0.17	0.24	160
476	0.89	0.56	0.69	180
477	0.92	0.46	0.61	182
478	0.49	0.27	0.35	171
479	0.57	0.18	0.27	174
480	0.96	0.52	0.68	162
481	0.21	0.04	0.06	169
482	0.33	0.03	0.06	157
483	0.77	0.48	0.59	200
484	0.58	0.21	0.31	177
485	0.51	0.26	0.34	175
486	0.64	0.51	0.57	185
487	0.96	0.52	0.67	167
488	0.00	0.00	0.00	192
489	0.30	0.09	0.14	176
490	0.00	0.00	0.00	167

490	0.00	0.00	0.00	167
491	0.33	0.01	0.01	177
492	0.47	0.26	0.33	160
493	0.46	0.22	0.30	159
494	0.15	0.03	0.04	159
495	0.31	0.10	0.15	162
496	0.82	0.46	0.59	167
497	0.17	0.02	0.03	168
498	0.40	0.12	0.19	154
499	0.00	0.00	0.00	184
500	0.14	0.03	0.05	167
501	0.41	0.20	0.27	153
502	0.78	0.55	0.65	143
503	0.22	0.07	0.10	177
504	0.69	0.32	0.44	177
505	0.90	0.50	0.64	152
506	0.80	0.40	0.54	179
507	0.60	0.12	0.20	171
508	0.61	0.28	0.39	151
509	0.51	0.23	0.32	162
510	0.63	0.24	0.35	158
511	0.18	0.03	0.05	164
512	0.00	0.00	0.00	149
513	0.78	0.60	0.68	174
514	0.51	0.15	0.23	172
515	0.34	0.14	0.20	144
516	0.57	0.15	0.23	164
517	0.88	0.67	0.76	152
518	0.60	0.02	0.03	175
519	0.29	0.04	0.06	168
520	0.52	0.11	0.18	145
521	0.89	0.38	0.53	165
522	0.91	0.55	0.69	151
523	0.93	0.57	0.71	171
524	0.89	0.53	0.66	160
525	0.59	0.41	0.49	139
526	0.57	0.19	0.29	165
527	0.57	0.22	0.31	148
528	0.64	0.21	0.32	178
529	0.31	0.06	0.10	152
530	0.11	0.01	0.01	143
531	0.57	0.20	0.30	174
532	0.63	0.20	0.30	135
533	0.35	0.05	0.09	179
534	0.26	0.04	0.08	135
535	0.29	0.09	0.14	157
536	0.88	0.53	0.66	163
537	0.79	0.39	0.53	127
538	0.34	0.13	0.19	130
539	0.55	0.20	0.29	155
540	0.43	0.18	0.25	165
541	0.35	0.11	0.16	139
542	0.38	0.05	0.09	159
543	0.44	0.18	0.25	140
544	0.76	0.17	0.28	143
545	0.44	0.12	0.19	147
546	0.47	0.18	0.26	153
547	0.76	0.28	0.41	165
548	0.35	0.10	0.16	149
549	0.62	0.26	0.37	123
550	0.82	0.06	0.11	148
551	0.68	0.41	0.51	145
552	0.50	0.04	0.07	157
553	0.46	0.23	0.31	151
554	0.50	0.01	0.01	152
555	0.43	0.17	0.24	147
556	0.72	0.35	0.47	143
557	0.47	0.20	0.28	139
558	0.92	0.54	0.68	165
559	0.37	0.10	0.16	147
560	0.27	0.13	0.17	139
561	0.29	0.08	0.12	152
562	0.45	0.26	0.33	132
563	0.41	0.17	0.24	150
564	0.30	0.08	0.13	165
565	0.73	0.38	0.50	147
566	0.27	0.05	0.08	151
567	0.52	0.24	0.33	152

567	0.52	0.24	0.33	153
568	0.48	0.19	0.27	148
569	0.17	0.04	0.06	142
570	0.11	0.02	0.04	140
571	0.07	0.01	0.01	149
572	1.00	0.02	0.04	146
573	0.51	0.29	0.37	135
574	0.73	0.24	0.36	137
575	0.50	0.11	0.18	142
576	0.24	0.10	0.14	145
577	0.82	0.25	0.38	145
578	0.72	0.33	0.45	131
579	0.40	0.15	0.22	142
580	0.00	0.00	0.00	143
581	0.38	0.09	0.15	139
582	0.57	0.15	0.24	150
583	0.00	0.00	0.00	121
584	0.57	0.28	0.38	148
585	0.61	0.41	0.49	134
586	0.64	0.37	0.47	151
587	0.74	0.11	0.20	150
588	0.48	0.11	0.18	141
589	0.20	0.03	0.05	137
590	0.79	0.36	0.50	154
591	0.52	0.22	0.31	126
592	0.85	0.49	0.62	144
593	0.29	0.06	0.10	130
594	0.46	0.15	0.22	148
595	0.13	0.02	0.03	115
596	0.64	0.46	0.53	142
597	0.95	0.46	0.62	123
598	0.63	0.21	0.32	150
599	0.00	0.00	0.00	134
600	0.24	0.04	0.07	154
601	0.36	0.08	0.14	165
602	0.50	0.02	0.04	150
603	0.49	0.15	0.23	137
604	0.89	0.53	0.67	133
605	0.38	0.14	0.21	146
606	0.88	0.12	0.21	129
607	0.17	0.03	0.05	151
608	0.86	0.55	0.67	138
609	0.36	0.13	0.19	124
610	0.40	0.01	0.03	144
611	0.00	0.00	0.00	150
612	0.00	0.00	0.00	130
613	0.21	0.05	0.08	127
614	0.41	0.17	0.24	141
615	0.10	0.02	0.03	133
616	0.54	0.29	0.38	132
617	0.67	0.02	0.03	131
618	0.21	0.03	0.06	125
619	0.63	0.37	0.46	123
620	0.00	0.00	0.00	148
621	0.12	0.01	0.02	117
622	0.72	0.47	0.57	129
623	0.36	0.04	0.06	113
624	0.88	0.51	0.64	110
625	0.92	0.63	0.75	121
626	0.22	0.08	0.12	125
627	0.95	0.59	0.73	132
628	0.67	0.30	0.42	116
629	0.81	0.38	0.52	126
630	0.29	0.04	0.07	126
631	0.28	0.06	0.10	148
632	0.91	0.61	0.74	140
633	0.50	0.02	0.03	128
634	0.40	0.16	0.22	128
635	0.00	0.00	0.00	140
636	0.95	0.41	0.57	130
637	0.62	0.23	0.34	126
638	0.75	0.08	0.15	143
639	0.67	0.31	0.42	121
640	0.16	0.04	0.07	117
641	0.36	0.12	0.19	112
642	0.46	0.14	0.21	137
643	0.96	0.61	0.74	141
644	0.71	0.37	0.49	127

644	0.71	0.37	0.49	127
645	0.28	0.06	0.10	128
646	0.10	0.01	0.01	124
647	0.11	0.03	0.05	138
648	0.13	0.03	0.04	119
649	0.00	0.00	0.00	137
650	0.33	0.01	0.02	121
651	0.07	0.02	0.03	108
652	0.72	0.41	0.52	122
653	0.61	0.26	0.36	139
654	0.40	0.02	0.03	112
655	0.53	0.14	0.22	125
656	0.64	0.19	0.29	124
657	0.30	0.08	0.12	117
658	0.50	0.20	0.28	116
659	0.37	0.08	0.14	130
660	0.15	0.02	0.03	121
661	0.75	0.35	0.48	124
662	0.48	0.12	0.19	121
663	0.84	0.63	0.72	126
664	0.00	0.00	0.00	118
665	0.18	0.06	0.09	113
666	0.00	0.00	0.00	128
667	0.53	0.12	0.20	139
668	0.29	0.04	0.07	131
669	0.26	0.05	0.08	127
670	0.47	0.07	0.12	125
671	0.33	0.02	0.03	111
672	0.55	0.37	0.44	127
673	0.72	0.48	0.57	130
674	0.19	0.02	0.04	130
675	0.60	0.20	0.30	126
676	0.15	0.02	0.03	104
677	0.53	0.14	0.22	127
678	0.57	0.15	0.24	130
679	0.26	0.10	0.14	112
680	0.43	0.09	0.15	131
681	0.00	0.00	0.00	140
682	0.53	0.35	0.42	114
683	0.78	0.12	0.22	112
684	0.35	0.06	0.10	115
685	0.66	0.15	0.24	128
686	0.57	0.10	0.17	122
687	0.25	0.03	0.05	109
688	0.29	0.02	0.03	108
689	0.00	0.00	0.00	125
690	0.50	0.01	0.02	117
691	0.36	0.09	0.15	127
692	0.80	0.35	0.49	129
693	0.42	0.16	0.23	118
694	0.72	0.37	0.49	151
695	0.67	0.29	0.41	112
696	0.81	0.22	0.34	119
697	0.19	0.05	0.07	109
698	0.58	0.33	0.42	122
699	0.96	0.49	0.65	102
700	0.29	0.07	0.11	102
701	0.46	0.26	0.33	107
702	0.25	0.03	0.05	105
703	0.25	0.01	0.02	113
704	0.62	0.27	0.37	98
705	0.21	0.05	0.08	100
706	0.72	0.33	0.45	131
707	0.45	0.21	0.29	112
708	0.44	0.03	0.06	119
709	0.28	0.07	0.11	105
710	0.18	0.03	0.04	117
711	0.39	0.14	0.21	115
712	0.41	0.10	0.16	129
713	0.68	0.27	0.38	101
714	0.57	0.10	0.17	122
715	0.00	0.00	0.00	97
716	0.38	0.16	0.23	116
717	0.43	0.08	0.14	110
718	0.38	0.04	0.08	113
719	0.75	0.49	0.59	110
720	0.78	0.05	0.10	130

721	0.00	0.00	0.00	104
722	0.89	0.66	0.75	119
723	0.00	0.00	0.00	108
724	0.43	0.22	0.29	112
725	0.32	0.05	0.08	126
726	0.93	0.67	0.78	120
727	0.30	0.05	0.09	130
728	0.67	0.02	0.04	103
729	0.70	0.17	0.28	111
730	0.33	0.03	0.05	110
731	0.00	0.00	0.00	96
732	0.55	0.05	0.10	112
733	0.39	0.08	0.13	90
734	0.28	0.11	0.15	95
735	0.80	0.39	0.52	116
736	0.40	0.02	0.03	128
737	0.25	0.09	0.13	93
738	0.89	0.15	0.26	107
739	0.58	0.29	0.39	99
740	0.40	0.04	0.07	105
741	0.46	0.05	0.09	116
742	0.68	0.43	0.53	105
743	0.40	0.19	0.26	84
744	0.44	0.14	0.21	102
745	0.69	0.23	0.34	111
746	0.36	0.10	0.15	104
747	0.44	0.14	0.21	110
748	0.58	0.21	0.30	92
749	0.87	0.57	0.69	106
750	0.00	0.00	0.00	116
751	0.28	0.09	0.14	109
752	0.85	0.54	0.66	104
753	1.00	0.01	0.02	119
754	0.27	0.06	0.10	96
755	0.17	0.04	0.06	104
756	0.00	0.00	0.00	101
757	0.50	0.19	0.28	114
758	0.00	0.00	0.00	112
759	0.67	0.04	0.08	95
760	0.00	0.00	0.00	102
761	0.31	0.11	0.17	105
762	0.57	0.25	0.35	109
763	0.09	0.01	0.02	112
764	0.94	0.40	0.56	116
765	0.60	0.31	0.41	109
766	0.00	0.00	0.00	96
767	0.50	0.09	0.15	114
768	0.00	0.00	0.00	99
769	0.65	0.15	0.25	98
770	0.48	0.21	0.30	107
771	0.00	0.00	0.00	103
772	0.00	0.00	0.00	96
773	0.00	0.00	0.00	106
774	0.76	0.33	0.46	97
775	0.27	0.03	0.06	91
776	0.00	0.00	0.00	101
777	0.76	0.38	0.50	109
778	0.00	0.00	0.00	104
779	0.33	0.08	0.13	116
780	0.00	0.00	0.00	102
781	0.85	0.26	0.40	106
782	0.64	0.15	0.24	108
783	0.80	0.08	0.15	95
784	0.91	0.36	0.52	108
785	0.94	0.43	0.59	113
786	0.40	0.06	0.10	109
787	0.78	0.41	0.54	112
788	0.00	0.00	0.00	104
789	0.43	0.17	0.25	92
790	0.44	0.06	0.11	116
791	0.29	0.04	0.07	96
792	0.58	0.15	0.24	118
793	0.64	0.27	0.38	106
794	0.26	0.06	0.10	93
795	0.80	0.31	0.45	103
796	0.39	0.12	0.18	104
797	0.57	0.09	0.16	89

798	0.55	0.06	0.11	97
799	0.00	0.00	0.00	92
800	0.55	0.14	0.22	85
801	1.00	0.04	0.08	93
802	0.79	0.28	0.41	93
803	0.36	0.13	0.19	102
804	0.65	0.12	0.20	108
805	0.87	0.37	0.52	111
806	0.61	0.14	0.23	98
807	0.20	0.03	0.06	94
808	0.15	0.02	0.04	84
809	0.84	0.32	0.46	100
810	0.22	0.02	0.04	92
811	0.37	0.11	0.17	88
812	0.39	0.13	0.20	104
813	0.50	0.04	0.08	90
814	0.38	0.07	0.12	109
815	0.23	0.04	0.06	81
816	0.70	0.22	0.33	96
817	0.98	0.53	0.69	88
818	0.56	0.24	0.33	101
819	0.94	0.45	0.61	103
820	0.00	0.00	0.00	94
821	0.72	0.17	0.27	108
822	0.29	0.06	0.09	90
823	0.81	0.44	0.57	97
824	0.50	0.02	0.04	90
825	0.52	0.23	0.32	102
826	0.12	0.01	0.02	85
827	0.20	0.02	0.03	109
828	0.30	0.03	0.05	103
829	0.98	0.40	0.56	106
830	0.88	0.26	0.40	108
831	0.50	0.04	0.07	84
832	0.00	0.00	0.00	98
833	0.77	0.26	0.39	92
834	0.50	0.10	0.17	91
835	0.87	0.28	0.43	92
836	0.28	0.07	0.11	104
837	0.63	0.24	0.34	102
838	0.22	0.07	0.11	111
839	0.00	0.00	0.00	96
840	0.41	0.15	0.22	86
841	0.34	0.10	0.16	105
842	0.20	0.01	0.02	92
843	0.39	0.16	0.23	86
844	0.00	0.00	0.00	108
845	0.45	0.06	0.11	82
846	0.22	0.04	0.07	101
847	0.97	0.60	0.74	94
848	1.00	0.41	0.58	101
849	0.39	0.14	0.20	88
850	0.88	0.36	0.51	81
851	0.79	0.10	0.18	109
852	0.45	0.13	0.20	101
853	0.25	0.03	0.06	91
854	0.29	0.06	0.10	95
855	0.20	0.01	0.02	99
856	0.14	0.01	0.02	79
857	0.67	0.32	0.43	91
858	0.00	0.00	0.00	89
859	0.42	0.09	0.15	91
860	0.49	0.19	0.28	88
861	0.32	0.07	0.11	101
862	0.51	0.30	0.37	81
863	0.69	0.20	0.31	101
864	0.28	0.11	0.16	80
865	0.00	0.00	0.00	97
866	0.88	0.46	0.60	94
867	0.00	0.00	0.00	97
868	0.29	0.07	0.11	91
869	0.35	0.09	0.14	88
870	0.53	0.25	0.34	112
871	0.93	0.57	0.71	94
872	0.00	0.00	0.00	84
873	0.89	0.53	0.66	74
874	0.91	0.53	0.67	80

875	0.46	0.23	0.31	79
876	0.56	0.07	0.12	71
877	0.77	0.26	0.39	92
878	1.00	0.08	0.15	99
879	0.56	0.14	0.23	98
880	0.37	0.18	0.24	82
881	0.70	0.35	0.47	80
882	0.91	0.55	0.69	94
883	0.07	0.01	0.02	102
884	0.88	0.22	0.35	95
885	0.91	0.57	0.70	87
886	0.20	0.01	0.02	88
887	0.41	0.08	0.13	90
888	0.84	0.46	0.60	104
889	0.20	0.01	0.02	93
890	0.14	0.02	0.04	83
891	0.00	0.00	0.00	92
892	0.58	0.17	0.26	88
893	0.00	0.00	0.00	74
894	1.00	0.40	0.57	98
895	0.47	0.22	0.30	73
896	0.00	0.00	0.00	87
897	0.29	0.03	0.05	73
898	0.58	0.22	0.32	86
899	0.24	0.08	0.12	100
900	0.43	0.14	0.21	93
901	0.82	0.36	0.50	86
902	0.38	0.07	0.12	107
903	0.43	0.03	0.06	97
904	0.52	0.17	0.26	88
905	0.00	0.00	0.00	94
906	0.14	0.02	0.04	83
907	0.00	0.00	0.00	85
908	0.00	0.00	0.00	90
909	0.14	0.01	0.02	83
910	0.60	0.07	0.13	83
911	0.19	0.03	0.06	87
912	0.94	0.38	0.54	87
913	0.56	0.10	0.18	86
914	0.52	0.16	0.25	91
915	0.25	0.02	0.04	87
916	0.00	0.00	0.00	92
917	0.00	0.00	0.00	92
918	0.81	0.37	0.51	78
919	0.44	0.10	0.16	81
920	0.00	0.00	0.00	87
921	0.00	0.00	0.00	95
922	0.85	0.27	0.41	82
923	0.33	0.02	0.04	89
924	0.00	0.00	0.00	73
925	0.41	0.09	0.14	82
926	0.43	0.03	0.06	91
927	0.38	0.10	0.15	83
928	0.33	0.03	0.05	79
929	0.55	0.07	0.12	89
930	0.29	0.07	0.11	85
931	0.00	0.00	0.00	95
932	0.25	0.01	0.02	80
933	0.50	0.07	0.12	72
934	0.64	0.29	0.40	79
935	0.52	0.15	0.23	75
936	0.70	0.22	0.34	85
937	0.47	0.09	0.16	75
938	0.23	0.09	0.13	69
939	0.00	0.00	0.00	85
940	0.11	0.01	0.02	72
941	0.00	0.00	0.00	69
942	0.44	0.09	0.14	94
943	0.00	0.00	0.00	85
944	0.94	0.36	0.52	89
945	0.19	0.04	0.06	77
946	0.78	0.15	0.25	93
947	0.00	0.00	0.00	81
948	0.95	0.50	0.66	78
949	0.00	0.00	0.00	75
950	0.00	0.00	0.00	80
951	0.12	0.01	0.02	88

952	0.29	0.03	0.05	80
953	1.00	0.71	0.83	85
954	0.83	0.55	0.66	71
955	0.00	0.00	0.00	80
956	0.81	0.37	0.51	68
957	0.87	0.52	0.65	75
958	0.43	0.13	0.20	90
959	0.81	0.15	0.25	87
960	0.89	0.38	0.53	87
961	0.74	0.29	0.42	68
962	0.65	0.26	0.37	86
963	0.57	0.19	0.28	85
964	0.43	0.15	0.23	78
965	0.76	0.44	0.56	88
966	0.93	0.46	0.61	85
967	0.52	0.23	0.32	70
968	0.33	0.04	0.07	82
969	0.88	0.47	0.61	92
970	0.31	0.05	0.09	73
971	0.00	0.00	0.00	77
972	0.46	0.16	0.24	82
973	0.80	0.10	0.18	80
974	0.12	0.01	0.02	83
975	0.98	0.58	0.73	76
976	0.00	0.00	0.00	85
977	0.00	0.00	0.00	65
978	0.57	0.11	0.19	72
979	0.33	0.02	0.04	85
980	0.23	0.05	0.08	64
981	0.25	0.03	0.05	76
982	0.58	0.07	0.13	96
983	0.94	0.31	0.46	94
984	0.29	0.02	0.04	87
985	0.33	0.01	0.03	75
986	0.00	0.00	0.00	79
987	0.00	0.00	0.00	86
988	0.50	0.01	0.02	88
989	0.00	0.00	0.00	84
990	0.52	0.14	0.22	95
991	0.37	0.15	0.22	71
992	0.57	0.38	0.46	68
993	0.00	0.00	0.00	75
994	0.00	0.00	0.00	90
995	0.95	0.43	0.60	83
996	0.89	0.43	0.58	79
997	0.71	0.08	0.14	64
998	0.27	0.04	0.07	74
999	0.81	0.36	0.50	81
1000	0.00	0.00	0.00	74
1001	0.14	0.02	0.03	62
1002	0.67	0.25	0.37	71
1003	0.00	0.00	0.00	72
1004	0.50	0.08	0.14	75
1005	0.93	0.53	0.67	72
1006	0.52	0.15	0.23	81
1007	0.00	0.00	0.00	74
1008	0.17	0.01	0.03	72
1009	0.00	0.00	0.00	75
1010	0.47	0.16	0.24	91
1011	0.59	0.18	0.27	90
1012	0.62	0.25	0.36	80
1013	0.00	0.00	0.00	88
1014	0.80	0.06	0.11	71
1015	0.57	0.11	0.18	74
1016	0.88	0.22	0.35	68
1017	0.70	0.39	0.50	71
1018	0.65	0.21	0.32	80
1019	0.00	0.00	0.00	83
1020	0.46	0.08	0.14	74
1021	0.93	0.49	0.64	78
1022	0.86	0.32	0.47	77
1023	0.12	0.01	0.02	78
1024	0.68	0.31	0.43	67
1025	0.50	0.01	0.02	80
1026	0.69	0.23	0.35	77
1027	0.80	0.32	0.46	88
1028	0.24	0.06	0.09	70

1029	0.00	0.00	0.00	79
1030	0.33	0.07	0.12	67
1031	0.88	0.47	0.61	75
1032	0.56	0.28	0.38	64
1033	0.88	0.21	0.34	70
1034	0.17	0.06	0.09	69
1035	0.44	0.10	0.16	72
1036	0.30	0.04	0.07	79
1037	0.24	0.05	0.08	84
1038	0.00	0.00	0.00	87
1039	0.68	0.35	0.46	65
1040	0.72	0.36	0.48	73
1041	0.00	0.00	0.00	77
1042	0.27	0.05	0.09	77
1043	0.16	0.07	0.09	60
1044	0.00	0.00	0.00	73
1045	0.00	0.00	0.00	67
1046	0.43	0.04	0.07	83
1047	1.00	0.40	0.57	70
1048	1.00	0.02	0.03	65
1049	0.62	0.14	0.22	74
1050	0.50	0.02	0.03	62
1051	0.58	0.16	0.25	70
1052	0.00	0.00	0.00	69
1053	0.25	0.08	0.12	72
1054	0.44	0.15	0.23	72
1055	0.90	0.52	0.66	73
1056	0.74	0.34	0.46	92
1057	0.67	0.05	0.10	73
1058	0.31	0.12	0.17	68
1059	0.00	0.00	0.00	71
1060	0.33	0.10	0.16	69
1061	0.85	0.24	0.37	72
1062	0.44	0.29	0.35	66
1063	0.14	0.01	0.02	84
1064	0.00	0.00	0.00	78
1065	0.81	0.45	0.58	66
1066	0.21	0.04	0.07	69
1067	0.11	0.01	0.02	80
1068	1.00	0.01	0.03	71
1069	0.52	0.18	0.27	60
1070	0.20	0.01	0.02	77
1071	0.88	0.29	0.43	80
1072	0.25	0.06	0.10	80
1073	0.00	0.00	0.00	74
1074	0.21	0.04	0.07	69
1075	0.44	0.07	0.12	56
1076	0.32	0.13	0.18	63
1077	0.58	0.19	0.29	58
1078	0.00	0.00	0.00	63
1079	0.83	0.24	0.37	85
1080	0.52	0.15	0.24	78
1081	0.00	0.00	0.00	84
1082	0.74	0.42	0.54	73
1083	0.09	0.02	0.03	55
1084	0.51	0.26	0.34	70
1085	0.69	0.26	0.38	85
1086	0.00	0.00	0.00	68
1087	0.40	0.02	0.05	82
1088	0.00	0.00	0.00	67
1089	0.81	0.44	0.57	78
1090	0.70	0.11	0.19	64
1091	0.35	0.09	0.15	75
1092	0.38	0.16	0.23	61
1093	0.65	0.17	0.28	63
1094	0.00	0.00	0.00	77
1095	0.36	0.13	0.19	70
1096	0.86	0.34	0.48	71
1097	0.44	0.12	0.18	69
1098	0.58	0.22	0.32	63
1099	0.80	0.49	0.61	67
1100	0.57	0.06	0.11	68
1101	0.00	0.00	0.00	57
1102	0.90	0.54	0.67	69
1103	0.14	0.01	0.03	70
1104	0.40	0.05	0.09	75
1105	0.21	0.05	0.08	62

1106	0.25	0.01	0.03	72
1107	0.00	0.00	0.00	76
1108	0.00	0.00	0.00	72
1109	0.00	0.00	0.00	86
1110	0.85	0.43	0.57	82
1111	0.00	0.00	0.00	70
1112	0.50	0.01	0.03	72
1113	0.65	0.24	0.35	70
1114	0.20	0.02	0.03	57
1115	0.25	0.04	0.07	68
1116	0.00	0.00	0.00	64
1117	0.29	0.03	0.05	66
1118	0.50	0.11	0.18	81
1119	0.68	0.24	0.35	63
1120	0.15	0.06	0.09	62
1121	0.00	0.00	0.00	79
1122	0.80	0.21	0.34	56
1123	0.24	0.06	0.09	71
1124	0.00	0.00	0.00	78
1125	0.80	0.06	0.11	66
1126	0.00	0.00	0.00	62
1127	0.75	0.18	0.29	66
1128	0.00	0.00	0.00	70
1129	0.94	0.46	0.62	65
1130	0.85	0.37	0.51	63
1131	0.89	0.52	0.66	79
1132	0.38	0.07	0.12	67
1133	0.00	0.00	0.00	64
1134	0.20	0.03	0.05	67
1135	0.73	0.21	0.32	78
1136	0.44	0.07	0.13	54
1137	0.00	0.00	0.00	64
1138	0.39	0.09	0.15	76
1139	0.00	0.00	0.00	64
1140	0.00	0.00	0.00	67
1141	0.06	0.01	0.02	70
1142	0.44	0.06	0.11	66
1143	0.74	0.40	0.52	62
1144	0.00	0.00	0.00	67
1145	0.43	0.06	0.11	47
1146	0.35	0.09	0.14	69
1147	0.71	0.40	0.51	63
1148	0.37	0.10	0.16	70
1149	0.41	0.13	0.19	55
1150	0.57	0.33	0.42	49
1151	0.57	0.07	0.12	58
1152	0.00	0.00	0.00	65
1153	0.00	0.00	0.00	67
1154	0.00	0.00	0.00	66
1155	0.94	0.52	0.67	62
1156	0.62	0.07	0.12	72
1157	0.90	0.42	0.57	62
1158	0.00	0.00	0.00	60
1159	0.43	0.16	0.23	64
1160	0.30	0.05	0.09	59
1161	0.10	0.02	0.03	55
1162	0.51	0.29	0.37	63
1163	0.77	0.36	0.49	64
1164	0.00	0.00	0.00	54
1165	0.32	0.10	0.15	62
1166	0.00	0.00	0.00	73
1167	0.46	0.21	0.29	56
1168	0.33	0.03	0.06	60
1169	0.35	0.11	0.17	63
1170	0.80	0.05	0.10	73
1171	0.60	0.31	0.41	58
1172	0.29	0.03	0.06	59
1173	0.23	0.04	0.07	68
1174	0.45	0.14	0.22	63
1175	0.98	0.60	0.74	70
1176	0.87	0.42	0.57	62
1177	0.00	0.00	0.00	62
1178	0.00	0.00	0.00	45
1179	0.97	0.37	0.53	79
1180	0.70	0.12	0.21	58
1181	0.88	0.30	0.44	71
1182	0.12	0.02	0.03	56

1183	0.00	0.00	0.00	63
1184	0.00	0.00	0.00	72
1185	0.33	0.04	0.06	56
1186	0.82	0.19	0.30	75
1187	0.17	0.02	0.03	57
1188	0.45	0.08	0.14	60
1189	0.25	0.02	0.03	65
1190	0.50	0.01	0.03	68
1191	0.59	0.16	0.25	62
1192	0.00	0.00	0.00	68
1193	0.00	0.00	0.00	66
1194	0.40	0.04	0.06	57
1195	0.11	0.01	0.03	67
1196	0.88	0.10	0.18	69
1197	0.36	0.06	0.10	66
1198	0.40	0.03	0.06	62
1199	0.33	0.08	0.14	59
1200	0.92	0.21	0.34	57
1201	1.00	0.31	0.47	62
1202	0.87	0.47	0.61	58
1203	0.00	0.00	0.00	67
1204	0.63	0.35	0.45	74
1205	0.50	0.02	0.04	55
1206	0.55	0.09	0.16	65
1207	0.47	0.11	0.17	75
1208	0.63	0.20	0.30	61
1209	0.69	0.39	0.49	62
1210	0.14	0.02	0.03	59
1211	0.50	0.19	0.28	47
1212	0.00	0.00	0.00	59
1213	0.95	0.36	0.52	59
1214	1.00	0.03	0.05	74
1215	0.25	0.02	0.03	65
1216	0.00	0.00	0.00	60
1217	0.53	0.19	0.27	54
1218	0.00	0.00	0.00	62
1219	0.93	0.68	0.79	78
1220	0.85	0.57	0.68	72
1221	0.75	0.35	0.48	60
1222	0.43	0.14	0.21	63
1223	0.00	0.00	0.00	66
1224	0.56	0.14	0.23	69
1225	0.00	0.00	0.00	69
1226	0.80	0.18	0.29	68
1227	0.53	0.17	0.26	58
1228	0.00	0.00	0.00	51
1229	0.00	0.00	0.00	59
1230	0.00	0.00	0.00	75
1231	0.50	0.11	0.18	64
1232	0.00	0.00	0.00	66
1233	0.29	0.03	0.06	58
1234	0.00	0.00	0.00	63
1235	0.06	0.02	0.03	62
1236	0.00	0.00	0.00	57
1237	1.00	0.01	0.03	77
1238	0.81	0.40	0.54	52
1239	0.86	0.30	0.45	63
1240	0.90	0.40	0.55	48
1241	0.00	0.00	0.00	71
1242	0.79	0.18	0.29	62
1243	0.43	0.10	0.16	61
1244	0.00	0.00	0.00	53
1245	0.09	0.01	0.02	75
1246	0.38	0.05	0.10	55
1247	0.50	0.02	0.04	55
1248	0.00	0.00	0.00	49
1249	0.33	0.05	0.09	74
1250	0.97	0.47	0.64	59
1251	0.38	0.14	0.21	56
1252	0.33	0.10	0.15	63
1253	0.59	0.21	0.31	48
1254	0.95	0.60	0.73	62
1255	0.00	0.00	0.00	69
1256	0.30	0.05	0.08	65
1257	0.00	0.00	0.00	62
1258	0.39	0.14	0.20	51
1259	0.62	0.12	0.21	64

1260	0.00	0.00	0.00	64
1261	0.00	0.00	0.00	63
1262	0.93	0.22	0.36	58
1263	0.36	0.07	0.12	54
1264	0.00	0.00	0.00	62
1265	0.00	0.00	0.00	59
1266	0.90	0.46	0.60	57
1267	0.14	0.02	0.03	51
1268	0.25	0.04	0.07	46
1269	0.97	0.53	0.68	55
1270	0.88	0.10	0.18	69
1271	0.60	0.14	0.22	65
1272	0.38	0.08	0.14	60
1273	0.35	0.10	0.16	59
1274	0.25	0.05	0.08	62
1275	0.00	0.00	0.00	52
1276	0.40	0.07	0.12	57
1277	0.29	0.03	0.06	61
1278	0.70	0.11	0.19	62
1279	0.93	0.57	0.71	47
1280	0.25	0.03	0.06	63
1281	0.58	0.11	0.19	61
1282	0.60	0.18	0.28	50
1283	0.27	0.08	0.12	52
1284	0.68	0.23	0.35	56
1285	0.67	0.04	0.07	57
1286	0.71	0.10	0.18	49
1287	0.57	0.14	0.23	56
1288	0.57	0.27	0.36	49
1289	0.00	0.00	0.00	55
1290	0.00	0.00	0.00	68
1291	0.90	0.50	0.64	52
1292	0.29	0.03	0.05	73
1293	0.88	0.43	0.58	67
1294	0.00	0.00	0.00	54
1295	0.25	0.06	0.10	34
1296	1.00	0.34	0.51	56
1297	0.00	0.00	0.00	66
1298	1.00	0.03	0.06	68
1299	0.57	0.06	0.11	64
1300	0.91	0.50	0.65	64
1301	0.00	0.00	0.00	48
1302	0.00	0.00	0.00	63
1303	0.00	0.00	0.00	62
1304	0.50	0.02	0.04	54
1305	0.23	0.10	0.14	51
1306	0.22	0.07	0.11	55
1307	0.00	0.00	0.00	53
1308	0.61	0.31	0.41	54
1309	0.67	0.16	0.26	61
1310	0.00	0.00	0.00	42
1311	0.25	0.02	0.03	55
1312	0.00	0.00	0.00	64
1313	0.00	0.00	0.00	58
1314	0.90	0.36	0.51	50
1315	0.00	0.00	0.00	57
1316	0.59	0.22	0.32	46
1317	1.00	0.05	0.09	42
1318	0.50	0.22	0.30	74
1319	0.00	0.00	0.00	55
1320	0.00	0.00	0.00	59
1321	1.00	0.02	0.04	56
1322	0.00	0.00	0.00	61
1323	0.00	0.00	0.00	43
1324	0.47	0.18	0.26	45
1325	0.62	0.09	0.16	56
1326	0.72	0.35	0.47	52
1327	0.52	0.20	0.29	56
1328	0.00	0.00	0.00	56
1329	0.56	0.10	0.17	51
1330	0.00	0.00	0.00	54
1331	0.50	0.12	0.19	51
1332	0.00	0.00	0.00	48
1333	0.00	0.00	0.00	51
1334	0.00	0.00	0.00	38
1335	0.91	0.42	0.58	50
1336	0.00	0.00	0.00	48

1337	0.38	0.10	0.15	52
1338	0.58	0.21	0.31	52
1339	0.25	0.04	0.06	56
1340	0.50	0.04	0.07	52
1341	1.00	0.02	0.03	58
1342	0.00	0.00	0.00	56
1343	0.33	0.03	0.06	62
1344	0.93	0.32	0.47	44
1345	0.38	0.06	0.10	53
1346	0.20	0.02	0.03	53
1347	0.00	0.00	0.00	52
1348	0.50	0.10	0.17	58
1349	0.64	0.36	0.46	50
1350	0.00	0.00	0.00	62
1351	0.96	0.39	0.55	59
1352	0.00	0.00	0.00	57
1353	0.63	0.24	0.35	50
1354	0.67	0.11	0.19	55
1355	0.00	0.00	0.00	55
1356	0.17	0.02	0.03	56
1357	0.16	0.08	0.11	38
1358	0.20	0.04	0.06	53
1359	1.00	0.23	0.37	44
1360	1.00	0.23	0.38	56
1361	0.25	0.04	0.06	56
1362	1.00	0.33	0.49	46
1363	0.73	0.22	0.34	49
1364	0.00	0.00	0.00	66
1365	0.33	0.05	0.09	60
1366	0.86	0.11	0.19	56
1367	0.00	0.00	0.00	63
1368	0.53	0.15	0.23	67
1369	1.00	0.44	0.61	59
1370	0.94	0.33	0.48	49
1371	0.76	0.25	0.38	51
1372	0.20	0.02	0.04	50
1373	0.93	0.40	0.56	63
1374	0.20	0.02	0.03	55
1375	0.00	0.00	0.00	60
1376	0.52	0.18	0.27	60
1377	0.00	0.00	0.00	42
1378	0.94	0.30	0.45	54
1379	0.00	0.00	0.00	50
1380	0.00	0.00	0.00	45
1381	0.60	0.06	0.12	47
1382	0.11	0.02	0.03	54
1383	0.33	0.04	0.08	45
1384	0.00	0.00	0.00	52
1385	0.73	0.23	0.35	48
1386	0.60	0.06	0.11	50
1387	0.17	0.02	0.04	47
1388	0.75	0.16	0.26	57
1389	0.00	0.00	0.00	49
1390	0.55	0.27	0.36	44
1391	0.00	0.00	0.00	58
1392	0.77	0.19	0.30	54
1393	0.38	0.12	0.18	51
1394	0.50	0.02	0.04	51
1395	0.83	0.21	0.33	48
1396	0.67	0.13	0.22	61
1397	1.00	0.02	0.03	61
1398	0.62	0.15	0.24	55
1399	0.74	0.25	0.37	57
1400	0.50	0.06	0.11	49
1401	0.50	0.04	0.07	56
1402	0.54	0.13	0.22	52
1403	0.75	0.12	0.21	49
1404	0.92	0.80	0.86	41
1405	0.75	0.32	0.44	57
1406	0.33	0.02	0.04	54
1407	0.70	0.55	0.62	47
1408	0.38	0.07	0.12	41
1409	1.00	0.39	0.56	49
1410	1.00	0.44	0.61	48
1411	0.17	0.02	0.03	55
1412	0.73	0.13	0.23	60
1413	1.00	0.01	0.03	67

1414	0.00	0.00	0.00	50
1415	0.00	0.00	0.00	53
1416	0.40	0.10	0.16	59
1417	0.53	0.14	0.22	66
1418	0.67	0.04	0.08	50
1419	0.80	0.11	0.20	36
1420	0.30	0.06	0.11	47
1421	0.00	0.00	0.00	46
1422	0.38	0.10	0.16	51
1423	0.82	0.18	0.30	49
1424	0.50	0.07	0.12	56
1425	0.00	0.00	0.00	51
1426	0.67	0.04	0.07	53
1427	0.30	0.06	0.11	47
1428	0.00	0.00	0.00	39
1429	0.97	0.56	0.71	50
1430	0.86	0.20	0.33	59
1431	0.00	0.00	0.00	67
1432	0.00	0.00	0.00	53
1433	0.38	0.08	0.14	72
1434	0.62	0.10	0.17	51
1435	0.54	0.12	0.20	56
1436	0.67	0.11	0.18	56
1437	0.57	0.16	0.25	51
1438	0.00	0.00	0.00	46
1439	0.67	0.04	0.07	52
1440	0.00	0.00	0.00	41
1441	1.00	0.04	0.08	47
1442	1.00	0.02	0.04	45
1443	0.10	0.02	0.03	54
1444	0.15	0.04	0.06	52
1445	0.00	0.00	0.00	52
1446	0.61	0.25	0.35	44
1447	1.00	0.17	0.29	47
1448	0.00	0.00	0.00	48
1449	0.33	0.02	0.03	56
1450	0.00	0.00	0.00	54
1451	0.12	0.02	0.03	65
1452	0.50	0.07	0.13	55
1453	0.29	0.07	0.11	61
1454	0.00	0.00	0.00	62
1455	0.65	0.22	0.33	49
1456	0.20	0.02	0.03	53
1457	0.62	0.31	0.41	42
1458	0.75	0.05	0.10	59
1459	0.00	0.00	0.00	49
1460	0.71	0.10	0.18	50
1461	0.00	0.00	0.00	45
1462	0.42	0.11	0.17	47
1463	0.71	0.33	0.45	45
1464	1.00	0.04	0.08	50
1465	0.33	0.05	0.08	62
1466	0.00	0.00	0.00	51
1467	0.33	0.02	0.03	62
1468	0.93	0.48	0.63	54
1469	0.50	0.11	0.17	38
1470	0.81	0.26	0.40	65
1471	1.00	0.29	0.45	52
1472	0.50	0.09	0.15	44
1473	0.17	0.04	0.06	50
1474	0.00	0.00	0.00	56
1475	0.00	0.00	0.00	58
1476	0.12	0.02	0.03	58
1477	0.00	0.00	0.00	39
1478	0.96	0.48	0.64	50
1479	0.00	0.00	0.00	49
1480	0.00	0.00	0.00	41
1481	0.83	0.33	0.47	57
1482	0.00	0.00	0.00	49
1483	0.00	0.00	0.00	49
1484	1.00	0.10	0.18	59
1485	0.93	0.28	0.43	47
1486	0.50	0.02	0.04	53
1487	0.00	0.00	0.00	42
1488	0.00	0.00	0.00	47
1489	0.33	0.02	0.04	52
1490	0.72	0.30	0.42	44

1491	0.00	0.00	0.00	47
1492	0.81	0.25	0.39	51
1493	0.00	0.00	0.00	39
1494	0.00	0.00	0.00	38
1495	0.40	0.12	0.19	49
1496	0.62	0.16	0.26	49
1497	0.00	0.00	0.00	51
1498	1.00	0.04	0.07	52
1499	0.50	0.06	0.11	48
1500	0.00	0.00	0.00	51
1501	0.25	0.02	0.03	56
1502	0.00	0.00	0.00	48
1503	0.82	0.48	0.61	58
1504	0.50	0.02	0.04	44
1505	0.00	0.00	0.00	45
1506	0.20	0.02	0.04	44
1507	0.00	0.00	0.00	55
1508	0.33	0.04	0.08	45
1509	0.62	0.17	0.27	46
1510	0.00	0.00	0.00	46
1511	0.00	0.00	0.00	43
1512	0.89	0.19	0.31	42
1513	0.00	0.00	0.00	44
1514	0.58	0.33	0.42	45
1515	1.00	0.48	0.65	42
1516	1.00	0.36	0.53	42
1517	0.22	0.10	0.14	49
1518	1.00	0.18	0.30	51
1519	0.50	0.02	0.04	47
1520	0.00	0.00	0.00	48
1521	0.00	0.00	0.00	54
1522	0.22	0.05	0.09	38
1523	0.00	0.00	0.00	44
1524	0.67	0.04	0.07	55
1525	0.00	0.00	0.00	47
1526	0.00	0.00	0.00	55
1527	0.00	0.00	0.00	48
1528	0.67	0.04	0.07	54
1529	0.67	0.06	0.12	63
1530	0.77	0.25	0.38	40
1531	0.00	0.00	0.00	40
1532	0.22	0.04	0.07	48
1533	0.00	0.00	0.00	49
1534	0.00	0.00	0.00	45
1535	1.00	0.19	0.32	42
1536	1.00	0.06	0.11	54
1537	0.64	0.12	0.21	56
1538	0.50	0.03	0.05	38
1539	0.00	0.00	0.00	47
1540	0.44	0.10	0.16	40
1541	0.82	0.20	0.32	46
1542	1.00	0.15	0.26	46
1543	0.25	0.02	0.04	42
1544	0.70	0.33	0.45	48
1545	1.00	0.02	0.05	41
1546	0.00	0.00	0.00	35
1547	0.00	0.00	0.00	45
1548	0.20	0.04	0.06	55
1549	0.88	0.30	0.44	47
1550	1.00	0.12	0.22	48
1551	0.84	0.68	0.75	40
1552	0.67	0.04	0.07	51
1553	0.75	0.07	0.12	44
1554	0.91	0.20	0.32	51
1555	0.00	0.00	0.00	59
1556	0.50	0.18	0.27	60
1557	1.00	0.07	0.12	46
1558	0.67	0.05	0.09	43
1559	0.00	0.00	0.00	52
1560	0.67	0.09	0.16	44
1561	0.95	0.50	0.66	38
1562	0.40	0.10	0.15	42
1563	0.30	0.06	0.10	49
1564	1.00	0.15	0.25	48
1565	1.00	0.38	0.56	52
1566	0.97	0.63	0.76	46
1567	0.00	0.00	0.00	46

1568	0.81	0.44	0.57	39
1569	0.57	0.09	0.15	47
1570	0.60	0.12	0.21	48
1571	0.00	0.00	0.00	47
1572	0.00	0.00	0.00	52
1573	0.00	0.00	0.00	31
1574	0.95	0.38	0.55	55
1575	0.14	0.02	0.04	49
1576	1.00	0.43	0.61	46
1577	0.25	0.02	0.03	55
1578	0.00	0.00	0.00	42
1579	0.89	0.20	0.32	41
1580	0.00	0.00	0.00	47
1581	0.40	0.08	0.13	50
1582	0.00	0.00	0.00	47
1583	0.50	0.11	0.18	54
1584	0.50	0.04	0.08	49
1585	0.25	0.06	0.09	35
1586	0.00	0.00	0.00	43
1587	0.64	0.13	0.22	53
1588	0.00	0.00	0.00	49
1589	0.00	0.00	0.00	44
1590	0.50	0.05	0.09	39
1591	0.00	0.00	0.00	36
1592	0.00	0.00	0.00	46
1593	0.75	0.22	0.34	55
1594	0.91	0.21	0.34	47
1595	1.00	0.22	0.35	51
1596	0.00	0.00	0.00	42
1597	0.00	0.00	0.00	50
1598	0.53	0.20	0.29	40
1599	0.00	0.00	0.00	38
1600	0.00	0.00	0.00	47
1601	0.88	0.38	0.53	37
1602	0.25	0.02	0.03	62
1603	0.00	0.00	0.00	43
1604	0.00	0.00	0.00	66
1605	0.33	0.03	0.06	33
1606	0.00	0.00	0.00	35
1607	1.00	0.29	0.44	42
1608	0.96	0.57	0.71	44
1609	0.67	0.05	0.09	40
1610	0.91	0.46	0.61	46
1611	0.33	0.04	0.07	55
1612	0.88	0.35	0.50	43
1613	0.00	0.00	0.00	51
1614	0.69	0.24	0.35	38
1615	0.00	0.00	0.00	47
1616	0.45	0.10	0.16	51
1617	0.00	0.00	0.00	52
1618	0.25	0.02	0.04	43
1619	1.00	0.03	0.05	37
1620	0.00	0.00	0.00	50
1621	0.00	0.00	0.00	44
1622	0.56	0.12	0.20	41
1623	0.50	0.13	0.21	46
1624	1.00	0.05	0.09	42
1625	0.94	0.33	0.49	48
1626	0.20	0.02	0.04	51
1627	0.00	0.00	0.00	37
1628	0.20	0.04	0.07	48
1629	0.00	0.00	0.00	43
1630	0.00	0.00	0.00	50
1631	0.00	0.00	0.00	41
1632	0.29	0.04	0.08	45
1633	0.90	0.40	0.55	45
1634	0.43	0.11	0.17	56
1635	0.71	0.27	0.39	44
1636	1.00	0.33	0.50	39
1637	0.74	0.27	0.40	51
1638	0.00	0.00	0.00	31
1639	0.00	0.00	0.00	53
1640	1.00	0.19	0.31	59
1641	0.20	0.03	0.05	35
1642	0.38	0.10	0.15	52
1643	0.00	0.00	0.00	32
1644	0.00	0.00	0.00	45

1644	0.00	0.00	0.00	45
1645	0.00	0.00	0.00	50
1646	0.36	0.08	0.13	52
1647	0.53	0.26	0.34	39
1648	0.25	0.02	0.03	56
1649	0.75	0.32	0.45	37
1650	0.30	0.07	0.12	42
1651	0.62	0.09	0.16	55
1652	0.89	0.47	0.62	34
1653	0.83	0.12	0.22	40
1654	0.00	0.00	0.00	45
1655	0.00	0.00	0.00	56
1656	0.00	0.00	0.00	50
1657	0.00	0.00	0.00	46
1658	0.84	0.37	0.52	43
1659	0.88	0.45	0.59	49
1660	0.80	0.23	0.36	52
1661	1.00	0.02	0.04	54
1662	0.00	0.00	0.00	43
1663	0.00	0.00	0.00	59
1664	0.00	0.00	0.00	45
1665	0.00	0.00	0.00	51
1666	0.00	0.00	0.00	47
1667	0.17	0.02	0.04	50
1668	0.86	0.30	0.44	40
1669	0.25	0.03	0.05	38
1670	1.00	0.14	0.24	37
1671	0.50	0.02	0.04	51
1672	0.86	0.51	0.64	47
1673	0.86	0.12	0.21	49
1674	0.25	0.02	0.04	45
1675	0.00	0.00	0.00	46
1676	0.00	0.00	0.00	45
1677	0.38	0.07	0.11	45
1678	0.00	0.00	0.00	43
1679	1.00	0.02	0.04	52
1680	0.60	0.07	0.13	41
1681	0.00	0.00	0.00	41
1682	0.00	0.00	0.00	35
1683	0.67	0.05	0.09	41
1684	0.50	0.11	0.19	35
1685	1.00	0.02	0.04	53
1686	0.00	0.00	0.00	43
1687	0.00	0.00	0.00	39
1688	0.00	0.00	0.00	38
1689	0.50	0.18	0.26	51
1690	0.50	0.06	0.11	47
1691	0.00	0.00	0.00	30
1692	0.64	0.23	0.34	30
1693	0.00	0.00	0.00	47
1694	0.00	0.00	0.00	51
1695	0.00	0.00	0.00	43
1696	0.86	0.30	0.44	40
1697	0.00	0.00	0.00	33
1698	0.00	0.00	0.00	45
1699	0.00	0.00	0.00	42
1700	1.00	0.42	0.59	45
1701	0.83	0.38	0.53	39
1702	0.00	0.00	0.00	56
1703	1.00	0.36	0.53	44
1704	0.83	0.34	0.48	44
1705	1.00	0.40	0.57	40
1706	1.00	0.23	0.37	35
1707	0.00	0.00	0.00	32
1708	1.00	0.27	0.42	45
1709	0.00	0.00	0.00	37
1710	0.00	0.00	0.00	47
1711	0.25	0.07	0.11	30
1712	0.00	0.00	0.00	38
1713	0.00	0.00	0.00	39
1714	0.73	0.31	0.43	36
1715	0.00	0.00	0.00	38
1716	0.20	0.02	0.03	55
1717	0.60	0.07	0.13	42
1718	0.55	0.24	0.33	46
1719	0.54	0.14	0.22	51
1720	0.27	0.11	0.16	35
1721	0.85	0.47	0.61	36

1721	0.83	0.47	0.61	36
1722	0.89	0.42	0.57	38
1723	0.92	0.30	0.45	40
1724	0.67	0.04	0.07	53
1725	0.00	0.00	0.00	27
1726	0.20	0.02	0.04	48
1727	0.83	0.50	0.62	38
1728	0.18	0.05	0.08	38
1729	0.86	0.11	0.19	57
1730	0.85	0.47	0.60	47
1731	0.00	0.00	0.00	48
1732	0.00	0.00	0.00	41
1733	0.15	0.06	0.09	33
1734	0.33	0.05	0.09	37
1735	0.50	0.04	0.08	45
1736	0.95	0.41	0.57	44
1737	0.80	0.26	0.39	47
1738	1.00	0.38	0.55	48
1739	0.25	0.02	0.04	48
1740	0.00	0.00	0.00	51
1741	0.91	0.24	0.38	42
1742	0.93	0.29	0.44	45
1743	1.00	0.14	0.24	43
1744	0.00	0.00	0.00	50
1745	1.00	0.25	0.40	40
1746	0.67	0.16	0.26	49
1747	0.00	0.00	0.00	37
1748	0.83	0.42	0.56	36
1749	0.40	0.05	0.09	41
1750	0.00	0.00	0.00	41
1751	0.91	0.29	0.44	34
1752	0.00	0.00	0.00	37
1753	0.80	0.20	0.31	41
1754	0.00	0.00	0.00	46
1755	0.00	0.00	0.00	35
1756	0.59	0.22	0.32	46
1757	0.00	0.00	0.00	44
1758	0.50	0.05	0.09	43
1759	0.17	0.03	0.06	30
1760	0.00	0.00	0.00	46
1761	0.00	0.00	0.00	39
1762	0.00	0.00	0.00	41
1763	0.00	0.00	0.00	47
1764	0.86	0.18	0.29	34
1765	0.00	0.00	0.00	32
1766	0.71	0.29	0.41	42
1767	0.90	0.24	0.38	38
1768	0.00	0.00	0.00	35
1769	0.57	0.12	0.20	33
1770	0.67	0.05	0.10	39
1771	0.00	0.00	0.00	37
1772	0.54	0.15	0.23	48
1773	1.00	0.33	0.49	46
1774	0.67	0.14	0.23	44
1775	0.50	0.02	0.03	63
1776	0.80	0.10	0.18	40
1777	1.00	0.03	0.05	39
1778	0.50	0.08	0.14	38
1779	0.00	0.00	0.00	44
1780	0.92	0.55	0.69	44
1781	0.67	0.05	0.09	40
1782	0.33	0.05	0.08	43
1783	0.00	0.00	0.00	39
1784	0.44	0.09	0.15	44
1785	0.71	0.13	0.22	38
1786	0.00	0.00	0.00	39
1787	1.00	0.05	0.09	44
1788	0.00	0.00	0.00	46
1789	0.70	0.17	0.28	40
1790	0.75	0.27	0.39	45
1791	0.00	0.00	0.00	39
1792	0.20	0.05	0.08	41
1793	0.71	0.21	0.33	47
1794	0.38	0.07	0.12	43
1795	0.76	0.38	0.51	34
1796	0.72	0.40	0.51	45
1797	1.00	0.19	0.32	31
1798	0.25	0.06	0.09	36

1798	0.25	0.06	0.09	36
1799	0.68	0.27	0.39	55
1800	0.00	0.00	0.00	30
1801	0.00	0.00	0.00	35
1802	1.00	0.23	0.37	48
1803	0.12	0.03	0.04	38
1804	0.00	0.00	0.00	35
1805	0.00	0.00	0.00	32
1806	0.71	0.27	0.39	37
1807	1.00	0.19	0.32	37
1808	0.00	0.00	0.00	36
1809	0.00	0.00	0.00	42
1810	0.00	0.00	0.00	42
1811	0.00	0.00	0.00	35
1812	0.57	0.10	0.17	39
1813	0.71	0.28	0.40	36
1814	0.43	0.06	0.11	48
1815	1.00	0.44	0.62	45
1816	0.75	0.26	0.39	34
1817	0.67	0.19	0.29	32
1818	1.00	0.27	0.43	44
1819	0.00	0.00	0.00	46
1820	0.00	0.00	0.00	40
1821	0.00	0.00	0.00	37
1822	0.00	0.00	0.00	35
1823	0.00	0.00	0.00	33
1824	0.00	0.00	0.00	38
1825	1.00	0.05	0.10	38
1826	0.73	0.18	0.29	45
1827	0.00	0.00	0.00	36
1828	0.00	0.00	0.00	45
1829	0.96	0.68	0.80	38
1830	0.17	0.03	0.05	35
1831	0.75	0.26	0.39	34
1832	0.50	0.03	0.06	33
1833	0.60	0.13	0.21	23
1834	0.50	0.02	0.04	44
1835	0.00	0.00	0.00	50
1836	1.00	0.05	0.09	44
1837	0.86	0.26	0.40	46
1838	0.00	0.00	0.00	33
1839	0.60	0.20	0.30	45
1840	0.00	0.00	0.00	37
1841	1.00	0.03	0.05	39
1842	0.00	0.00	0.00	40
1843	0.00	0.00	0.00	41
1844	0.33	0.05	0.08	43
1845	0.00	0.00	0.00	36
1846	0.00	0.00	0.00	38
1847	0.00	0.00	0.00	33
1848	0.00	0.00	0.00	37
1849	1.00	0.12	0.21	34
1850	0.00	0.00	0.00	42
1851	0.60	0.41	0.48	37
1852	0.80	0.11	0.19	37
1853	0.91	0.24	0.38	41
1854	1.00	0.45	0.62	40
1855	0.00	0.00	0.00	40
1856	0.00	0.00	0.00	39
1857	0.00	0.00	0.00	30
1858	0.33	0.02	0.04	49
1859	0.67	0.28	0.39	29
1860	0.00	0.00	0.00	45
1861	0.25	0.05	0.08	40
1862	0.90	0.23	0.37	39
1863	0.00	0.00	0.00	37
1864	0.81	0.35	0.49	37
1865	0.91	0.28	0.43	36
1866	0.00	0.00	0.00	39
1867	0.38	0.07	0.12	42
1868	0.73	0.25	0.37	44
1869	0.00	0.00	0.00	39
1870	0.00	0.00	0.00	46
1871	0.00	0.00	0.00	43
1872	0.14	0.03	0.05	34
1873	0.40	0.04	0.08	47
1874	0.57	0.10	0.17	39
1875	0.33	0.03	0.05	36

1875	0.33	0.03	0.05	36
1876	0.56	0.14	0.22	37
1877	0.00	0.00	0.00	47
1878	0.50	0.06	0.11	48
1879	0.67	0.19	0.29	32
1880	0.87	0.28	0.43	46
1881	0.17	0.03	0.05	38
1882	0.00	0.00	0.00	36
1883	0.00	0.00	0.00	40
1884	0.38	0.09	0.14	34
1885	0.00	0.00	0.00	41
1886	0.00	0.00	0.00	42
1887	0.00	0.00	0.00	38
1888	1.00	0.02	0.04	49
1889	1.00	0.42	0.59	36
1890	0.70	0.19	0.30	36
1891	0.67	0.23	0.34	44
1892	0.33	0.04	0.07	24
1893	0.00	0.00	0.00	36
1894	1.00	0.39	0.56	46
1895	0.00	0.00	0.00	33
1896	1.00	0.12	0.21	42
1897	0.00	0.00	0.00	35
1898	0.00	0.00	0.00	31
1899	0.71	0.33	0.45	36
1900	0.00	0.00	0.00	30
1901	0.62	0.10	0.18	49
1902	0.67	0.12	0.20	34
1903	1.00	0.07	0.14	40
1904	0.00	0.00	0.00	42
1905	0.00	0.00	0.00	44
1906	0.84	0.34	0.48	47
1907	0.00	0.00	0.00	46
1908	0.57	0.33	0.42	36
1909	1.00	0.06	0.11	35
1910	0.00	0.00	0.00	46
1911	0.00	0.00	0.00	39
1912	0.85	0.29	0.43	38
1913	0.00	0.00	0.00	38
1914	0.73	0.19	0.30	43
1915	0.84	0.52	0.64	31
1916	0.33	0.08	0.12	39
1917	0.00	0.00	0.00	38
1918	0.75	0.20	0.32	45
1919	0.58	0.19	0.29	37
1920	0.00	0.00	0.00	29
1921	0.00	0.00	0.00	31
1922	0.61	0.34	0.44	41
1923	0.17	0.02	0.03	54
1924	0.80	0.12	0.22	32
1925	0.00	0.00	0.00	32
1926	0.00	0.00	0.00	38
1927	0.94	0.38	0.54	42
1928	0.00	0.00	0.00	41
1929	0.00	0.00	0.00	47
1930	1.00	0.40	0.57	30
1931	1.00	0.05	0.09	41
1932	0.00	0.00	0.00	40
1933	0.62	0.19	0.29	43
1934	0.00	0.00	0.00	42
1935	0.33	0.06	0.10	36
1936	0.57	0.29	0.38	42
1937	1.00	0.03	0.05	36
1938	0.94	0.50	0.65	32
1939	1.00	0.12	0.21	50
1940	0.33	0.03	0.05	35
1941	0.00	0.00	0.00	41
1942	0.80	0.20	0.32	40
1943	0.00	0.00	0.00	38
1944	0.84	0.47	0.60	34
1945	0.00	0.00	0.00	42
1946	0.90	0.32	0.47	28
1947	0.00	0.00	0.00	37
1948	0.00	0.00	0.00	32
1949	0.00	0.00	0.00	32
1950	0.69	0.35	0.46	26
1951	0.00	0.00	0.00	49
1952	0.00	0.00	0.00	32

1952	0.00	0.00	0.00	32
1953	0.50	0.03	0.06	31
1954	0.71	0.12	0.21	40
1955	0.00	0.00	0.00	47
1956	1.00	0.07	0.13	43
1957	0.00	0.00	0.00	38
1958	0.77	0.26	0.39	38
1959	0.00	0.00	0.00	34
1960	0.32	0.21	0.25	39
1961	1.00	0.03	0.06	34
1962	0.20	0.02	0.04	42
1963	0.60	0.09	0.16	32
1964	0.00	0.00	0.00	41
1965	0.33	0.02	0.04	42
1966	0.00	0.00	0.00	37
1967	0.00	0.00	0.00	41
1968	0.86	0.60	0.71	30
1969	0.50	0.24	0.32	25
1970	0.50	0.15	0.23	40
1971	0.00	0.00	0.00	43
1972	0.00	0.00	0.00	42
1973	0.00	0.00	0.00	32
1974	0.00	0.00	0.00	33
1975	1.00	0.21	0.35	28
1976	0.00	0.00	0.00	35
1977	0.92	0.22	0.36	49
1978	1.00	0.33	0.49	49
1979	0.00	0.00	0.00	34
1980	0.00	0.00	0.00	28
1981	1.00	0.24	0.38	34
1982	0.00	0.00	0.00	30
1983	0.50	0.03	0.05	40
1984	0.00	0.00	0.00	38
1985	0.00	0.00	0.00	42
1986	0.00	0.00	0.00	32
1987	0.00	0.00	0.00	37
1988	0.25	0.03	0.05	34
1989	0.75	0.15	0.24	41
1990	0.00	0.00	0.00	34
1991	0.00	0.00	0.00	34
1992	0.00	0.00	0.00	30
1993	0.67	0.17	0.27	36
1994	0.83	0.16	0.26	32
1995	0.00	0.00	0.00	38
1996	0.00	0.00	0.00	32
1997	0.00	0.00	0.00	39
1998	0.00	0.00	0.00	32
1999	0.73	0.18	0.29	44
2000	0.50	0.02	0.05	41
2001	1.00	0.24	0.39	37
2002	0.30	0.08	0.12	38
2003	0.00	0.00	0.00	31
2004	0.00	0.00	0.00	35
2005	0.80	0.24	0.36	34
2006	0.80	0.24	0.36	34
2007	1.00	0.06	0.12	31
2008	0.00	0.00	0.00	40
2009	1.00	0.25	0.40	40
2010	0.40	0.05	0.09	39
2011	0.62	0.14	0.22	37
2012	0.00	0.00	0.00	35
2013	0.00	0.00	0.00	27
2014	0.00	0.00	0.00	38
2015	0.00	0.00	0.00	34
2016	0.00	0.00	0.00	33
2017	0.00	0.00	0.00	31
2018	1.00	0.06	0.11	34
2019	0.00	0.00	0.00	40
2020	0.00	0.00	0.00	29
2021	0.00	0.00	0.00	34
2022	0.00	0.00	0.00	37
2023	0.54	0.23	0.33	30
2024	0.00	0.00	0.00	34
2025	0.00	0.00	0.00	36
2026	0.92	0.22	0.36	49
2027	0.00	0.00	0.00	22
2028	0.94	0.38	0.55	39

2029	0.00	0.00	0.00	36
2030	1.00	0.49	0.65	37
2031	0.90	0.28	0.43	32
2032	1.00	0.17	0.29	41
2033	0.00	0.00	0.00	28
2034	0.30	0.08	0.12	38
2035	0.00	0.00	0.00	26
2036	0.00	0.00	0.00	33
2037	0.00	0.00	0.00	32
2038	0.80	0.22	0.34	37
2039	0.00	0.00	0.00	32
2040	0.55	0.15	0.24	40
2041	0.40	0.07	0.12	29
2042	0.00	0.00	0.00	30
2043	0.00	0.00	0.00	33
2044	0.00	0.00	0.00	35
2045	0.50	0.18	0.26	34
2046	0.50	0.03	0.06	31
2047	0.50	0.06	0.11	32
2048	0.00	0.00	0.00	36
2049	1.00	0.02	0.05	43
2050	0.00	0.00	0.00	27
2051	0.50	0.10	0.16	31
2052	0.00	0.00	0.00	34
2053	0.00	0.00	0.00	32
2054	0.71	0.11	0.19	45
2055	0.00	0.00	0.00	39
2056	0.95	0.58	0.72	33
2057	0.40	0.05	0.09	38
2058	0.25	0.03	0.05	33
2059	0.00	0.00	0.00	44
2060	1.00	0.46	0.63	35
2061	0.40	0.10	0.16	40
2062	0.00	0.00	0.00	31
2063	1.00	0.44	0.61	32
2064	0.00	0.00	0.00	45
2065	0.93	0.40	0.56	35
2066	0.00	0.00	0.00	37
2067	0.40	0.06	0.10	35
2068	0.00	0.00	0.00	43
2069	0.00	0.00	0.00	26
2070	0.00	0.00	0.00	40
2071	1.00	0.46	0.63	37
2072	0.00	0.00	0.00	31
2073	0.40	0.11	0.18	35
2074	0.00	0.00	0.00	35
2075	0.00	0.00	0.00	31
2076	0.00	0.00	0.00	30
2077	0.83	0.18	0.29	28
2078	0.00	0.00	0.00	37
2079	0.00	0.00	0.00	38
2080	0.00	0.00	0.00	28
2081	0.00	0.00	0.00	28
2082	0.00	0.00	0.00	33
2083	1.00	0.11	0.19	28
2084	1.00	0.26	0.41	23
2085	0.84	0.46	0.59	35
2086	0.60	0.08	0.14	39
2087	0.00	0.00	0.00	31
2088	0.00	0.00	0.00	25
2089	0.77	0.46	0.58	37
2090	0.00	0.00	0.00	34
2091	0.00	0.00	0.00	34
2092	0.00	0.00	0.00	38
2093	0.00	0.00	0.00	36
2094	0.29	0.06	0.10	33
2095	0.40	0.05	0.09	40
2096	0.67	0.11	0.18	38
2097	0.33	0.04	0.07	25
2098	0.00	0.00	0.00	33
2099	1.00	0.19	0.32	42
2100	0.00	0.00	0.00	29
2101	0.00	0.00	0.00	29
2102	0.50	0.06	0.10	35
2103	0.67	0.10	0.17	40
2104	0.00	0.00	0.00	42
2105	0.00	0.00	0.00	36

2106	0.00	0.00	0.00	33
2107	0.00	0.00	0.00	33
2108	0.00	0.00	0.00	34
2109	0.00	0.00	0.00	42
2110	0.00	0.00	0.00	28
2111	0.40	0.05	0.09	40
2112	1.00	0.04	0.08	24
2113	0.00	0.00	0.00	36
2114	0.43	0.09	0.15	33
2115	0.00	0.00	0.00	32
2116	0.67	0.15	0.24	27
2117	0.00	0.00	0.00	30
2118	0.79	0.38	0.51	29
2119	0.50	0.07	0.12	28
2120	0.94	0.46	0.62	35
2121	0.00	0.00	0.00	35
2122	0.00	0.00	0.00	37
2123	0.00	0.00	0.00	35
2124	0.40	0.06	0.10	35
2125	0.00	0.00	0.00	37
2126	0.00	0.00	0.00	35
2127	0.40	0.06	0.11	32
2128	0.36	0.13	0.20	30
2129	0.00	0.00	0.00	32
2130	0.00	0.00	0.00	41
2131	1.00	0.04	0.07	26
2132	0.00	0.00	0.00	34
2133	0.00	0.00	0.00	29
2134	0.00	0.00	0.00	36
2135	0.00	0.00	0.00	29
2136	0.00	0.00	0.00	35
2137	0.83	0.37	0.51	27
2138	0.00	0.00	0.00	35
2139	0.85	0.37	0.51	30
2140	0.00	0.00	0.00	33
2141	0.67	0.05	0.10	38
2142	0.00	0.00	0.00	37
2143	1.00	0.10	0.18	31
2144	0.71	0.14	0.24	35
2145	1.00	0.37	0.54	38
2146	1.00	0.17	0.29	35
2147	0.38	0.15	0.22	33
2148	0.00	0.00	0.00	32
2149	0.67	0.05	0.10	37
2150	0.00	0.00	0.00	41
2151	0.00	0.00	0.00	39
2152	0.00	0.00	0.00	36
2153	0.00	0.00	0.00	31
2154	0.00	0.00	0.00	30
2155	1.00	0.42	0.59	26
2156	0.00	0.00	0.00	32
2157	0.00	0.00	0.00	38
2158	0.00	0.00	0.00	33
2159	0.00	0.00	0.00	32
2160	0.33	0.03	0.06	32
2161	0.00	0.00	0.00	34
2162	0.50	0.22	0.31	27
2163	0.00	0.00	0.00	37
2164	1.00	0.03	0.06	30
2165	0.00	0.00	0.00	35
2166	0.56	0.21	0.30	24
2167	0.00	0.00	0.00	37
2168	0.87	0.50	0.63	26
2169	0.00	0.00	0.00	27
2170	0.00	0.00	0.00	39
2171	0.00	0.00	0.00	25
2172	0.00	0.00	0.00	33
2173	0.00	0.00	0.00	39
2174	0.94	0.43	0.59	35
2175	1.00	0.33	0.50	30
2176	0.00	0.00	0.00	36
2177	0.33	0.04	0.06	28
2178	0.00	0.00	0.00	34
2179	0.00	0.00	0.00	35
2180	0.00	0.00	0.00	23
2181	0.00	0.00	0.00	34
2182	0.00	0.00	0.00	27

2183	1.00	0.08	0.15	25
2184	0.00	0.00	0.00	33
2185	1.00	0.15	0.26	33
2186	0.33	0.16	0.21	19
2187	0.00	0.00	0.00	38
2188	0.00	0.00	0.00	20
2189	0.00	0.00	0.00	32
2190	0.33	0.06	0.11	31
2191	0.67	0.12	0.21	33
2192	0.00	0.00	0.00	28
2193	1.00	0.06	0.11	36
2194	0.00	0.00	0.00	35
2195	0.00	0.00	0.00	26
2196	0.00	0.00	0.00	32
2197	0.00	0.00	0.00	34
2198	1.00	0.03	0.06	33
2199	0.00	0.00	0.00	27
2200	0.60	0.10	0.17	31
2201	0.00	0.00	0.00	22
2202	0.00	0.00	0.00	28
2203	0.75	0.19	0.30	32
2204	0.00	0.00	0.00	34
2205	0.00	0.00	0.00	27
2206	1.00	0.11	0.21	35
2207	0.00	0.00	0.00	32
2208	1.00	0.03	0.06	31
2209	0.00	0.00	0.00	34
2210	0.00	0.00	0.00	31
2211	0.00	0.00	0.00	38
2212	1.00	0.03	0.07	29
2213	1.00	0.08	0.15	24
2214	0.00	0.00	0.00	26
2215	0.60	0.08	0.14	39
2216	0.50	0.11	0.18	28
2217	0.00	0.00	0.00	29
2218	0.00	0.00	0.00	39
2219	0.00	0.00	0.00	26
2220	0.00	0.00	0.00	29
2221	1.00	0.41	0.58	22
2222	0.00	0.00	0.00	28
2223	1.00	0.08	0.15	37
2224	0.00	0.00	0.00	31
2225	0.20	0.03	0.04	40
2226	1.00	0.18	0.31	33
2227	0.00	0.00	0.00	41
2228	0.00	0.00	0.00	33
2229	0.00	0.00	0.00	29
2230	0.00	0.00	0.00	34
2231	0.00	0.00	0.00	28
2232	0.86	0.23	0.36	26
2233	0.00	0.00	0.00	27
2234	1.00	0.23	0.38	26
2235	1.00	0.39	0.57	33
2236	0.00	0.00	0.00	33
2237	0.64	0.19	0.30	36
2238	1.00	0.16	0.27	38
2239	0.00	0.00	0.00	27
2240	0.93	0.37	0.53	35
2241	0.00	0.00	0.00	41
2242	0.50	0.03	0.06	30
2243	0.00	0.00	0.00	29
2244	0.00	0.00	0.00	37
2245	0.50	0.15	0.24	39
2246	0.00	0.00	0.00	29
2247	0.00	0.00	0.00	30
2248	0.00	0.00	0.00	37
2249	0.00	0.00	0.00	33
2250	0.50	0.04	0.07	27
2251	0.00	0.00	0.00	31
2252	0.00	0.00	0.00	27
2253	0.00	0.00	0.00	32
2254	0.73	0.23	0.35	35
2255	0.00	0.00	0.00	37
2256	0.00	0.00	0.00	33
2257	0.82	0.45	0.58	20
2258	0.00	0.00	0.00	28
2259	0.43	0.13	0.20	23

2260	0.00	0.00	0.00	31
2261	1.00	0.10	0.19	29
2262	0.60	0.12	0.19	26
2263	0.00	0.00	0.00	32
2264	0.00	0.00	0.00	35
2265	0.00	0.00	0.00	33
2266	0.67	0.23	0.34	35
2267	0.00	0.00	0.00	30
2268	0.50	0.05	0.08	22
2269	0.00	0.00	0.00	31
2270	0.00	0.00	0.00	32
2271	0.00	0.00	0.00	28
2272	0.83	0.19	0.31	26
2273	0.00	0.00	0.00	27
2274	0.00	0.00	0.00	33
2275	0.00	0.00	0.00	33
2276	0.50	0.09	0.15	22
2277	0.00	0.00	0.00	33
2278	0.00	0.00	0.00	36
2279	1.00	0.32	0.49	34
2280	0.00	0.00	0.00	24
2281	0.00	0.00	0.00	26
2282	0.40	0.09	0.15	22
2283	0.20	0.04	0.06	28
2284	0.00	0.00	0.00	43
2285	0.00	0.00	0.00	31
2286	0.00	0.00	0.00	30
2287	0.00	0.00	0.00	32
2288	0.00	0.00	0.00	28
2289	0.88	0.19	0.31	37
2290	0.00	0.00	0.00	23
2291	0.00	0.00	0.00	33
2292	0.50	0.03	0.06	33
2293	0.00	0.00	0.00	29
2294	0.00	0.00	0.00	28
2295	0.00	0.00	0.00	29
2296	0.00	0.00	0.00	24
2297	0.00	0.00	0.00	28
2298	1.00	0.15	0.27	26
2299	0.00	0.00	0.00	28
2300	1.00	0.10	0.18	31
2301	0.00	0.00	0.00	28
2302	0.00	0.00	0.00	34
2303	0.50	0.04	0.07	27
2304	0.00	0.00	0.00	31
2305	0.00	0.00	0.00	38
2306	0.00	0.00	0.00	37
2307	0.83	0.36	0.50	28
2308	1.00	0.04	0.07	28
2309	0.00	0.00	0.00	26
2310	1.00	0.21	0.35	28
2311	0.00	0.00	0.00	29
2312	1.00	0.11	0.19	38
2313	0.50	0.04	0.07	25
2314	1.00	0.05	0.09	22
2315	0.00	0.00	0.00	33
2316	0.00	0.00	0.00	30
2317	0.00	0.00	0.00	37
2318	0.00	0.00	0.00	26
2319	0.20	0.05	0.08	21
2320	0.00	0.00	0.00	29
2321	0.00	0.00	0.00	23
2322	0.00	0.00	0.00	33
2323	0.00	0.00	0.00	29
2324	0.00	0.00	0.00	29
2325	0.40	0.10	0.15	21
2326	0.00	0.00	0.00	36
2327	0.00	0.00	0.00	34
2328	0.00	0.00	0.00	25
2329	1.00	0.07	0.13	28
2330	0.00	0.00	0.00	30
2331	0.79	0.38	0.51	29
2332	0.00	0.00	0.00	32
2333	0.00	0.00	0.00	34
2334	0.50	0.03	0.06	30
2335	0.00	0.00	0.00	29
2336	1.00	0.03	0.06	30

2337	0.00	0.00	0.00	26
2338	0.92	0.40	0.56	30
2339	0.00	0.00	0.00	35
2340	0.00	0.00	0.00	26
2341	0.00	0.00	0.00	33
2342	1.00	0.15	0.27	39
2343	0.80	0.15	0.26	26
2344	0.00	0.00	0.00	39
2345	0.00	0.00	0.00	36
2346	0.00	0.00	0.00	37
2347	0.00	0.00	0.00	18
2348	0.60	0.10	0.17	31
2349	0.50	0.05	0.09	20
2350	0.00	0.00	0.00	32
2351	0.00	0.00	0.00	32
2352	0.00	0.00	0.00	28
2353	0.00	0.00	0.00	22
2354	0.92	0.33	0.49	36
2355	0.67	0.06	0.11	33
2356	0.00	0.00	0.00	31
2357	0.60	0.09	0.16	32
2358	0.12	0.05	0.07	19
2359	0.00	0.00	0.00	29
2360	0.00	0.00	0.00	27
2361	0.00	0.00	0.00	25
2362	1.00	0.04	0.08	24
2363	0.00	0.00	0.00	35
2364	0.00	0.00	0.00	32
2365	0.00	0.00	0.00	39
2366	0.00	0.00	0.00	32
2367	0.00	0.00	0.00	31
2368	0.00	0.00	0.00	32
2369	0.00	0.00	0.00	29
2370	0.00	0.00	0.00	32
2371	0.00	0.00	0.00	31
2372	0.00	0.00	0.00	32
2373	0.67	0.06	0.12	31
2374	0.00	0.00	0.00	30
2375	0.00	0.00	0.00	20
2376	0.83	0.18	0.29	28
2377	0.00	0.00	0.00	35
2378	0.00	0.00	0.00	24
2379	1.00	0.04	0.08	23
2380	0.00	0.00	0.00	31
2381	0.67	0.05	0.10	38
2382	0.00	0.00	0.00	26
2383	0.00	0.00	0.00	33
2384	0.00	0.00	0.00	36
2385	0.00	0.00	0.00	24
2386	0.54	0.33	0.41	21
2387	0.00	0.00	0.00	28
2388	0.00	0.00	0.00	22
2389	1.00	0.18	0.30	28
2390	0.88	0.20	0.33	35
2391	0.00	0.00	0.00	23
2392	0.00	0.00	0.00	27
2393	0.00	0.00	0.00	24
2394	1.00	0.43	0.61	23
2395	0.00	0.00	0.00	24
2396	1.00	0.03	0.06	31
2397	0.00	0.00	0.00	28
2398	0.00	0.00	0.00	35
2399	0.40	0.08	0.13	25
2400	0.00	0.00	0.00	33
2401	0.00	0.00	0.00	22
2402	0.25	0.03	0.05	36
2403	0.00	0.00	0.00	29
2404	0.50	0.08	0.13	26
2405	0.00	0.00	0.00	26
2406	0.58	0.42	0.49	26
2407	1.00	0.04	0.07	26
2408	1.00	0.03	0.06	32
2409	0.00	0.00	0.00	29
2410	0.00	0.00	0.00	26
2411	0.00	0.00	0.00	30
2412	0.00	0.00	0.00	30
2413	0.00	0.00	0.00	29

2414	0.00	0.00	0.00	33
2415	0.00	0.00	0.00	22
2416	0.00	0.00	0.00	27
2417	0.50	0.09	0.15	22
2418	0.00	0.00	0.00	33
2419	1.00	0.03	0.07	29
2420	0.00	0.00	0.00	38
2421	0.00	0.00	0.00	28
2422	0.00	0.00	0.00	25
2423	0.78	0.32	0.45	22
2424	0.50	0.03	0.05	35
2425	1.00	0.11	0.19	28
2426	0.50	0.03	0.06	34
2427	0.00	0.00	0.00	23
2428	0.00	0.00	0.00	30
2429	0.00	0.00	0.00	21
2430	0.00	0.00	0.00	26
2431	0.50	0.04	0.08	23
2432	0.00	0.00	0.00	33
2433	0.00	0.00	0.00	26
2434	0.78	0.48	0.60	29
2435	0.00	0.00	0.00	29
2436	0.00	0.00	0.00	29
2437	0.00	0.00	0.00	27
2438	0.00	0.00	0.00	26
2439	0.00	0.00	0.00	27
2440	0.00	0.00	0.00	28
2441	1.00	0.33	0.50	30
2442	0.00	0.00	0.00	26
2443	0.00	0.00	0.00	27
2444	0.00	0.00	0.00	30
2445	1.00	0.42	0.59	24
2446	0.00	0.00	0.00	21
2447	0.80	0.13	0.22	31
2448	1.00	0.04	0.08	23
2449	0.00	0.00	0.00	34
2450	0.00	0.00	0.00	33
2451	0.00	0.00	0.00	27
2452	1.00	0.07	0.13	29
2453	0.75	0.10	0.18	29
2454	0.00	0.00	0.00	28
2455	0.17	0.04	0.06	27
2456	0.00	0.00	0.00	25
2457	0.00	0.00	0.00	26
2458	0.71	0.16	0.26	31
2459	0.00	0.00	0.00	31
2460	0.00	0.00	0.00	30
2461	1.00	0.18	0.30	28
2462	0.67	0.07	0.12	30
2463	0.00	0.00	0.00	33
2464	0.00	0.00	0.00	29
2465	0.00	0.00	0.00	19
2466	0.00	0.00	0.00	25
2467	0.00	0.00	0.00	32
2468	0.00	0.00	0.00	29
2469	0.00	0.00	0.00	23
2470	0.92	0.41	0.56	27
2471	0.00	0.00	0.00	19
2472	0.00	0.00	0.00	25
2473	0.00	0.00	0.00	31
2474	0.00	0.00	0.00	27
2475	0.00	0.00	0.00	25
2476	0.92	0.37	0.52	30
2477	0.00	0.00	0.00	32
2478	0.67	0.07	0.13	28
2479	0.00	0.00	0.00	32
2480	0.00	0.00	0.00	36
2481	0.00	0.00	0.00	30
2482	0.00	0.00	0.00	23
2483	0.00	0.00	0.00	29
2484	0.62	0.22	0.32	23
2485	0.00	0.00	0.00	20
2486	0.00	0.00	0.00	24
2487	0.00	0.00	0.00	26
2488	0.00	0.00	0.00	27
2489	1.00	0.03	0.06	32
2490	0.00	0.00	0.00	32

2491	0.00	0.00	0.00	24
2492	0.50	0.19	0.27	27
2493	0.00	0.00	0.00	26
2494	0.00	0.00	0.00	24
2495	0.00	0.00	0.00	28
2496	0.00	0.00	0.00	20
2497	0.50	0.03	0.06	29
2498	1.00	0.18	0.30	34
2499	0.92	0.44	0.59	25
2500	0.00	0.00	0.00	30
2501	0.00	0.00	0.00	27
2502	0.50	0.14	0.22	28
2503	0.00	0.00	0.00	22
2504	0.00	0.00	0.00	26
2505	0.00	0.00	0.00	28
2506	0.33	0.04	0.08	23
2507	0.00	0.00	0.00	17
2508	0.00	0.00	0.00	25
2509	0.00	0.00	0.00	34
2510	0.00	0.00	0.00	24
2511	0.40	0.11	0.17	19
2512	0.00	0.00	0.00	27
2513	0.00	0.00	0.00	30
2514	0.75	0.12	0.21	24
2515	0.00	0.00	0.00	26
2516	0.00	0.00	0.00	18
2517	0.00	0.00	0.00	36
2518	1.00	0.03	0.06	30
2519	0.00	0.00	0.00	31
2520	0.00	0.00	0.00	33
2521	1.00	0.33	0.50	21
2522	0.00	0.00	0.00	12
2523	0.00	0.00	0.00	27
2524	0.89	0.35	0.50	23
2525	0.00	0.00	0.00	31
2526	0.00	0.00	0.00	35
2527	0.00	0.00	0.00	30
2528	0.00	0.00	0.00	24
2529	0.87	0.33	0.47	40
2530	0.25	0.03	0.05	33
2531	0.00	0.00	0.00	17
2532	0.00	0.00	0.00	29
2533	0.00	0.00	0.00	24
2534	1.00	0.07	0.13	28
2535	0.00	0.00	0.00	26
2536	0.00	0.00	0.00	26
2537	0.00	0.00	0.00	31
2538	0.00	0.00	0.00	28
2539	0.00	0.00	0.00	18
2540	0.67	0.20	0.31	30
2541	1.00	0.07	0.13	29
2542	0.00	0.00	0.00	23
2543	0.75	0.09	0.17	32
2544	1.00	0.19	0.31	27
2545	1.00	0.08	0.15	38
2546	1.00	0.04	0.07	26
2547	0.00	0.00	0.00	31
2548	0.00	0.00	0.00	27
2549	0.00	0.00	0.00	31
2550	0.67	0.08	0.14	26
2551	0.45	0.24	0.31	21
2552	0.00	0.00	0.00	28
2553	0.00	0.00	0.00	31
2554	0.67	0.11	0.18	19
2555	1.00	0.17	0.30	23
2556	0.60	0.39	0.47	23
2557	0.00	0.00	0.00	19
2558	0.00	0.00	0.00	23
2559	0.00	0.00	0.00	26
2560	0.00	0.00	0.00	20
2561	0.14	0.06	0.08	17
2562	1.00	0.10	0.18	20
2563	0.80	0.16	0.27	25
2564	0.00	0.00	0.00	21
2565	0.00	0.00	0.00	28
2566	0.00	0.00	0.00	26
2567	0.00	0.00	0.00	30

2568	0.00	0.00	0.00	37
2569	0.75	0.27	0.40	22
2570	1.00	0.12	0.22	24
2571	0.00	0.00	0.00	20
2572	0.00	0.00	0.00	26
2573	1.00	0.07	0.12	30
2574	0.00	0.00	0.00	29
2575	0.00	0.00	0.00	28
2576	0.00	0.00	0.00	22
2577	0.00	0.00	0.00	25
2578	0.00	0.00	0.00	24
2579	0.00	0.00	0.00	29
2580	0.00	0.00	0.00	27
2581	0.00	0.00	0.00	29
2582	0.00	0.00	0.00	21
2583	1.00	0.13	0.23	23
2584	0.00	0.00	0.00	27
2585	0.86	0.70	0.78	27
2586	0.00	0.00	0.00	25
2587	1.00	0.21	0.34	29
2588	0.00	0.00	0.00	20
2589	0.00	0.00	0.00	28
2590	0.00	0.00	0.00	28
2591	0.00	0.00	0.00	29
2592	1.00	0.05	0.10	20
2593	0.00	0.00	0.00	31
2594	0.00	0.00	0.00	19
2595	0.00	0.00	0.00	31
2596	0.00	0.00	0.00	28
2597	0.67	0.06	0.11	32
2598	0.60	0.10	0.18	29
2599	0.00	0.00	0.00	20
2600	0.00	0.00	0.00	18
2601	0.00	0.00	0.00	14
2602	0.00	0.00	0.00	29
2603	0.25	0.04	0.07	26
2604	0.00	0.00	0.00	25
2605	0.00	0.00	0.00	23
2606	1.00	0.05	0.09	22
2607	0.00	0.00	0.00	25
2608	1.00	0.04	0.08	25
2609	0.00	0.00	0.00	30
2610	0.00	0.00	0.00	26
2611	0.00	0.00	0.00	26
2612	0.00	0.00	0.00	30
2613	0.00	0.00	0.00	28
2614	0.00	0.00	0.00	28
2615	0.00	0.00	0.00	32
2616	0.00	0.00	0.00	23
2617	0.00	0.00	0.00	21
2618	0.00	0.00	0.00	26
2619	0.00	0.00	0.00	29
2620	0.86	0.32	0.46	19
2621	0.00	0.00	0.00	28
2622	0.00	0.00	0.00	23
2623	0.00	0.00	0.00	26
2624	0.00	0.00	0.00	24
2625	0.00	0.00	0.00	24
2626	0.00	0.00	0.00	30
2627	0.00	0.00	0.00	28
2628	0.83	0.29	0.43	17
2629	0.00	0.00	0.00	31
2630	0.00	0.00	0.00	30
2631	0.00	0.00	0.00	33
2632	0.00	0.00	0.00	31
2633	0.86	0.16	0.27	37
2634	0.00	0.00	0.00	21
2635	0.00	0.00	0.00	30
2636	0.00	0.00	0.00	22
2637	0.00	0.00	0.00	24
2638	0.00	0.00	0.00	29
2639	0.00	0.00	0.00	29
2640	0.00	0.00	0.00	20
2641	0.00	0.00	0.00	27
2642	0.00	0.00	0.00	28
2643	0.00	0.00	0.00	29
2644	0.89	0.31	0.46	26

2645	0.00	0.00	0.00	22
2646	0.00	0.00	0.00	20
2647	0.67	0.07	0.13	27
2648	0.00	0.00	0.00	30
2649	0.00	0.00	0.00	19
2650	0.00	0.00	0.00	15
2651	0.00	0.00	0.00	32
2652	0.00	0.00	0.00	19
2653	0.00	0.00	0.00	28
2654	1.00	0.35	0.52	23
2655	0.00	0.00	0.00	27
2656	0.00	0.00	0.00	26
2657	0.00	0.00	0.00	31
2658	0.00	0.00	0.00	21
2659	0.50	0.04	0.07	28
2660	0.00	0.00	0.00	24
2661	0.00	0.00	0.00	18
2662	0.83	0.19	0.31	26
2663	0.00	0.00	0.00	26
2664	0.00	0.00	0.00	28
2665	0.00	0.00	0.00	22
2666	0.67	0.07	0.13	28
2667	0.00	0.00	0.00	31
2668	0.00	0.00	0.00	18
2669	0.00	0.00	0.00	32
2670	0.00	0.00	0.00	24
2671	0.00	0.00	0.00	22
2672	0.00	0.00	0.00	23
2673	0.93	0.56	0.70	25
2674	0.50	0.04	0.07	26
2675	1.00	0.13	0.23	23
2676	0.00	0.00	0.00	23
2677	0.00	0.00	0.00	24
2678	0.00	0.00	0.00	26
2679	0.00	0.00	0.00	19
2680	0.00	0.00	0.00	19
2681	0.00	0.00	0.00	21
2682	0.89	0.27	0.41	30
2683	0.00	0.00	0.00	28
2684	0.00	0.00	0.00	26
2685	0.00	0.00	0.00	23
2686	0.50	0.11	0.18	28
2687	0.00	0.00	0.00	21
2688	0.00	0.00	0.00	32
2689	0.00	0.00	0.00	27
2690	1.00	0.17	0.30	23
2691	0.00	0.00	0.00	23
2692	0.00	0.00	0.00	24
2693	0.00	0.00	0.00	24
2694	0.00	0.00	0.00	20
2695	0.00	0.00	0.00	29
2696	0.00	0.00	0.00	20
2697	0.80	0.15	0.26	26
2698	0.00	0.00	0.00	30
2699	0.00	0.00	0.00	20
2700	0.00	0.00	0.00	25
2701	1.00	0.04	0.08	23
2702	0.00	0.00	0.00	24
2703	0.40	0.08	0.14	24
2704	0.00	0.00	0.00	29
2705	0.00	0.00	0.00	36
2706	0.20	0.03	0.06	29
2707	0.00	0.00	0.00	25
2708	0.00	0.00	0.00	21
2709	0.67	0.07	0.13	28
2710	0.00	0.00	0.00	14
2711	0.00	0.00	0.00	28
2712	0.00	0.00	0.00	21
2713	0.00	0.00	0.00	33
2714	0.00	0.00	0.00	21
2715	0.50	0.04	0.08	23
2716	0.00	0.00	0.00	26
2717	0.00	0.00	0.00	22
2718	0.50	0.07	0.12	30
2719	0.00	0.00	0.00	25
2720	0.00	0.00	0.00	25
2721	0.00	0.00	0.00	23

2722	0.00	0.00	0.00	20
2723	0.00	0.00	0.00	29
2724	0.00	0.00	0.00	20
2725	0.78	0.33	0.47	21
2726	0.00	0.00	0.00	25
2727	0.00	0.00	0.00	27
2728	0.00	0.00	0.00	24
2729	1.00	0.33	0.50	15
2730	0.00	0.00	0.00	26
2731	0.00	0.00	0.00	28
2732	0.00	0.00	0.00	30
2733	0.00	0.00	0.00	35
2734	0.80	0.17	0.28	24
2735	0.00	0.00	0.00	17
2736	0.50	0.19	0.28	26
2737	0.00	0.00	0.00	22
2738	0.00	0.00	0.00	33
2739	0.00	0.00	0.00	29
2740	0.00	0.00	0.00	28
2741	1.00	0.33	0.50	27
2742	1.00	0.52	0.69	23
2743	0.00	0.00	0.00	23
2744	0.00	0.00	0.00	20
2745	0.00	0.00	0.00	28
2746	0.00	0.00	0.00	25
2747	0.00	0.00	0.00	22
2748	0.00	0.00	0.00	24
2749	0.00	0.00	0.00	28
2750	1.00	0.10	0.19	29
2751	0.00	0.00	0.00	25
2752	0.00	0.00	0.00	23
2753	0.00	0.00	0.00	30
2754	0.00	0.00	0.00	20
2755	0.00	0.00	0.00	23
2756	0.00	0.00	0.00	26
2757	1.00	0.06	0.11	18
2758	0.80	0.22	0.35	18
2759	0.00	0.00	0.00	23
2760	0.00	0.00	0.00	30
2761	0.00	0.00	0.00	18
2762	0.00	0.00	0.00	21
2763	0.00	0.00	0.00	20
2764	0.00	0.00	0.00	17
2765	0.00	0.00	0.00	28
2766	1.00	0.06	0.11	18
2767	0.00	0.00	0.00	24
2768	1.00	0.25	0.40	24
2769	0.00	0.00	0.00	23
2770	0.00	0.00	0.00	19
2771	0.00	0.00	0.00	23
2772	1.00	0.11	0.19	19
2773	0.00	0.00	0.00	19
2774	1.00	0.24	0.38	21
2775	0.00	0.00	0.00	19
2776	0.00	0.00	0.00	23
2777	0.00	0.00	0.00	29
2778	0.00	0.00	0.00	21
2779	0.00	0.00	0.00	20
2780	0.00	0.00	0.00	23
2781	0.00	0.00	0.00	26
2782	0.00	0.00	0.00	31
2783	0.00	0.00	0.00	24
2784	0.00	0.00	0.00	23
2785	0.00	0.00	0.00	17
2786	0.00	0.00	0.00	26
2787	0.00	0.00	0.00	27
2788	0.71	0.20	0.31	25
2789	0.00	0.00	0.00	21
2790	0.00	0.00	0.00	23
2791	0.00	0.00	0.00	29
2792	0.00	0.00	0.00	35
2793	0.00	0.00	0.00	18
2794	0.00	0.00	0.00	17
2795	0.00	0.00	0.00	21
2796	0.00	0.00	0.00	19
2797	1.00	0.05	0.09	21
2798	0.00	0.00	0.00	17

2799	0.00	0.00	0.00	22
2800	1.00	0.04	0.08	24
2801	0.50	0.11	0.17	19
2802	0.00	0.00	0.00	23
2803	0.00	0.00	0.00	17
2804	0.00	0.00	0.00	23
2805	0.00	0.00	0.00	22
2806	0.00	0.00	0.00	24
2807	0.00	0.00	0.00	18
2808	1.00	0.04	0.08	24
2809	1.00	0.04	0.08	24
2810	0.00	0.00	0.00	20
2811	0.00	0.00	0.00	20
2812	0.00	0.00	0.00	23
2813	0.00	0.00	0.00	24
2814	0.00	0.00	0.00	17
2815	0.00	0.00	0.00	26
2816	0.00	0.00	0.00	16
2817	0.00	0.00	0.00	23
2818	0.00	0.00	0.00	26
2819	0.25	0.07	0.11	14
2820	0.00	0.00	0.00	22
2821	1.00	0.10	0.17	21
2822	0.00	0.00	0.00	24
2823	0.00	0.00	0.00	18
2824	0.00	0.00	0.00	26
2825	0.00	0.00	0.00	18
2826	0.75	0.15	0.25	20
2827	0.00	0.00	0.00	17
2828	0.00	0.00	0.00	25
2829	1.00	0.04	0.07	28
2830	0.00	0.00	0.00	19
2831	0.00	0.00	0.00	25
2832	0.00	0.00	0.00	20
2833	0.00	0.00	0.00	21
2834	0.00	0.00	0.00	25
2835	1.00	0.17	0.29	18
2836	0.00	0.00	0.00	26
2837	0.00	0.00	0.00	31
2838	1.00	0.08	0.15	24
2839	0.00	0.00	0.00	21
2840	0.00	0.00	0.00	20
2841	0.00	0.00	0.00	28
2842	1.00	0.23	0.37	35
2843	1.00	0.16	0.27	19
2844	0.00	0.00	0.00	24
2845	0.00	0.00	0.00	21
2846	1.00	0.08	0.15	25
2847	0.00	0.00	0.00	23
2848	0.00	0.00	0.00	26
2849	0.00	0.00	0.00	30
2850	0.00	0.00	0.00	31
2851	1.00	0.16	0.27	19
2852	0.00	0.00	0.00	29
2853	0.00	0.00	0.00	27
2854	0.00	0.00	0.00	22
2855	0.00	0.00	0.00	27
2856	0.00	0.00	0.00	18
2857	0.00	0.00	0.00	18
2858	0.00	0.00	0.00	22
2859	0.00	0.00	0.00	19
2860	0.00	0.00	0.00	22
2861	0.00	0.00	0.00	21
2862	0.00	0.00	0.00	23
2863	0.00	0.00	0.00	24
2864	0.00	0.00	0.00	28
2865	0.00	0.00	0.00	18
2866	0.67	0.27	0.39	22
2867	0.00	0.00	0.00	28
2868	0.00	0.00	0.00	27
2869	0.00	0.00	0.00	24
2870	0.00	0.00	0.00	21
2871	0.00	0.00	0.00	22
2872	0.00	0.00	0.00	21
2873	0.00	0.00	0.00	26
2874	0.00	0.00	0.00	25
2875	1.00	0.05	0.09	21

2875	1.00	0.05	0.09	21
2876	0.00	0.00	0.00	25
2877	0.00	0.00	0.00	22
2878	0.80	0.19	0.31	21
2879	1.00	0.11	0.20	27
2880	1.00	0.04	0.08	24
2881	0.00	0.00	0.00	26
2882	0.00	0.00	0.00	29
2883	0.00	0.00	0.00	26
2884	0.00	0.00	0.00	25
2885	0.33	0.05	0.09	19
2886	0.83	0.26	0.40	19
2887	0.00	0.00	0.00	18
2888	0.00	0.00	0.00	22
2889	0.00	0.00	0.00	20
2890	0.00	0.00	0.00	28
2891	0.00	0.00	0.00	34
2892	0.00	0.00	0.00	18
2893	0.00	0.00	0.00	26
2894	0.00	0.00	0.00	19
2895	0.00	0.00	0.00	26
2896	0.00	0.00	0.00	17
2897	0.00	0.00	0.00	25
2898	0.00	0.00	0.00	19
2899	0.00	0.00	0.00	19
2900	0.00	0.00	0.00	28
2901	0.00	0.00	0.00	27
2902	0.00	0.00	0.00	19
2903	0.00	0.00	0.00	26
2904	0.00	0.00	0.00	21
2905	1.00	0.16	0.27	19
2906	0.00	0.00	0.00	19
2907	1.00	0.20	0.33	20
2908	0.00	0.00	0.00	19
2909	0.00	0.00	0.00	23
2910	0.00	0.00	0.00	20
2911	0.00	0.00	0.00	24
2912	1.00	0.05	0.09	22
2913	0.00	0.00	0.00	21
2914	0.00	0.00	0.00	28
2915	0.00	0.00	0.00	20
2916	0.00	0.00	0.00	24
2917	0.00	0.00	0.00	23
2918	1.00	0.04	0.08	25
2919	0.00	0.00	0.00	18
2920	1.00	0.14	0.25	21
2921	0.00	0.00	0.00	28
2922	0.00	0.00	0.00	17
2923	0.00	0.00	0.00	17
2924	0.00	0.00	0.00	25
2925	0.00	0.00	0.00	18
2926	0.00	0.00	0.00	20
2927	0.00	0.00	0.00	22
2928	1.00	0.05	0.09	21
2929	0.00	0.00	0.00	15
2930	0.00	0.00	0.00	21
2931	0.00	0.00	0.00	25
2932	0.00	0.00	0.00	21
2933	0.00	0.00	0.00	12
2934	0.00	0.00	0.00	29
2935	0.00	0.00	0.00	29
2936	0.00	0.00	0.00	20
2937	0.67	0.09	0.16	22
2938	0.00	0.00	0.00	24
2939	1.00	0.16	0.28	31
2940	0.00	0.00	0.00	23
2941	0.00	0.00	0.00	24
2942	0.00	0.00	0.00	23
2943	0.00	0.00	0.00	22
2944	0.00	0.00	0.00	17
2945	0.00	0.00	0.00	22
2946	0.00	0.00	0.00	17
2947	0.00	0.00	0.00	27
2948	0.00	0.00	0.00	18
2949	0.00	0.00	0.00	23
2950	0.00	0.00	0.00	22
2951	0.80	0.21	0.33	19
2952	0.00	0.00	0.00	15

2952	0.00	0.00	0.00	15
2953	1.00	0.16	0.27	19
2954	0.00	0.00	0.00	19
2955	0.00	0.00	0.00	17
2956	0.00	0.00	0.00	20
2957	1.00	0.06	0.12	16
2958	0.00	0.00	0.00	17
2959	0.00	0.00	0.00	24
2960	0.00	0.00	0.00	23
2961	0.00	0.00	0.00	28
2962	0.50	0.05	0.10	19
2963	0.00	0.00	0.00	17
2964	0.00	0.00	0.00	25
2965	0.00	0.00	0.00	24
2966	0.00	0.00	0.00	18
2967	0.00	0.00	0.00	22
2968	0.00	0.00	0.00	17
2969	0.00	0.00	0.00	16
2970	0.00	0.00	0.00	24
2971	0.00	0.00	0.00	25
2972	0.00	0.00	0.00	18
2973	0.00	0.00	0.00	24
2974	0.00	0.00	0.00	19
2975	0.00	0.00	0.00	27
2976	0.00	0.00	0.00	21
2977	0.67	0.09	0.15	23
2978	0.00	0.00	0.00	26
2979	0.00	0.00	0.00	22
2980	0.00	0.00	0.00	24
2981	0.00	0.00	0.00	19
2982	1.00	0.05	0.09	21
2983	0.00	0.00	0.00	23
2984	0.00	0.00	0.00	24
2985	1.00	0.09	0.16	23
2986	1.00	0.09	0.16	23
2987	0.00	0.00	0.00	25
2988	1.00	0.17	0.29	24
2989	0.00	0.00	0.00	17
2990	0.00	0.00	0.00	23
2991	0.00	0.00	0.00	27
2992	0.00	0.00	0.00	18
2993	1.00	0.21	0.35	19
2994	0.00	0.00	0.00	27
2995	0.40	0.08	0.13	25
2996	0.00	0.00	0.00	21
2997	0.00	0.00	0.00	16
2998	0.00	0.00	0.00	28
2999	0.00	0.00	0.00	25
3000	0.00	0.00	0.00	16
3001	0.00	0.00	0.00	23
3002	0.00	0.00	0.00	20
3003	0.00	0.00	0.00	28
3004	0.00	0.00	0.00	14
3005	1.00	0.05	0.09	21
3006	0.00	0.00	0.00	19
3007	0.00	0.00	0.00	26
3008	0.00	0.00	0.00	27
3009	0.50	0.04	0.07	26
3010	0.00	0.00	0.00	20
3011	0.00	0.00	0.00	21
3012	0.00	0.00	0.00	21
3013	0.00	0.00	0.00	15
3014	0.00	0.00	0.00	27
3015	0.67	0.11	0.18	19
3016	1.00	0.05	0.10	19
3017	0.00	0.00	0.00	20
3018	0.00	0.00	0.00	19
3019	1.00	0.06	0.12	16
3020	0.00	0.00	0.00	15
3021	0.50	0.06	0.10	18
3022	0.00	0.00	0.00	18
3023	0.00	0.00	0.00	21
3024	1.00	0.27	0.42	26
3025	0.00	0.00	0.00	18
3026	0.50	0.04	0.08	23
3027	0.00	0.00	0.00	28
3028	0.83	0.24	0.37	21
3029	0.75	0.14	0.23	22

3029	0.75	0.14	0.25	22
3030	0.00	0.00	0.00	21
3031	0.00	0.00	0.00	19
3032	0.00	0.00	0.00	23
3033	0.00	0.00	0.00	21
3034	0.00	0.00	0.00	17
3035	0.00	0.00	0.00	20
3036	0.67	0.10	0.17	21
3037	0.00	0.00	0.00	26
3038	0.00	0.00	0.00	27
3039	0.00	0.00	0.00	21
3040	0.00	0.00	0.00	19
3041	0.00	0.00	0.00	20
3042	0.00	0.00	0.00	24
3043	0.00	0.00	0.00	28
3044	0.00	0.00	0.00	18
3045	0.00	0.00	0.00	26
3046	0.00	0.00	0.00	26
3047	0.00	0.00	0.00	23
3048	0.00	0.00	0.00	18
3049	0.00	0.00	0.00	23
3050	1.00	0.18	0.30	17
3051	0.50	0.04	0.07	26
3052	0.00	0.00	0.00	32
3053	0.00	0.00	0.00	24
3054	0.00	0.00	0.00	16
3055	0.00	0.00	0.00	21
3056	0.00	0.00	0.00	23
3057	0.00	0.00	0.00	28
3058	0.00	0.00	0.00	13
3059	0.00	0.00	0.00	17
3060	0.00	0.00	0.00	15
3061	0.00	0.00	0.00	19
3062	0.00	0.00	0.00	18
3063	0.00	0.00	0.00	18
3064	0.00	0.00	0.00	22
3065	0.00	0.00	0.00	16
3066	0.00	0.00	0.00	18
3067	0.00	0.00	0.00	18
3068	0.00	0.00	0.00	22
3069	0.00	0.00	0.00	27
3070	0.00	0.00	0.00	23
3071	0.00	0.00	0.00	16
3072	0.00	0.00	0.00	24
3073	1.00	0.50	0.67	20
3074	0.00	0.00	0.00	22
3075	1.00	0.04	0.08	25
3076	0.00	0.00	0.00	18
3077	0.00	0.00	0.00	21
3078	0.00	0.00	0.00	18
3079	0.00	0.00	0.00	15
3080	1.00	0.07	0.12	15
3081	0.00	0.00	0.00	20
3082	0.00	0.00	0.00	23
3083	0.00	0.00	0.00	17
3084	0.00	0.00	0.00	16
3085	0.00	0.00	0.00	25
3086	0.00	0.00	0.00	13
3087	0.00	0.00	0.00	24
3088	0.00	0.00	0.00	22
3089	0.00	0.00	0.00	25
3090	0.00	0.00	0.00	21
3091	0.00	0.00	0.00	15
3092	0.00	0.00	0.00	19
3093	0.00	0.00	0.00	21
3094	0.00	0.00	0.00	22
3095	0.00	0.00	0.00	22
3096	0.00	0.00	0.00	26
3097	0.00	0.00	0.00	23
3098	0.00	0.00	0.00	22
3099	0.00	0.00	0.00	17
3100	1.00	0.22	0.36	18
3101	0.00	0.00	0.00	19
3102	0.00	0.00	0.00	15
3103	0.00	0.00	0.00	17
3104	0.00	0.00	0.00	20
3105	0.00	0.00	0.00	16
3106	0.00	0.00	0.00	14

3106	0.00	0.00	0.00	14
3107	0.00	0.00	0.00	22
3108	0.00	0.00	0.00	24
3109	0.00	0.00	0.00	20
3110	0.00	0.00	0.00	19
3111	0.00	0.00	0.00	23
3112	0.00	0.00	0.00	21
3113	0.00	0.00	0.00	19
3114	0.00	0.00	0.00	18
3115	0.00	0.00	0.00	22
3116	0.00	0.00	0.00	19
3117	0.00	0.00	0.00	20
3118	0.00	0.00	0.00	18
3119	0.00	0.00	0.00	23
3120	0.00	0.00	0.00	18
3121	0.00	0.00	0.00	19
3122	1.00	0.19	0.32	16
3123	0.00	0.00	0.00	20
3124	0.50	0.05	0.08	22
3125	0.17	0.07	0.10	14
3126	0.00	0.00	0.00	16
3127	0.00	0.00	0.00	18
3128	0.00	0.00	0.00	33
3129	0.00	0.00	0.00	19
3130	0.00	0.00	0.00	28
3131	0.00	0.00	0.00	22
3132	0.00	0.00	0.00	20
3133	0.25	0.06	0.10	17
3134	0.00	0.00	0.00	19
3135	0.00	0.00	0.00	20
3136	0.00	0.00	0.00	20
3137	0.00	0.00	0.00	21
3138	0.00	0.00	0.00	21
3139	0.00	0.00	0.00	22
3140	0.00	0.00	0.00	18
3141	0.00	0.00	0.00	15
3142	0.00	0.00	0.00	20
3143	0.00	0.00	0.00	17
3144	0.00	0.00	0.00	23
3145	0.00	0.00	0.00	19
3146	0.00	0.00	0.00	17
3147	1.00	0.31	0.48	16
3148	0.80	0.50	0.62	16
3149	0.00	0.00	0.00	23
3150	0.00	0.00	0.00	25
3151	0.00	0.00	0.00	25
3152	0.00	0.00	0.00	26
3153	0.00	0.00	0.00	27
3154	0.00	0.00	0.00	20
3155	1.00	0.33	0.50	18
3156	0.00	0.00	0.00	17
3157	0.75	0.21	0.33	14
3158	0.00	0.00	0.00	23
3159	0.00	0.00	0.00	19
3160	0.50	0.05	0.09	20
3161	0.00	0.00	0.00	18
3162	0.00	0.00	0.00	19
3163	0.00	0.00	0.00	21
3164	0.00	0.00	0.00	16
3165	0.00	0.00	0.00	22
3166	0.00	0.00	0.00	19
3167	0.00	0.00	0.00	21
3168	0.00	0.00	0.00	27
3169	0.00	0.00	0.00	21
3170	0.00	0.00	0.00	23
3171	0.00	0.00	0.00	15
3172	0.00	0.00	0.00	24
3173	0.00	0.00	0.00	18
3174	0.00	0.00	0.00	21
3175	0.00	0.00	0.00	14
3176	0.00	0.00	0.00	19
3177	0.00	0.00	0.00	22
3178	0.00	0.00	0.00	20
3179	0.00	0.00	0.00	18
3180	0.00	0.00	0.00	20
3181	0.00	0.00	0.00	27
3182	0.00	0.00	0.00	23
3183	0.00	0.00	0.00	13

3183	0.00	0.00	0.00	13
3184	0.00	0.00	0.00	22
3185	0.00	0.00	0.00	20
3186	0.00	0.00	0.00	28
3187	0.00	0.00	0.00	19
3188	0.00	0.00	0.00	23
3189	0.00	0.00	0.00	25
3190	0.00	0.00	0.00	21
3191	0.00	0.00	0.00	20
3192	0.00	0.00	0.00	22
3193	0.00	0.00	0.00	21
3194	0.00	0.00	0.00	16
3195	0.00	0.00	0.00	21
3196	0.00	0.00	0.00	21
3197	1.00	0.05	0.10	20
3198	0.00	0.00	0.00	18
3199	0.00	0.00	0.00	23
3200	0.33	0.05	0.09	19
3201	1.00	0.06	0.11	18
3202	0.00	0.00	0.00	25
3203	0.00	0.00	0.00	21
3204	1.00	0.07	0.12	15
3205	0.00	0.00	0.00	18
3206	0.00	0.00	0.00	23
3207	0.00	0.00	0.00	15
3208	0.00	0.00	0.00	20
3209	0.00	0.00	0.00	21
3210	0.00	0.00	0.00	20
3211	0.00	0.00	0.00	22
3212	0.00	0.00	0.00	21
3213	0.00	0.00	0.00	22
3214	0.00	0.00	0.00	25
3215	0.00	0.00	0.00	16
3216	0.00	0.00	0.00	7
3217	1.00	0.18	0.30	17
3218	0.00	0.00	0.00	26
3219	0.00	0.00	0.00	19
3220	0.00	0.00	0.00	29
3221	0.00	0.00	0.00	25
3222	0.00	0.00	0.00	14
3223	1.00	0.12	0.21	17
3224	0.00	0.00	0.00	23
3225	0.00	0.00	0.00	22
3226	0.00	0.00	0.00	20
3227	0.00	0.00	0.00	24
3228	0.00	0.00	0.00	17
3229	0.00	0.00	0.00	31
3230	0.00	0.00	0.00	21
3231	0.00	0.00	0.00	22
3232	0.00	0.00	0.00	15
3233	0.00	0.00	0.00	21
3234	0.00	0.00	0.00	23
3235	0.00	0.00	0.00	21
3236	0.00	0.00	0.00	14
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3238	0.00	0.00	0.00	17
3239	0.00	0.00	0.00	22
3240	0.00	0.00	0.00	22
3241	0.00	0.00	0.00	15
3242	0.00	0.00	0.00	21
3243	0.00	0.00	0.00	15
3244	0.00	0.00	0.00	29
3245	0.00	0.00	0.00	17
3246	0.00	0.00	0.00	22
3247	0.00	0.00	0.00	25
3248	0.00	0.00	0.00	20
3249	0.00	0.00	0.00	22
3250	0.00	0.00	0.00	24
3251	0.00	0.00	0.00	19
3252	0.00	0.00	0.00	17
3253	0.00	0.00	0.00	16
3254	0.00	0.00	0.00	25
3255	0.00	0.00	0.00	15
3256	0.00	0.00	0.00	17
3257	0.00	0.00	0.00	15
3258	0.00	0.00	0.00	21
3259	0.00	0.00	0.00	14
3260	0.00	0.00	0.00	18

3260	0.00	0.00	0.00	18
3261	0.00	0.00	0.00	24
3262	0.00	0.00	0.00	20
3263	0.00	0.00	0.00	16
3264	1.00	0.05	0.10	19
3265	0.00	0.00	0.00	21
3266	0.00	0.00	0.00	20
3267	0.00	0.00	0.00	22
3268	0.00	0.00	0.00	13
3269	0.00	0.00	0.00	18
3270	0.00	0.00	0.00	15
3271	0.00	0.00	0.00	19
3272	0.00	0.00	0.00	25
3273	0.00	0.00	0.00	18
3274	0.00	0.00	0.00	22
3275	0.00	0.00	0.00	23
3276	0.00	0.00	0.00	17
3277	0.00	0.00	0.00	20
3278	0.00	0.00	0.00	22
3279	0.00	0.00	0.00	21
3280	0.00	0.00	0.00	19
3281	0.00	0.00	0.00	18
3282	0.00	0.00	0.00	20
3283	0.00	0.00	0.00	15
3284	0.00	0.00	0.00	17
3285	0.00	0.00	0.00	20
3286	0.00	0.00	0.00	11
3287	0.00	0.00	0.00	16
3288	0.00	0.00	0.00	14
3289	0.00	0.00	0.00	27
3290	0.00	0.00	0.00	26
3291	0.00	0.00	0.00	24
3292	0.00	0.00	0.00	19
3293	0.00	0.00	0.00	15
3294	1.00	0.05	0.09	22
3295	0.00	0.00	0.00	19
3296	0.00	0.00	0.00	26
3297	0.00	0.00	0.00	22
3298	0.00	0.00	0.00	16
3299	0.00	0.00	0.00	19
3300	0.00	0.00	0.00	16
3301	1.00	0.05	0.10	19
3302	1.00	0.06	0.11	17
3303	0.00	0.00	0.00	17
3304	0.00	0.00	0.00	16
3305	0.00	0.00	0.00	26
3306	0.00	0.00	0.00	16
3307	0.00	0.00	0.00	21
3308	0.00	0.00	0.00	15
3309	0.00	0.00	0.00	14
3310	0.00	0.00	0.00	16
3311	0.00	0.00	0.00	26
3312	0.00	0.00	0.00	21
3313	0.00	0.00	0.00	17
3314	0.00	0.00	0.00	20
3315	0.00	0.00	0.00	18
3316	0.00	0.00	0.00	20
3317	0.00	0.00	0.00	20
3318	0.00	0.00	0.00	19
3319	0.00	0.00	0.00	11
3320	0.00	0.00	0.00	17
3321	0.00	0.00	0.00	21
3322	0.00	0.00	0.00	20
3323	0.00	0.00	0.00	19
3324	1.00	0.12	0.21	17
3325	0.00	0.00	0.00	13
3326	0.00	0.00	0.00	18
3327	0.00	0.00	0.00	15
3328	1.00	0.04	0.08	24
3329	0.00	0.00	0.00	23
3330	1.00	0.25	0.40	12
3331	0.33	0.06	0.11	16
3332	0.00	0.00	0.00	19
3333	0.00	0.00	0.00	23
3334	0.00	0.00	0.00	21
3335	0.00	0.00	0.00	12
3336	0.00	0.00	0.00	16

3337	0.00	0.00	0.00	8
3338	0.00	0.00	0.00	21
3339	0.00	0.00	0.00	22
3340	0.00	0.00	0.00	23
3341	0.00	0.00	0.00	14
3342	0.00	0.00	0.00	26
3343	0.00	0.00	0.00	19
3344	0.00	0.00	0.00	10
3345	0.00	0.00	0.00	22
3346	0.00	0.00	0.00	19
3347	0.00	0.00	0.00	21
3348	0.00	0.00	0.00	17
3349	0.00	0.00	0.00	20
3350	0.00	0.00	0.00	21
3351	0.00	0.00	0.00	21
3352	0.00	0.00	0.00	16
3353	0.00	0.00	0.00	19
3354	0.00	0.00	0.00	15
3355	0.00	0.00	0.00	19
3356	0.00	0.00	0.00	14
3357	0.00	0.00	0.00	17
3358	0.00	0.00	0.00	19
3359	0.00	0.00	0.00	17
3360	0.00	0.00	0.00	11
3361	0.00	0.00	0.00	20
3362	0.00	0.00	0.00	18
3363	0.00	0.00	0.00	23
3364	0.00	0.00	0.00	19
3365	0.00	0.00	0.00	15
3366	0.00	0.00	0.00	28
3367	1.00	0.06	0.12	16
3368	0.00	0.00	0.00	12
3369	0.00	0.00	0.00	16
3370	0.00	0.00	0.00	18
3371	0.00	0.00	0.00	24
3372	0.00	0.00	0.00	22
3373	0.00	0.00	0.00	12
3374	0.00	0.00	0.00	23
3375	0.00	0.00	0.00	23
3376	0.00	0.00	0.00	22
3377	0.00	0.00	0.00	16
3378	0.00	0.00	0.00	16
3379	0.00	0.00	0.00	14
3380	0.00	0.00	0.00	21
3381	0.00	0.00	0.00	17
3382	0.00	0.00	0.00	19
3383	0.00	0.00	0.00	16
3384	0.00	0.00	0.00	18
3385	0.00	0.00	0.00	10
3386	0.00	0.00	0.00	28
3387	0.00	0.00	0.00	18
3388	0.00	0.00	0.00	16
3389	1.00	0.06	0.12	16
3390	0.00	0.00	0.00	8
3391	0.00	0.00	0.00	24
3392	0.00	0.00	0.00	17
3393	0.00	0.00	0.00	15
3394	1.00	0.25	0.40	20
3395	0.00	0.00	0.00	23
3396	0.00	0.00	0.00	14
3397	0.00	0.00	0.00	13
3398	0.00	0.00	0.00	19
3399	0.00	0.00	0.00	21
3400	0.00	0.00	0.00	18
3401	0.00	0.00	0.00	22
3402	0.00	0.00	0.00	15
3403	0.00	0.00	0.00	15
3404	0.33	0.10	0.15	10
3405	0.00	0.00	0.00	19
3406	0.00	0.00	0.00	25
3407	0.00	0.00	0.00	19
3408	0.00	0.00	0.00	16
3409	0.00	0.00	0.00	19
3410	0.00	0.00	0.00	21
3411	0.00	0.00	0.00	16
3412	0.00	0.00	0.00	16
3413	0.00	0.00	0.00	12

3414	0.00	0.00	0.00	16
3415	0.00	0.00	0.00	19
3416	0.00	0.00	0.00	19
3417	0.00	0.00	0.00	19
3418	0.00	0.00	0.00	8
3419	0.00	0.00	0.00	20
3420	0.00	0.00	0.00	23
3421	0.00	0.00	0.00	12
3422	0.00	0.00	0.00	22
3423	0.00	0.00	0.00	20
3424	0.00	0.00	0.00	21
3425	0.00	0.00	0.00	16
3426	0.00	0.00	0.00	21
3427	0.00	0.00	0.00	17
3428	0.00	0.00	0.00	12
3429	0.00	0.00	0.00	15
3430	0.00	0.00	0.00	22
3431	0.00	0.00	0.00	16
3432	0.00	0.00	0.00	15
3433	0.00	0.00	0.00	16
3434	0.00	0.00	0.00	16
3435	0.00	0.00	0.00	21
3436	0.00	0.00	0.00	16
3437	0.00	0.00	0.00	14
3438	0.00	0.00	0.00	19
3439	0.00	0.00	0.00	12
3440	0.00	0.00	0.00	17
3441	0.00	0.00	0.00	16
3442	0.00	0.00	0.00	16
3443	0.00	0.00	0.00	15
3444	0.00	0.00	0.00	14
3445	0.00	0.00	0.00	21
3446	0.00	0.00	0.00	20
3447	0.00	0.00	0.00	23
3448	0.00	0.00	0.00	13
3449	0.00	0.00	0.00	19
3450	0.00	0.00	0.00	20
3451	0.00	0.00	0.00	11
3452	0.00	0.00	0.00	13
3453	0.00	0.00	0.00	21
3454	0.00	0.00	0.00	20
3455	0.00	0.00	0.00	11
3456	0.00	0.00	0.00	20
3457	0.00	0.00	0.00	16
3458	0.00	0.00	0.00	19
3459	0.00	0.00	0.00	14
3460	0.00	0.00	0.00	20
3461	0.00	0.00	0.00	19
3462	0.00	0.00	0.00	21
3463	0.00	0.00	0.00	20
3464	0.00	0.00	0.00	14
3465	0.00	0.00	0.00	13
3466	0.00	0.00	0.00	20
3467	0.00	0.00	0.00	22
3468	0.00	0.00	0.00	18
3469	0.00	0.00	0.00	14
3470	0.00	0.00	0.00	18
3471	0.00	0.00	0.00	17
3472	0.00	0.00	0.00	18
3473	0.00	0.00	0.00	15
3474	0.00	0.00	0.00	20
3475	1.00	0.16	0.27	19
3476	0.00	0.00	0.00	15
3477	0.00	0.00	0.00	11
3478	0.00	0.00	0.00	19
3479	0.00	0.00	0.00	16
3480	0.00	0.00	0.00	18
3481	0.00	0.00	0.00	14
3482	0.00	0.00	0.00	14
3483	0.00	0.00	0.00	20
3484	0.67	0.12	0.20	17
3485	0.00	0.00	0.00	16
3486	0.00	0.00	0.00	15
3487	0.00	0.00	0.00	21
3488	0.00	0.00	0.00	15
3489	0.00	0.00	0.00	21
3490	0.00	0.00	0.00	21

3491	0.00	0.00	0.00	19
3492	0.00	0.00	0.00	23
3493	1.00	0.12	0.21	17
3494	0.00	0.00	0.00	21
3495	0.00	0.00	0.00	11
3496	0.00	0.00	0.00	14
3497	0.00	0.00	0.00	15
3498	0.00	0.00	0.00	17
3499	0.00	0.00	0.00	19
3500	0.00	0.00	0.00	15
3501	0.00	0.00	0.00	20
3502	0.00	0.00	0.00	15
3503	0.00	0.00	0.00	19
3504	0.00	0.00	0.00	23
3505	0.50	0.06	0.11	16
3506	0.00	0.00	0.00	17
3507	0.00	0.00	0.00	20
3508	0.00	0.00	0.00	11
3509	0.00	0.00	0.00	20
3510	0.00	0.00	0.00	15
3511	0.00	0.00	0.00	14
3512	0.00	0.00	0.00	14
3513	0.00	0.00	0.00	17
3514	0.00	0.00	0.00	20
3515	0.00	0.00	0.00	19
3516	0.00	0.00	0.00	18
3517	0.00	0.00	0.00	16
3518	0.00	0.00	0.00	15
3519	0.00	0.00	0.00	19
3520	0.00	0.00	0.00	17
3521	0.00	0.00	0.00	15
3522	0.00	0.00	0.00	23
3523	0.00	0.00	0.00	17
3524	0.00	0.00	0.00	21
3525	0.00	0.00	0.00	17
3526	0.00	0.00	0.00	12
3527	0.00	0.00	0.00	20
3528	0.00	0.00	0.00	25
3529	0.00	0.00	0.00	19
3530	0.00	0.00	0.00	9
3531	0.00	0.00	0.00	18
3532	0.00	0.00	0.00	17
3533	0.00	0.00	0.00	13
3534	0.00	0.00	0.00	19
3535	0.00	0.00	0.00	12
3536	0.00	0.00	0.00	20
3537	0.00	0.00	0.00	22
3538	0.00	0.00	0.00	12
3539	1.00	0.06	0.12	16
3540	0.00	0.00	0.00	14
3541	0.60	0.20	0.30	15
3542	0.00	0.00	0.00	17
3543	0.00	0.00	0.00	17
3544	0.00	0.00	0.00	17
3545	0.00	0.00	0.00	14
3546	0.00	0.00	0.00	14
3547	0.00	0.00	0.00	18
3548	0.00	0.00	0.00	21
3549	0.00	0.00	0.00	11
3550	0.00	0.00	0.00	13
3551	0.00	0.00	0.00	17
3552	0.00	0.00	0.00	12
3553	0.00	0.00	0.00	13
3554	0.00	0.00	0.00	16
3555	0.00	0.00	0.00	24
3556	0.00	0.00	0.00	8
3557	0.00	0.00	0.00	15
3558	0.00	0.00	0.00	13
3559	0.00	0.00	0.00	22
3560	0.00	0.00	0.00	15
3561	0.00	0.00	0.00	19
3562	0.00	0.00	0.00	16
3563	0.00	0.00	0.00	21
3564	0.00	0.00	0.00	19
3565	0.00	0.00	0.00	19
3566	0.00	0.00	0.00	16
3567	0.00	0.00	0.00	13

3568	0.00	0.00	0.00	20
3569	0.00	0.00	0.00	13
3570	0.00	0.00	0.00	16
3571	1.00	0.04	0.08	25
3572	0.00	0.00	0.00	18
3573	0.00	0.00	0.00	11
3574	0.00	0.00	0.00	19
3575	0.00	0.00	0.00	23
3576	0.00	0.00	0.00	12
3577	0.00	0.00	0.00	21
3578	0.00	0.00	0.00	16
3579	0.00	0.00	0.00	21
3580	0.00	0.00	0.00	17
3581	0.00	0.00	0.00	21
3582	0.00	0.00	0.00	13
3583	0.00	0.00	0.00	24
3584	0.00	0.00	0.00	18
3585	0.00	0.00	0.00	13
3586	0.00	0.00	0.00	14
3587	0.00	0.00	0.00	22
3588	0.00	0.00	0.00	14
3589	0.00	0.00	0.00	18
3590	0.00	0.00	0.00	23
3591	0.00	0.00	0.00	18
3592	0.00	0.00	0.00	11
3593	0.00	0.00	0.00	16
3594	1.00	0.25	0.40	12
3595	0.00	0.00	0.00	21
3596	0.00	0.00	0.00	17
3597	0.00	0.00	0.00	19
3598	0.00	0.00	0.00	13
3599	0.00	0.00	0.00	18
3600	0.00	0.00	0.00	17
3601	0.00	0.00	0.00	18
3602	1.00	0.08	0.14	13
3603	0.00	0.00	0.00	12
3604	0.00	0.00	0.00	18
3605	0.00	0.00	0.00	16
3606	0.00	0.00	0.00	15
3607	0.00	0.00	0.00	22
3608	0.00	0.00	0.00	21
3609	0.00	0.00	0.00	20
3610	0.00	0.00	0.00	17
3611	0.00	0.00	0.00	19
3612	0.00	0.00	0.00	13
3613	0.00	0.00	0.00	12
3614	0.00	0.00	0.00	18
3615	0.00	0.00	0.00	7
3616	0.00	0.00	0.00	23
3617	0.00	0.00	0.00	14
3618	0.00	0.00	0.00	21
3619	0.00	0.00	0.00	18
3620	0.00	0.00	0.00	20
3621	0.00	0.00	0.00	15
3622	0.00	0.00	0.00	17
3623	0.00	0.00	0.00	16
3624	0.00	0.00	0.00	18
3625	0.00	0.00	0.00	21
3626	1.00	0.25	0.40	12
3627	0.00	0.00	0.00	18
3628	0.50	0.07	0.12	14
3629	0.00	0.00	0.00	13
3630	0.00	0.00	0.00	10
3631	0.00	0.00	0.00	17
3632	0.00	0.00	0.00	8
3633	0.00	0.00	0.00	16
3634	0.00	0.00	0.00	19
3635	0.00	0.00	0.00	14
3636	0.00	0.00	0.00	13
3637	0.00	0.00	0.00	18
3638	0.00	0.00	0.00	23
3639	0.00	0.00	0.00	20
3640	0.00	0.00	0.00	17
3641	0.00	0.00	0.00	20
3642	0.50	0.09	0.15	11
3643	0.00	0.00	0.00	13
3644	0.00	0.00	0.00	19

3645	0.00	0.00	0.00	11
3646	0.33	0.08	0.12	13
3647	0.00	0.00	0.00	13
3648	0.00	0.00	0.00	19
3649	0.00	0.00	0.00	19
3650	0.00	0.00	0.00	12
3651	0.00	0.00	0.00	18
3652	0.00	0.00	0.00	18
3653	0.00	0.00	0.00	12
3654	0.00	0.00	0.00	20
3655	0.00	0.00	0.00	22
3656	0.00	0.00	0.00	19
3657	0.00	0.00	0.00	10
3658	0.00	0.00	0.00	15
3659	0.00	0.00	0.00	11
3660	0.00	0.00	0.00	15
3661	0.00	0.00	0.00	18
3662	0.00	0.00	0.00	18
3663	0.00	0.00	0.00	19
3664	0.00	0.00	0.00	12
3665	1.00	0.04	0.08	24
3666	0.00	0.00	0.00	18
3667	0.00	0.00	0.00	16
3668	0.00	0.00	0.00	12
3669	0.00	0.00	0.00	22
3670	0.00	0.00	0.00	19
3671	0.00	0.00	0.00	19
3672	0.00	0.00	0.00	19
3673	0.00	0.00	0.00	14
3674	0.00	0.00	0.00	18
3675	0.00	0.00	0.00	16
3676	0.00	0.00	0.00	12
3677	0.00	0.00	0.00	17
3678	0.00	0.00	0.00	20
3679	0.00	0.00	0.00	21
3680	0.00	0.00	0.00	22
3681	0.00	0.00	0.00	15
3682	0.00	0.00	0.00	17
3683	0.00	0.00	0.00	19
3684	0.00	0.00	0.00	13
3685	0.00	0.00	0.00	17
3686	0.00	0.00	0.00	18
3687	0.00	0.00	0.00	26
3688	0.00	0.00	0.00	20
3689	1.00	0.10	0.18	20
3690	0.00	0.00	0.00	22
3691	0.00	0.00	0.00	18
3692	0.00	0.00	0.00	15
3693	0.00	0.00	0.00	15
3694	0.40	0.14	0.21	14
3695	0.00	0.00	0.00	19
3696	0.00	0.00	0.00	13
3697	0.00	0.00	0.00	13
3698	0.00	0.00	0.00	16
3699	0.00	0.00	0.00	17
3700	0.00	0.00	0.00	19
3701	0.00	0.00	0.00	15
3702	0.00	0.00	0.00	23
3703	0.00	0.00	0.00	19
3704	0.00	0.00	0.00	12
3705	0.00	0.00	0.00	21
3706	0.00	0.00	0.00	17
3707	0.00	0.00	0.00	19
3708	0.00	0.00	0.00	19
3709	0.00	0.00	0.00	13
3710	0.00	0.00	0.00	13
3711	0.00	0.00	0.00	11
3712	0.00	0.00	0.00	18
3713	0.00	0.00	0.00	17
3714	0.00	0.00	0.00	18
3715	0.00	0.00	0.00	13
3716	0.00	0.00	0.00	21
3717	0.00	0.00	0.00	17
3718	0.00	0.00	0.00	13
3719	0.00	0.00	0.00	18
3720	0.00	0.00	0.00	11
3721	0.00	0.00	0.00	15

3722	0.00	0.00	0.00	12
3723	0.00	0.00	0.00	19
3724	0.00	0.00	0.00	12
3725	0.00	0.00	0.00	14
3726	0.00	0.00	0.00	16
3727	0.00	0.00	0.00	14
3728	0.00	0.00	0.00	19
3729	0.00	0.00	0.00	15
3730	0.00	0.00	0.00	12
3731	0.00	0.00	0.00	16
3732	0.00	0.00	0.00	17
3733	0.00	0.00	0.00	17
3734	0.00	0.00	0.00	16
3735	0.00	0.00	0.00	18
3736	0.00	0.00	0.00	15
3737	0.00	0.00	0.00	15
3738	0.00	0.00	0.00	15
3739	0.00	0.00	0.00	19
3740	0.00	0.00	0.00	16
3741	0.00	0.00	0.00	20
3742	0.00	0.00	0.00	15
3743	0.00	0.00	0.00	13
3744	1.00	0.15	0.27	13
3745	0.00	0.00	0.00	15
3746	0.00	0.00	0.00	16
3747	0.00	0.00	0.00	19
3748	0.00	0.00	0.00	11
3749	0.00	0.00	0.00	20
3750	0.00	0.00	0.00	17
3751	0.00	0.00	0.00	11
3752	0.00	0.00	0.00	13
3753	0.00	0.00	0.00	18
3754	0.00	0.00	0.00	17
3755	0.00	0.00	0.00	20
3756	0.00	0.00	0.00	16
3757	0.00	0.00	0.00	14
3758	0.00	0.00	0.00	14
3759	0.00	0.00	0.00	22
3760	0.00	0.00	0.00	15
3761	0.00	0.00	0.00	17
3762	0.00	0.00	0.00	17
3763	0.00	0.00	0.00	15
3764	1.00	0.21	0.35	19
3765	0.00	0.00	0.00	17
3766	0.00	0.00	0.00	7
3767	0.00	0.00	0.00	15
3768	0.00	0.00	0.00	12
3769	0.00	0.00	0.00	14
3770	0.00	0.00	0.00	15
3771	0.00	0.00	0.00	16
3772	0.00	0.00	0.00	15
3773	0.00	0.00	0.00	16
3774	0.00	0.00	0.00	17
3775	0.00	0.00	0.00	16
3776	0.00	0.00	0.00	11
3777	0.00	0.00	0.00	19
3778	0.00	0.00	0.00	22
3779	0.00	0.00	0.00	9
3780	1.00	0.15	0.27	13
3781	0.00	0.00	0.00	12
3782	0.00	0.00	0.00	23
3783	0.00	0.00	0.00	13
3784	0.00	0.00	0.00	15
3785	0.00	0.00	0.00	19
3786	0.00	0.00	0.00	17
3787	0.00	0.00	0.00	13
3788	0.00	0.00	0.00	18
3789	1.00	0.06	0.11	17
3790	0.00	0.00	0.00	14
3791	0.00	0.00	0.00	13
3792	0.00	0.00	0.00	18
3793	0.00	0.00	0.00	12
3794	0.00	0.00	0.00	22
3795	0.00	0.00	0.00	14
3796	0.00	0.00	0.00	23
3797	0.00	0.00	0.00	8
3798	0.00	0.00	0.00	23

3799	0.00	0.00	0.00	9
3800	0.00	0.00	0.00	17
3801	0.00	0.00	0.00	17
3802	0.00	0.00	0.00	14
3803	0.00	0.00	0.00	21
3804	0.00	0.00	0.00	15
3805	0.00	0.00	0.00	13
3806	0.00	0.00	0.00	13
3807	0.00	0.00	0.00	10
3808	0.00	0.00	0.00	14
3809	0.00	0.00	0.00	17
3810	0.00	0.00	0.00	21
3811	0.00	0.00	0.00	14
3812	0.00	0.00	0.00	18
3813	0.00	0.00	0.00	19
3814	0.00	0.00	0.00	16
3815	0.00	0.00	0.00	14
3816	0.00	0.00	0.00	14
3817	0.00	0.00	0.00	14
3818	0.00	0.00	0.00	15
3819	0.00	0.00	0.00	18
3820	0.00	0.00	0.00	16
3821	0.00	0.00	0.00	19
3822	0.00	0.00	0.00	21
3823	0.00	0.00	0.00	16
3824	0.00	0.00	0.00	17
3825	0.00	0.00	0.00	16
3826	0.00	0.00	0.00	20
3827	0.00	0.00	0.00	17
3828	0.00	0.00	0.00	17
3829	0.00	0.00	0.00	16
3830	0.00	0.00	0.00	19
3831	0.00	0.00	0.00	15
3832	0.00	0.00	0.00	20
3833	0.00	0.00	0.00	16
3834	0.00	0.00	0.00	13
3835	0.00	0.00	0.00	14
3836	0.00	0.00	0.00	12
3837	0.00	0.00	0.00	14
3838	0.00	0.00	0.00	9
3839	0.00	0.00	0.00	13
3840	0.00	0.00	0.00	14
3841	0.00	0.00	0.00	19
3842	0.00	0.00	0.00	19
3843	0.00	0.00	0.00	16
3844	0.00	0.00	0.00	13
3845	0.00	0.00	0.00	21
3846	0.00	0.00	0.00	7
3847	0.00	0.00	0.00	16
3848	0.00	0.00	0.00	10
3849	0.00	0.00	0.00	19
3850	0.00	0.00	0.00	18
3851	0.00	0.00	0.00	11
3852	0.00	0.00	0.00	17
3853	0.00	0.00	0.00	13
3854	0.00	0.00	0.00	20
3855	0.00	0.00	0.00	20
3856	0.00	0.00	0.00	10
3857	0.00	0.00	0.00	20
3858	0.00	0.00	0.00	22
3859	0.00	0.00	0.00	13
3860	0.00	0.00	0.00	19
3861	0.00	0.00	0.00	16
3862	0.00	0.00	0.00	18
3863	0.00	0.00	0.00	10
3864	1.00	0.15	0.27	13
3865	0.00	0.00	0.00	15
3866	0.00	0.00	0.00	13
3867	0.00	0.00	0.00	18
3868	0.00	0.00	0.00	13
3869	0.00	0.00	0.00	17
3870	0.00	0.00	0.00	14
3871	0.00	0.00	0.00	11
3872	0.00	0.00	0.00	10
3873	0.00	0.00	0.00	17
3874	0.00	0.00	0.00	9
3875	0.00	0.00	0.00	13

3876	0.00	0.00	0.00	12
3877	0.00	0.00	0.00	13
3878	0.00	0.00	0.00	16
3879	0.00	0.00	0.00	17
3880	0.00	0.00	0.00	11
3881	0.00	0.00	0.00	17
3882	0.00	0.00	0.00	13
3883	0.00	0.00	0.00	11
3884	0.00	0.00	0.00	15
3885	0.00	0.00	0.00	17
3886	0.00	0.00	0.00	14
3887	1.00	0.20	0.33	10
3888	0.00	0.00	0.00	16
3889	0.00	0.00	0.00	13
3890	0.00	0.00	0.00	14
3891	0.00	0.00	0.00	15
3892	0.00	0.00	0.00	19
3893	0.00	0.00	0.00	9
3894	0.00	0.00	0.00	16
3895	0.00	0.00	0.00	18
3896	0.00	0.00	0.00	17
3897	0.00	0.00	0.00	18
3898	0.00	0.00	0.00	10
3899	0.00	0.00	0.00	14
3900	0.00	0.00	0.00	22
3901	0.00	0.00	0.00	23
3902	0.00	0.00	0.00	11
3903	0.00	0.00	0.00	10
3904	0.00	0.00	0.00	7
3905	0.00	0.00	0.00	19
3906	1.00	0.13	0.24	15
3907	0.00	0.00	0.00	9
3908	0.00	0.00	0.00	12
3909	0.00	0.00	0.00	17
3910	0.00	0.00	0.00	11
3911	0.00	0.00	0.00	14
3912	0.00	0.00	0.00	18
3913	0.00	0.00	0.00	12
3914	0.00	0.00	0.00	15
3915	0.00	0.00	0.00	12
3916	0.00	0.00	0.00	14
3917	0.00	0.00	0.00	12
3918	0.00	0.00	0.00	11
3919	0.00	0.00	0.00	12
3920	0.00	0.00	0.00	24
3921	0.00	0.00	0.00	13
3922	0.00	0.00	0.00	15
3923	1.00	0.07	0.12	15
3924	0.00	0.00	0.00	10
3925	0.00	0.00	0.00	20
3926	0.00	0.00	0.00	15
3927	0.00	0.00	0.00	20
3928	0.00	0.00	0.00	11
3929	0.00	0.00	0.00	15
3930	0.00	0.00	0.00	8
3931	0.00	0.00	0.00	16
3932	0.00	0.00	0.00	15
3933	0.00	0.00	0.00	15
3934	0.00	0.00	0.00	17
3935	0.00	0.00	0.00	10
3936	0.00	0.00	0.00	21
3937	0.00	0.00	0.00	14
3938	0.00	0.00	0.00	19
3939	0.00	0.00	0.00	17
3940	0.00	0.00	0.00	19
3941	0.00	0.00	0.00	13
3942	0.00	0.00	0.00	12
3943	0.00	0.00	0.00	18
3944	0.00	0.00	0.00	17
3945	0.00	0.00	0.00	17
3946	0.00	0.00	0.00	12
3947	0.00	0.00	0.00	15
3948	0.00	0.00	0.00	14
3949	0.00	0.00	0.00	17
3950	0.00	0.00	0.00	14
3951	0.00	0.00	0.00	15
3952	0.00	0.00	0.00	17

3953	0.00	0.00	0.00	11
3954	0.00	0.00	0.00	14
3955	0.00	0.00	0.00	15
3956	0.00	0.00	0.00	17
3957	0.00	0.00	0.00	9
3958	0.00	0.00	0.00	20
3959	1.00	0.33	0.50	9
3960	0.00	0.00	0.00	13
3961	0.00	0.00	0.00	18
3962	0.00	0.00	0.00	14
3963	0.00	0.00	0.00	15
3964	0.00	0.00	0.00	13
3965	0.00	0.00	0.00	16
3966	0.00	0.00	0.00	15
3967	0.00	0.00	0.00	15
3968	0.00	0.00	0.00	17
3969	0.00	0.00	0.00	20
3970	0.00	0.00	0.00	16
3971	0.00	0.00	0.00	19
3972	1.00	0.12	0.22	16
3973	0.00	0.00	0.00	15
3974	0.00	0.00	0.00	8
3975	0.00	0.00	0.00	16
3976	0.00	0.00	0.00	15
3977	0.00	0.00	0.00	14
3978	0.00	0.00	0.00	16
3979	0.00	0.00	0.00	13
3980	0.00	0.00	0.00	28
3981	0.00	0.00	0.00	16
3982	0.00	0.00	0.00	12
3983	0.00	0.00	0.00	13
3984	0.00	0.00	0.00	12
3985	0.00	0.00	0.00	15
3986	0.00	0.00	0.00	10
3987	0.00	0.00	0.00	20
3988	0.00	0.00	0.00	17
3989	0.00	0.00	0.00	14
3990	0.00	0.00	0.00	11
3991	0.00	0.00	0.00	14
3992	0.00	0.00	0.00	13
3993	1.00	0.23	0.38	13
3994	0.00	0.00	0.00	18
3995	0.00	0.00	0.00	13
3996	0.00	0.00	0.00	13
3997	0.00	0.00	0.00	19
3998	0.00	0.00	0.00	10
3999	1.00	0.13	0.24	15
4000	0.00	0.00	0.00	20
4001	0.00	0.00	0.00	16
4002	0.00	0.00	0.00	11
4003	0.00	0.00	0.00	14
4004	0.00	0.00	0.00	15
4005	0.00	0.00	0.00	21
4006	0.00	0.00	0.00	12
4007	0.00	0.00	0.00	15
4008	0.00	0.00	0.00	9
4009	0.50	0.06	0.11	16
4010	0.00	0.00	0.00	12
4011	0.00	0.00	0.00	16
4012	0.00	0.00	0.00	19
4013	0.00	0.00	0.00	13
4014	0.00	0.00	0.00	13
4015	0.00	0.00	0.00	13
4016	0.00	0.00	0.00	16
4017	0.00	0.00	0.00	17
4018	0.00	0.00	0.00	10
4019	0.00	0.00	0.00	12
4020	0.00	0.00	0.00	13
4021	0.00	0.00	0.00	17
4022	0.00	0.00	0.00	16
4023	0.00	0.00	0.00	14
4024	0.00	0.00	0.00	11
4025	0.00	0.00	0.00	8
4026	0.00	0.00	0.00	8
4027	0.00	0.00	0.00	18
4028	0.00	0.00	0.00	13
4029	0.00	0.00	0.00	11

4030	0.00	0.00	0.00	19
4031	0.00	0.00	0.00	9
4032	0.00	0.00	0.00	12
4033	0.00	0.00	0.00	14
4034	0.00	0.00	0.00	17
4035	0.00	0.00	0.00	10
4036	0.00	0.00	0.00	12
4037	0.00	0.00	0.00	13
4038	0.00	0.00	0.00	13
4039	0.00	0.00	0.00	13
4040	0.00	0.00	0.00	12
4041	0.00	0.00	0.00	17
4042	0.00	0.00	0.00	10
4043	0.00	0.00	0.00	15
4044	0.00	0.00	0.00	13
4045	0.00	0.00	0.00	20
4046	0.00	0.00	0.00	16
4047	0.00	0.00	0.00	12
4048	0.00	0.00	0.00	16
4049	0.00	0.00	0.00	14
4050	0.00	0.00	0.00	15
4051	0.00	0.00	0.00	20
4052	0.00	0.00	0.00	10
4053	0.00	0.00	0.00	14
4054	0.00	0.00	0.00	14
4055	0.00	0.00	0.00	5
4056	0.00	0.00	0.00	15
4057	1.00	0.07	0.12	15
4058	0.00	0.00	0.00	17
4059	0.00	0.00	0.00	13
4060	0.00	0.00	0.00	14
4061	0.00	0.00	0.00	10
4062	0.00	0.00	0.00	15
4063	0.00	0.00	0.00	15
4064	0.00	0.00	0.00	17
4065	0.00	0.00	0.00	17
4066	0.00	0.00	0.00	14
4067	0.00	0.00	0.00	15
4068	0.00	0.00	0.00	21
4069	0.00	0.00	0.00	9
4070	0.00	0.00	0.00	9
4071	0.00	0.00	0.00	21
4072	0.00	0.00	0.00	18
4073	0.00	0.00	0.00	9
4074	0.00	0.00	0.00	12
4075	0.00	0.00	0.00	20
4076	0.00	0.00	0.00	15
4077	0.00	0.00	0.00	15
4078	0.00	0.00	0.00	9
4079	0.00	0.00	0.00	15
4080	0.00	0.00	0.00	19
4081	0.00	0.00	0.00	10
4082	0.00	0.00	0.00	11
4083	0.00	0.00	0.00	12
4084	0.00	0.00	0.00	14
4085	0.00	0.00	0.00	9
4086	0.00	0.00	0.00	9
4087	0.00	0.00	0.00	9
4088	0.00	0.00	0.00	18
4089	0.00	0.00	0.00	14
4090	0.00	0.00	0.00	18
4091	0.00	0.00	0.00	14
4092	0.00	0.00	0.00	13
4093	0.00	0.00	0.00	16
4094	0.00	0.00	0.00	14
4095	0.00	0.00	0.00	19
4096	0.00	0.00	0.00	15
4097	0.00	0.00	0.00	14
4098	0.00	0.00	0.00	16
4099	0.00	0.00	0.00	21
4100	0.00	0.00	0.00	18
4101	0.00	0.00	0.00	15
4102	0.00	0.00	0.00	15
4103	0.00	0.00	0.00	17
4104	0.00	0.00	0.00	13
4105	0.00	0.00	0.00	15
4106	0.00	0.00	0.00	14

4107	0.00	0.00	0.00	13
4108	0.00	0.00	0.00	15
4109	0.00	0.00	0.00	15
4110	0.00	0.00	0.00	13
4111	0.00	0.00	0.00	16
4112	0.00	0.00	0.00	13
4113	0.00	0.00	0.00	12
4114	0.00	0.00	0.00	13
4115	0.00	0.00	0.00	11
4116	0.00	0.00	0.00	15
4117	0.00	0.00	0.00	12
4118	0.00	0.00	0.00	12
4119	0.00	0.00	0.00	18
4120	1.00	0.09	0.17	11
4121	0.00	0.00	0.00	9
4122	0.00	0.00	0.00	12
4123	0.00	0.00	0.00	11
4124	0.00	0.00	0.00	9
4125	0.00	0.00	0.00	9
4126	0.00	0.00	0.00	15
4127	0.00	0.00	0.00	16
4128	0.00	0.00	0.00	13
4129	0.00	0.00	0.00	11
4130	0.00	0.00	0.00	7
4131	0.00	0.00	0.00	12
4132	0.00	0.00	0.00	15
4133	1.00	0.08	0.15	12
4134	0.00	0.00	0.00	16
4135	0.00	0.00	0.00	16
4136	0.00	0.00	0.00	11
4137	0.00	0.00	0.00	12
4138	0.00	0.00	0.00	12
4139	0.00	0.00	0.00	21
4140	0.00	0.00	0.00	13
4141	0.00	0.00	0.00	7
4142	0.00	0.00	0.00	12
4143	0.00	0.00	0.00	19
4144	0.00	0.00	0.00	10
4145	0.00	0.00	0.00	13
4146	0.00	0.00	0.00	18
4147	0.00	0.00	0.00	14
4148	0.00	0.00	0.00	11
4149	0.00	0.00	0.00	7
4150	0.00	0.00	0.00	10
4151	0.00	0.00	0.00	18
4152	0.00	0.00	0.00	14
4153	0.00	0.00	0.00	16
4154	0.00	0.00	0.00	12
4155	0.00	0.00	0.00	10
4156	0.00	0.00	0.00	15
4157	0.00	0.00	0.00	16
4158	0.00	0.00	0.00	19
4159	0.00	0.00	0.00	10
4160	0.00	0.00	0.00	17
4161	0.00	0.00	0.00	18
4162	0.00	0.00	0.00	12
4163	0.00	0.00	0.00	11
4164	0.00	0.00	0.00	8
4165	0.00	0.00	0.00	17
4166	0.00	0.00	0.00	17
4167	0.00	0.00	0.00	8
4168	0.00	0.00	0.00	12
4169	0.00	0.00	0.00	19
4170	0.00	0.00	0.00	15
4171	0.00	0.00	0.00	10
4172	0.00	0.00	0.00	17
4173	0.00	0.00	0.00	12
4174	0.00	0.00	0.00	14
4175	0.00	0.00	0.00	18
4176	0.00	0.00	0.00	8
4177	0.00	0.00	0.00	20
4178	0.00	0.00	0.00	15
4179	0.00	0.00	0.00	16
4180	0.00	0.00	0.00	12
4181	0.00	0.00	0.00	18
4182	0.00	0.00	0.00	8
4183	0.00	0.00	0.00	18

4184	0.00	0.00	0.00	16
4185	0.00	0.00	0.00	12
4186	0.00	0.00	0.00	16
4187	0.00	0.00	0.00	14
4188	0.00	0.00	0.00	17
4189	0.00	0.00	0.00	13
4190	0.00	0.00	0.00	11
4191	0.00	0.00	0.00	14
4192	0.00	0.00	0.00	11
4193	0.00	0.00	0.00	11
4194	0.00	0.00	0.00	17
4195	0.00	0.00	0.00	6
4196	0.00	0.00	0.00	17
4197	0.00	0.00	0.00	13
4198	0.00	0.00	0.00	12
4199	0.00	0.00	0.00	9
4200	0.00	0.00	0.00	12
4201	0.00	0.00	0.00	13
4202	0.00	0.00	0.00	13
4203	0.00	0.00	0.00	15
4204	0.00	0.00	0.00	15
4205	0.00	0.00	0.00	11
4206	0.00	0.00	0.00	14
4207	0.00	0.00	0.00	9
4208	0.00	0.00	0.00	15
4209	0.00	0.00	0.00	14
4210	0.00	0.00	0.00	11
4211	0.00	0.00	0.00	12
4212	0.00	0.00	0.00	12
4213	0.00	0.00	0.00	14
4214	0.00	0.00	0.00	9
4215	0.00	0.00	0.00	7
4216	0.00	0.00	0.00	12
4217	0.00	0.00	0.00	11
4218	0.00	0.00	0.00	13
4219	1.00	0.09	0.17	11
4220	1.00	0.07	0.13	14
4221	0.00	0.00	0.00	11
4222	1.00	0.08	0.14	13
4223	0.00	0.00	0.00	4
4224	0.00	0.00	0.00	12
4225	0.00	0.00	0.00	13
4226	0.00	0.00	0.00	7
4227	0.00	0.00	0.00	14
4228	0.00	0.00	0.00	9
4229	0.00	0.00	0.00	14
4230	0.00	0.00	0.00	11
4231	0.00	0.00	0.00	13
4232	0.00	0.00	0.00	16
4233	0.00	0.00	0.00	20
4234	0.00	0.00	0.00	12
4235	0.00	0.00	0.00	12
4236	0.00	0.00	0.00	13
4237	0.00	0.00	0.00	11
4238	0.00	0.00	0.00	15
4239	0.00	0.00	0.00	10
4240	0.00	0.00	0.00	11
4241	0.00	0.00	0.00	17
4242	0.00	0.00	0.00	16
4243	0.00	0.00	0.00	17
4244	0.00	0.00	0.00	12
4245	0.00	0.00	0.00	16
4246	0.00	0.00	0.00	10
4247	0.00	0.00	0.00	19
4248	0.00	0.00	0.00	9
4249	0.00	0.00	0.00	15
4250	0.00	0.00	0.00	18
4251	0.00	0.00	0.00	11
4252	0.00	0.00	0.00	9
4253	0.00	0.00	0.00	16
4254	0.00	0.00	0.00	13
4255	0.00	0.00	0.00	7
4256	0.00	0.00	0.00	11
4257	0.00	0.00	0.00	17
4258	0.00	0.00	0.00	12
4259	0.00	0.00	0.00	12
4260	0.00	0.00	0.00	17

4260	0.00	0.00	0.00	17
4261	0.00	0.00	0.00	12
4262	0.00	0.00	0.00	10
4263	0.00	0.00	0.00	21
4264	0.00	0.00	0.00	16
4265	0.00	0.00	0.00	13
4266	0.00	0.00	0.00	13
4267	0.00	0.00	0.00	12
4268	0.00	0.00	0.00	14
4269	0.00	0.00	0.00	16
4270	0.00	0.00	0.00	12
4271	0.00	0.00	0.00	10
4272	0.00	0.00	0.00	15
4273	0.00	0.00	0.00	9
4274	0.00	0.00	0.00	17
4275	0.00	0.00	0.00	16
4276	0.00	0.00	0.00	8
4277	0.00	0.00	0.00	14
4278	0.00	0.00	0.00	18
4279	0.00	0.00	0.00	17
4280	0.00	0.00	0.00	12
4281	0.00	0.00	0.00	4
4282	0.00	0.00	0.00	17
4283	0.00	0.00	0.00	14
4284	0.00	0.00	0.00	15
4285	0.00	0.00	0.00	22
4286	0.00	0.00	0.00	18
4287	0.00	0.00	0.00	9
4288	0.00	0.00	0.00	14
4289	0.00	0.00	0.00	9
4290	0.00	0.00	0.00	12
4291	0.00	0.00	0.00	11
4292	1.00	0.06	0.11	17
4293	0.00	0.00	0.00	8
4294	0.00	0.00	0.00	8
4295	0.00	0.00	0.00	9
4296	0.00	0.00	0.00	9
4297	0.00	0.00	0.00	19
4298	0.00	0.00	0.00	11
4299	0.00	0.00	0.00	6
4300	0.00	0.00	0.00	13
4301	0.00	0.00	0.00	14
4302	0.00	0.00	0.00	14
4303	0.00	0.00	0.00	15
4304	0.00	0.00	0.00	4
4305	0.00	0.00	0.00	13
4306	0.00	0.00	0.00	12
4307	0.00	0.00	0.00	7
4308	0.00	0.00	0.00	19
4309	0.00	0.00	0.00	12
4310	0.00	0.00	0.00	15
4311	0.00	0.00	0.00	13
4312	0.00	0.00	0.00	20
4313	0.00	0.00	0.00	10
4314	0.00	0.00	0.00	10
4315	0.00	0.00	0.00	12
4316	0.00	0.00	0.00	11
4317	0.00	0.00	0.00	11
4318	0.00	0.00	0.00	13
4319	0.00	0.00	0.00	11
4320	0.00	0.00	0.00	10
4321	0.00	0.00	0.00	13
4322	0.00	0.00	0.00	10
4323	0.00	0.00	0.00	14
4324	0.00	0.00	0.00	13
4325	0.00	0.00	0.00	8
4326	0.00	0.00	0.00	13
4327	0.00	0.00	0.00	15
4328	0.00	0.00	0.00	15
4329	0.00	0.00	0.00	15
4330	0.00	0.00	0.00	13
4331	0.00	0.00	0.00	9
4332	0.00	0.00	0.00	12
4333	0.00	0.00	0.00	13
4334	0.00	0.00	0.00	12
4335	0.00	0.00	0.00	16
4336	0.00	0.00	0.00	14
4337	0.00	0.00	0.00	11

4337	0.00	0.00	0.00	11
4338	0.00	0.00	0.00	11
4339	0.00	0.00	0.00	18
4340	0.00	0.00	0.00	12
4341	0.00	0.00	0.00	13
4342	0.00	0.00	0.00	6
4343	0.00	0.00	0.00	16
4344	0.00	0.00	0.00	14
4345	0.00	0.00	0.00	15
4346	0.00	0.00	0.00	10
4347	0.00	0.00	0.00	14
4348	0.00	0.00	0.00	12
4349	0.00	0.00	0.00	14
4350	0.00	0.00	0.00	17
4351	0.00	0.00	0.00	16
4352	0.00	0.00	0.00	11
4353	0.00	0.00	0.00	9
4354	0.00	0.00	0.00	17
4355	0.00	0.00	0.00	23
4356	0.00	0.00	0.00	6
4357	0.00	0.00	0.00	10
4358	0.00	0.00	0.00	9
4359	0.00	0.00	0.00	10
4360	0.00	0.00	0.00	17
4361	0.00	0.00	0.00	5
4362	0.00	0.00	0.00	13
4363	0.00	0.00	0.00	11
4364	0.00	0.00	0.00	17
4365	0.00	0.00	0.00	14
4366	0.00	0.00	0.00	13
4367	0.00	0.00	0.00	10
4368	0.75	0.17	0.27	18
4369	0.00	0.00	0.00	7
4370	0.00	0.00	0.00	12
4371	0.00	0.00	0.00	14
4372	0.00	0.00	0.00	6
4373	0.00	0.00	0.00	8
4374	0.00	0.00	0.00	16
4375	0.00	0.00	0.00	11
4376	0.00	0.00	0.00	18
4377	0.00	0.00	0.00	9
4378	0.00	0.00	0.00	14
4379	0.00	0.00	0.00	8
4380	0.00	0.00	0.00	9
4381	0.00	0.00	0.00	10
4382	0.00	0.00	0.00	16
4383	0.00	0.00	0.00	13
4384	0.00	0.00	0.00	9
4385	0.00	0.00	0.00	12
4386	0.00	0.00	0.00	14
4387	0.00	0.00	0.00	11
4388	0.00	0.00	0.00	8
4389	0.00	0.00	0.00	12
4390	0.00	0.00	0.00	8
4391	0.00	0.00	0.00	16
4392	0.00	0.00	0.00	7
4393	0.00	0.00	0.00	8
4394	0.00	0.00	0.00	11
4395	0.00	0.00	0.00	9
4396	0.00	0.00	0.00	11
4397	0.00	0.00	0.00	13
4398	0.00	0.00	0.00	17
4399	0.00	0.00	0.00	10
4400	0.00	0.00	0.00	17
4401	0.00	0.00	0.00	8
4402	0.33	0.08	0.13	12
4403	0.00	0.00	0.00	14
4404	0.00	0.00	0.00	14
4405	0.00	0.00	0.00	10
4406	0.00	0.00	0.00	14
4407	0.00	0.00	0.00	13
4408	0.00	0.00	0.00	13
4409	0.00	0.00	0.00	11
4410	0.00	0.00	0.00	16
4411	0.00	0.00	0.00	12
4412	0.00	0.00	0.00	10
4413	0.00	0.00	0.00	16
4414	0.00	0.00	0.00	14

4414	0.00	0.00	0.00	14
4415	0.00	0.00	0.00	11
4416	0.00	0.00	0.00	14
4417	0.00	0.00	0.00	13
4418	0.00	0.00	0.00	8
4419	0.00	0.00	0.00	12
4420	0.00	0.00	0.00	13
4421	0.00	0.00	0.00	15
4422	0.00	0.00	0.00	14
4423	0.00	0.00	0.00	15
4424	0.00	0.00	0.00	9
4425	0.00	0.00	0.00	10
4426	0.00	0.00	0.00	17
4427	0.00	0.00	0.00	12
4428	0.00	0.00	0.00	12
4429	0.00	0.00	0.00	13
4430	0.00	0.00	0.00	10
4431	0.00	0.00	0.00	10
4432	0.00	0.00	0.00	10
4433	0.00	0.00	0.00	15
4434	0.00	0.00	0.00	13
4435	0.00	0.00	0.00	21
4436	0.00	0.00	0.00	17
4437	0.00	0.00	0.00	9
4438	0.00	0.00	0.00	11
4439	0.00	0.00	0.00	17
4440	0.00	0.00	0.00	14
4441	0.00	0.00	0.00	15
4442	0.00	0.00	0.00	8
4443	0.00	0.00	0.00	13
4444	0.00	0.00	0.00	10
4445	0.00	0.00	0.00	13
4446	0.00	0.00	0.00	10
4447	0.00	0.00	0.00	10
4448	0.00	0.00	0.00	7
4449	0.00	0.00	0.00	12
4450	0.00	0.00	0.00	8
4451	0.00	0.00	0.00	13
4452	0.00	0.00	0.00	15
4453	0.00	0.00	0.00	8
4454	0.00	0.00	0.00	4
4455	0.00	0.00	0.00	15
4456	0.00	0.00	0.00	9
4457	0.00	0.00	0.00	10
4458	0.00	0.00	0.00	13
4459	0.00	0.00	0.00	14
4460	0.00	0.00	0.00	10
4461	0.00	0.00	0.00	12
4462	0.00	0.00	0.00	10
4463	0.00	0.00	0.00	12
4464	0.00	0.00	0.00	9
4465	0.00	0.00	0.00	9
4466	0.00	0.00	0.00	12
4467	0.00	0.00	0.00	10
4468	0.00	0.00	0.00	11
4469	0.00	0.00	0.00	13
4470	0.00	0.00	0.00	18
4471	0.00	0.00	0.00	11
4472	0.00	0.00	0.00	16
4473	0.00	0.00	0.00	12
4474	0.00	0.00	0.00	10
4475	0.00	0.00	0.00	11
4476	0.00	0.00	0.00	13
4477	0.00	0.00	0.00	12
4478	0.00	0.00	0.00	11
4479	0.00	0.00	0.00	14
4480	0.00	0.00	0.00	10
4481	0.00	0.00	0.00	11
4482	0.00	0.00	0.00	13
4483	0.00	0.00	0.00	13
4484	0.00	0.00	0.00	15
4485	0.00	0.00	0.00	13
4486	0.00	0.00	0.00	14
4487	0.00	0.00	0.00	15
4488	0.00	0.00	0.00	14
4489	0.00	0.00	0.00	13
4490	0.00	0.00	0.00	18
4491	0.00	0.00	0.00	10

4491	0.00	0.00	0.00	10
4492	0.00	0.00	0.00	12
4493	0.00	0.00	0.00	16
4494	0.00	0.00	0.00	8
4495	0.00	0.00	0.00	9
4496	0.00	0.00	0.00	8
4497	0.00	0.00	0.00	13
4498	0.00	0.00	0.00	18
4499	0.00	0.00	0.00	11
4500	0.00	0.00	0.00	8
4501	0.00	0.00	0.00	17
4502	0.00	0.00	0.00	9
4503	0.00	0.00	0.00	12
4504	0.00	0.00	0.00	7
4505	0.00	0.00	0.00	13
4506	0.00	0.00	0.00	13
4507	0.00	0.00	0.00	12
4508	0.00	0.00	0.00	13
4509	0.00	0.00	0.00	19
4510	0.00	0.00	0.00	12
4511	0.00	0.00	0.00	12
4512	0.00	0.00	0.00	13
4513	0.00	0.00	0.00	11
4514	0.00	0.00	0.00	8
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4519	0.00	0.00	0.00	12
4520	0.00	0.00	0.00	12
4521	0.00	0.00	0.00	14
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4524	0.00	0.00	0.00	13
4525	0.00	0.00	0.00	11
4526	0.00	0.00	0.00	14
4527	0.00	0.00	0.00	12
4528	0.00	0.00	0.00	12
4529	0.00	0.00	0.00	10
4530	0.00	0.00	0.00	15
4531	0.00	0.00	0.00	16
4532	0.00	0.00	0.00	12
4533	0.00	0.00	0.00	14
4534	0.00	0.00	0.00	13
4535	0.00	0.00	0.00	12
4536	0.00	0.00	0.00	11
4537	0.00	0.00	0.00	18
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4545	0.00	0.00	0.00	12
4546	0.00	0.00	0.00	12
4547	0.00	0.00	0.00	8
4548	0.00	0.00	0.00	12
4549	0.00	0.00	0.00	9
4550	0.00	0.00	0.00	8
4551	0.00	0.00	0.00	13
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4553	0.00	0.00	0.00	8
4554	0.00	0.00	0.00	10
4555	0.00	0.00	0.00	8
4556	0.00	0.00	0.00	5
4557	0.00	0.00	0.00	10
4558	0.00	0.00	0.00	9
4559	0.00	0.00	0.00	14
4560	0.00	0.00	0.00	16
4561	0.00	0.00	0.00	15
4562	0.00	0.00	0.00	11
4563	0.00	0.00	0.00	9
4564	0.00	0.00	0.00	13
4565	0.00	0.00	0.00	12
4566	0.00	0.00	0.00	8
4567	0.00	0.00	0.00	5
4568	0.00	0.00	0.00	7

4568	0.00	0.00	0.00	7
4569	0.00	0.00	0.00	7
4570	0.00	0.00	0.00	10
4571	0.00	0.00	0.00	12
4572	0.00	0.00	0.00	14
4573	0.00	0.00	0.00	12
4574	0.00	0.00	0.00	8
4575	0.00	0.00	0.00	11
4576	0.00	0.00	0.00	10
4577	0.00	0.00	0.00	9
4578	0.00	0.00	0.00	14
4579	0.00	0.00	0.00	13
4580	0.00	0.00	0.00	14
4581	0.00	0.00	0.00	9
4582	0.00	0.00	0.00	15
4583	0.00	0.00	0.00	13
4584	0.00	0.00	0.00	7
4585	0.00	0.00	0.00	9
4586	0.00	0.00	0.00	15
4587	0.00	0.00	0.00	13
4588	0.00	0.00	0.00	11
4589	0.00	0.00	0.00	6
4590	0.00	0.00	0.00	6
4591	0.00	0.00	0.00	11
4592	0.00	0.00	0.00	12
4593	0.00	0.00	0.00	12
4594	0.00	0.00	0.00	10
4595	0.00	0.00	0.00	14
4596	0.00	0.00	0.00	11
4597	0.00	0.00	0.00	11
4598	0.00	0.00	0.00	9
4599	0.00	0.00	0.00	7
4600	0.00	0.00	0.00	11
4601	0.00	0.00	0.00	12
4602	0.00	0.00	0.00	9
4603	0.00	0.00	0.00	13
4604	0.00	0.00	0.00	15
4605	0.00	0.00	0.00	11
4606	0.00	0.00	0.00	9
4607	0.00	0.00	0.00	10
4608	0.00	0.00	0.00	6
4609	0.00	0.00	0.00	6
4610	0.00	0.00	0.00	12
4611	0.00	0.00	0.00	9
4612	0.00	0.00	0.00	13
4613	0.00	0.00	0.00	14
4614	0.00	0.00	0.00	8
4615	0.00	0.00	0.00	12
4616	0.00	0.00	0.00	13
4617	0.00	0.00	0.00	7
4618	0.00	0.00	0.00	11
4619	0.00	0.00	0.00	14
4620	0.00	0.00	0.00	11
4621	0.00	0.00	0.00	9
4622	0.00	0.00	0.00	6
4623	0.00	0.00	0.00	12
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4625	0.00	0.00	0.00	10
4626	0.00	0.00	0.00	9
4627	0.00	0.00	0.00	8
4628	0.00	0.00	0.00	11
4629	0.00	0.00	0.00	11
4630	0.00	0.00	0.00	13
4631	0.00	0.00	0.00	15
4632	0.00	0.00	0.00	11
4633	0.00	0.00	0.00	7
4634	0.00	0.00	0.00	11
4635	0.00	0.00	0.00	8
4636	0.00	0.00	0.00	7
4637	0.00	0.00	0.00	8
4638	0.00	0.00	0.00	9
4639	0.00	0.00	0.00	13
4640	0.00	0.00	0.00	12
4641	0.00	0.00	0.00	11
4642	0.00	0.00	0.00	8
4643	0.00	0.00	0.00	12
4644	0.00	0.00	0.00	9

4645	0.00	0.00	0.00	12
4646	0.00	0.00	0.00	10
4647	0.00	0.00	0.00	17
4648	0.00	0.00	0.00	10
4649	0.00	0.00	0.00	12
4650	0.00	0.00	0.00	13
4651	0.00	0.00	0.00	12
4652	0.00	0.00	0.00	11
4653	0.00	0.00	0.00	10
4654	0.00	0.00	0.00	11
4655	0.00	0.00	0.00	14
4656	0.00	0.00	0.00	10
4657	0.00	0.00	0.00	9
4658	0.00	0.00	0.00	9
4659	0.00	0.00	0.00	9
4660	0.00	0.00	0.00	13
4661	0.00	0.00	0.00	8
4662	0.00	0.00	0.00	12
4663	0.00	0.00	0.00	12
4664	0.00	0.00	0.00	14
4665	0.00	0.00	0.00	11
4666	0.00	0.00	0.00	9
4667	0.00	0.00	0.00	7
4668	0.00	0.00	0.00	8
4669	0.00	0.00	0.00	6
4670	0.00	0.00	0.00	12
4671	0.00	0.00	0.00	6
4672	0.00	0.00	0.00	14
4673	0.00	0.00	0.00	14
4674	0.00	0.00	0.00	13
4675	0.00	0.00	0.00	12
4676	0.00	0.00	0.00	13
4677	0.00	0.00	0.00	12
4678	0.00	0.00	0.00	11
4679	0.00	0.00	0.00	14
4680	0.00	0.00	0.00	7
4681	0.00	0.00	0.00	9
4682	0.00	0.00	0.00	15
4683	0.00	0.00	0.00	10
4684	0.00	0.00	0.00	7
4685	0.00	0.00	0.00	12
4686	0.00	0.00	0.00	9
4687	0.00	0.00	0.00	11
4688	0.00	0.00	0.00	10
4689	0.00	0.00	0.00	17
4690	0.00	0.00	0.00	11
4691	0.00	0.00	0.00	16
4692	0.00	0.00	0.00	12
4693	0.00	0.00	0.00	9
4694	0.00	0.00	0.00	16
4695	0.00	0.00	0.00	10
4696	0.00	0.00	0.00	13
4697	0.00	0.00	0.00	10
4698	0.00	0.00	0.00	13
4699	0.00	0.00	0.00	12
4700	0.00	0.00	0.00	16
4701	0.00	0.00	0.00	5
4702	0.00	0.00	0.00	10
4703	0.00	0.00	0.00	8
4704	0.00	0.00	0.00	17
4705	0.00	0.00	0.00	12
4706	0.00	0.00	0.00	5
4707	0.00	0.00	0.00	11
4708	0.00	0.00	0.00	13
4709	0.00	0.00	0.00	11
4710	0.00	0.00	0.00	10
4711	0.00	0.00	0.00	12
4712	0.00	0.00	0.00	9
4713	0.00	0.00	0.00	14
4714	0.00	0.00	0.00	14
4715	0.00	0.00	0.00	11
4716	0.00	0.00	0.00	10
4717	0.00	0.00	0.00	16
4718	0.00	0.00	0.00	15
4719	0.00	0.00	0.00	14
4720	0.00	0.00	0.00	10
4721	0.00	0.00	0.00	18

4722	0.00	0.00	0.00	9
4723	0.00	0.00	0.00	15
4724	0.00	0.00	0.00	10
4725	0.00	0.00	0.00	6
4726	0.00	0.00	0.00	8
4727	0.00	0.00	0.00	9
4728	0.00	0.00	0.00	12
4729	0.00	0.00	0.00	10
4730	0.00	0.00	0.00	16
4731	0.00	0.00	0.00	9
4732	0.00	0.00	0.00	10
4733	0.00	0.00	0.00	13
4734	0.00	0.00	0.00	14
4735	0.00	0.00	0.00	20
4736	0.00	0.00	0.00	9
4737	0.00	0.00	0.00	8
4738	0.00	0.00	0.00	16
4739	0.00	0.00	0.00	6
4740	0.00	0.00	0.00	10
4741	0.00	0.00	0.00	10
4742	0.00	0.00	0.00	10
4743	0.00	0.00	0.00	8
4744	0.00	0.00	0.00	9
4745	0.00	0.00	0.00	12
4746	0.00	0.00	0.00	11
4747	0.00	0.00	0.00	18
4748	0.00	0.00	0.00	7
4749	0.00	0.00	0.00	10
4750	0.00	0.00	0.00	12
4751	0.00	0.00	0.00	13
4752	0.00	0.00	0.00	9
4753	0.00	0.00	0.00	8
4754	0.00	0.00	0.00	10
4755	0.00	0.00	0.00	14
4756	0.00	0.00	0.00	17
4757	0.00	0.00	0.00	15
4758	0.00	0.00	0.00	11
4759	0.00	0.00	0.00	10
4760	0.00	0.00	0.00	10
4761	0.00	0.00	0.00	14
4762	0.00	0.00	0.00	13
4763	0.00	0.00	0.00	13
4764	0.00	0.00	0.00	12
4765	0.00	0.00	0.00	8
4766	0.00	0.00	0.00	7
4767	0.00	0.00	0.00	14
4768	0.00	0.00	0.00	10
4769	0.00	0.00	0.00	11
4770	0.00	0.00	0.00	12
4771	0.00	0.00	0.00	11
4772	0.00	0.00	0.00	11
4773	0.00	0.00	0.00	17
4774	0.00	0.00	0.00	5
4775	0.00	0.00	0.00	5
4776	0.00	0.00	0.00	12
4777	0.00	0.00	0.00	12
4778	0.00	0.00	0.00	10
4779	0.00	0.00	0.00	16
4780	0.00	0.00	0.00	10
4781	0.00	0.00	0.00	5
4782	0.00	0.00	0.00	11
4783	0.00	0.00	0.00	7
4784	0.00	0.00	0.00	13
4785	0.00	0.00	0.00	8
4786	0.00	0.00	0.00	15
4787	0.00	0.00	0.00	8
4788	0.00	0.00	0.00	7
4789	0.00	0.00	0.00	10
4790	0.00	0.00	0.00	12
4791	0.00	0.00	0.00	11
4792	0.00	0.00	0.00	10
4793	0.00	0.00	0.00	13
4794	0.00	0.00	0.00	18
4795	0.00	0.00	0.00	6
4796	0.00	0.00	0.00	11
4797	0.00	0.00	0.00	9
4798	0.00	0.00	0.00	11

4799	0.00	0.00	0.00	10
4800	0.00	0.00	0.00	14
4801	0.00	0.00	0.00	9
4802	0.00	0.00	0.00	11
4803	0.00	0.00	0.00	12
4804	0.00	0.00	0.00	19
4805	0.00	0.00	0.00	10
4806	0.00	0.00	0.00	12
4807	0.00	0.00	0.00	12
4808	0.00	0.00	0.00	14
4809	0.00	0.00	0.00	12
4810	0.00	0.00	0.00	7
4811	0.00	0.00	0.00	16
4812	0.00	0.00	0.00	10
4813	0.00	0.00	0.00	14
4814	0.00	0.00	0.00	10
4815	0.00	0.00	0.00	10
4816	0.00	0.00	0.00	12
4817	0.00	0.00	0.00	14
4818	0.00	0.00	0.00	9
4819	0.00	0.00	0.00	13
4820	0.00	0.00	0.00	15
4821	0.00	0.00	0.00	5
4822	0.00	0.00	0.00	12
4823	0.00	0.00	0.00	11
4824	0.00	0.00	0.00	18
4825	0.00	0.00	0.00	8
4826	0.00	0.00	0.00	7
4827	0.00	0.00	0.00	13
4828	0.00	0.00	0.00	16
4829	0.00	0.00	0.00	5
4830	0.00	0.00	0.00	9
4831	0.00	0.00	0.00	12
4832	0.00	0.00	0.00	12
4833	0.00	0.00	0.00	12
4834	0.00	0.00	0.00	16
4835	0.00	0.00	0.00	9
4836	0.00	0.00	0.00	8
4837	0.00	0.00	0.00	10
4838	0.00	0.00	0.00	12
4839	0.00	0.00	0.00	10
4840	0.00	0.00	0.00	8
4841	0.00	0.00	0.00	13
4842	0.00	0.00	0.00	8
4843	0.00	0.00	0.00	10
4844	0.00	0.00	0.00	6
4845	0.00	0.00	0.00	13
4846	0.00	0.00	0.00	15
4847	0.00	0.00	0.00	16
4848	0.00	0.00	0.00	12
4849	0.00	0.00	0.00	13
4850	0.00	0.00	0.00	16
4851	0.00	0.00	0.00	13
4852	0.00	0.00	0.00	11
4853	0.00	0.00	0.00	10
4854	0.00	0.00	0.00	10
4855	0.00	0.00	0.00	7
4856	0.00	0.00	0.00	9
4857	0.00	0.00	0.00	12
4858	0.00	0.00	0.00	9
4859	0.00	0.00	0.00	11
4860	0.00	0.00	0.00	11
4861	0.00	0.00	0.00	15
4862	0.00	0.00	0.00	10
4863	0.00	0.00	0.00	9
4864	0.00	0.00	0.00	6
4865	0.00	0.00	0.00	14
4866	0.00	0.00	0.00	7
4867	0.00	0.00	0.00	8
4868	0.00	0.00	0.00	14
4869	0.00	0.00	0.00	10
4870	0.00	0.00	0.00	11
4871	0.00	0.00	0.00	11
4872	0.00	0.00	0.00	13
4873	0.00	0.00	0.00	9
4874	0.00	0.00	0.00	8
4875	0.00	0.00	0.00	10

4876	0.00	0.00	0.00	8
4877	0.00	0.00	0.00	8
4878	0.00	0.00	0.00	14
4879	0.00	0.00	0.00	11
4880	0.00	0.00	0.00	5
4881	0.00	0.00	0.00	10
4882	0.00	0.00	0.00	9
4883	0.00	0.00	0.00	10
4884	0.00	0.00	0.00	15
4885	0.00	0.00	0.00	11
4886	0.00	0.00	0.00	18
4887	0.00	0.00	0.00	12
4888	0.00	0.00	0.00	13
4889	0.00	0.00	0.00	8
4890	0.00	0.00	0.00	4
4891	0.00	0.00	0.00	10
4892	0.00	0.00	0.00	14
4893	0.00	0.00	0.00	12
4894	0.00	0.00	0.00	9
4895	1.00	0.12	0.22	8
4896	0.00	0.00	0.00	11
4897	0.00	0.00	0.00	14
4898	0.00	0.00	0.00	12
4899	0.00	0.00	0.00	11
4900	0.00	0.00	0.00	12
4901	0.00	0.00	0.00	13
4902	0.00	0.00	0.00	12
4903	0.00	0.00	0.00	11
4904	0.00	0.00	0.00	10
4905	0.00	0.00	0.00	11
4906	0.00	0.00	0.00	8
4907	0.00	0.00	0.00	9
4908	0.00	0.00	0.00	7
4909	0.00	0.00	0.00	13
4910	0.00	0.00	0.00	10
4911	0.00	0.00	0.00	10
4912	0.00	0.00	0.00	9
4913	0.00	0.00	0.00	13
4914	0.00	0.00	0.00	14
4915	0.00	0.00	0.00	12
4916	0.00	0.00	0.00	6
4917	0.00	0.00	0.00	8
4918	0.00	0.00	0.00	6
4919	0.00	0.00	0.00	6
4920	0.00	0.00	0.00	15
4921	0.00	0.00	0.00	10
4922	0.00	0.00	0.00	12
4923	0.00	0.00	0.00	7
4924	0.00	0.00	0.00	16
4925	0.00	0.00	0.00	13
4926	0.00	0.00	0.00	10
4927	0.00	0.00	0.00	8
4928	0.00	0.00	0.00	10
4929	0.00	0.00	0.00	10
4930	0.00	0.00	0.00	12
4931	0.00	0.00	0.00	11
4932	0.00	0.00	0.00	10
4933	0.00	0.00	0.00	11
4934	0.00	0.00	0.00	7
4935	0.00	0.00	0.00	13
4936	0.00	0.00	0.00	10
4937	0.00	0.00	0.00	13
4938	0.00	0.00	0.00	17
4939	0.00	0.00	0.00	13
4940	0.00	0.00	0.00	15
4941	0.00	0.00	0.00	13
4942	0.00	0.00	0.00	15
4943	0.00	0.00	0.00	13
4944	0.00	0.00	0.00	10
4945	0.00	0.00	0.00	9
4946	0.00	0.00	0.00	13
4947	0.00	0.00	0.00	7
4948	0.00	0.00	0.00	10
4949	0.00	0.00	0.00	9
4950	0.00	0.00	0.00	13
4951	0.00	0.00	0.00	12
4952	0.00	0.00	0.00	8

4953	0.00	0.00	0.00	14
4954	0.00	0.00	0.00	11
4955	0.00	0.00	0.00	11
4956	0.00	0.00	0.00	11
4957	0.00	0.00	0.00	8
4958	0.00	0.00	0.00	8
4959	0.00	0.00	0.00	13
4960	0.00	0.00	0.00	9
4961	0.00	0.00	0.00	12
4962	0.00	0.00	0.00	8
4963	0.00	0.00	0.00	3
4964	0.00	0.00	0.00	8
4965	0.00	0.00	0.00	14
4966	0.00	0.00	0.00	9
4967	0.00	0.00	0.00	12
4968	0.00	0.00	0.00	8
4969	0.00	0.00	0.00	7
4970	0.00	0.00	0.00	11
4971	0.00	0.00	0.00	8
4972	0.00	0.00	0.00	13
4973	0.00	0.00	0.00	12
4974	0.00	0.00	0.00	9
4975	0.00	0.00	0.00	14
4976	0.00	0.00	0.00	12
4977	0.00	0.00	0.00	8
4978	0.00	0.00	0.00	16
4979	0.00	0.00	0.00	12
4980	0.00	0.00	0.00	6
4981	0.00	0.00	0.00	15
4982	0.00	0.00	0.00	4
4983	0.00	0.00	0.00	8
4984	0.00	0.00	0.00	9
4985	0.00	0.00	0.00	13
4986	0.00	0.00	0.00	14
4987	0.00	0.00	0.00	7
4988	0.00	0.00	0.00	12
4989	0.00	0.00	0.00	15
4990	0.00	0.00	0.00	9
4991	0.00	0.00	0.00	13
4992	0.00	0.00	0.00	10
4993	0.00	0.00	0.00	8
4994	0.00	0.00	0.00	10
4995	0.00	0.00	0.00	11
4996	0.00	0.00	0.00	10
4997	0.00	0.00	0.00	4
4998	0.00	0.00	0.00	13
4999	0.00	0.00	0.00	8
5000	0.00	0.00	0.00	11
5001	0.00	0.00	0.00	5
5002	0.00	0.00	0.00	9
5003	0.00	0.00	0.00	6
5004	0.00	0.00	0.00	10
5005	0.00	0.00	0.00	8
5006	0.00	0.00	0.00	15
5007	0.00	0.00	0.00	14
5008	1.00	0.12	0.22	8
5009	0.00	0.00	0.00	10
5010	0.00	0.00	0.00	11
5011	0.00	0.00	0.00	10
5012	0.00	0.00	0.00	11
5013	0.00	0.00	0.00	14
5014	0.00	0.00	0.00	8
5015	0.00	0.00	0.00	14
5016	0.00	0.00	0.00	14
5017	0.00	0.00	0.00	11
5018	0.00	0.00	0.00	9
5019	0.00	0.00	0.00	14
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5022	0.00	0.00	0.00	11
5023	0.00	0.00	0.00	6
5024	0.00	0.00	0.00	14
5025	0.00	0.00	0.00	8
5026	0.00	0.00	0.00	14
5027	0.00	0.00	0.00	6
5028	0.00	0.00	0.00	13
5029	0.00	0.00	0.00	5

5030	0.00	0.00	0.00	15
5031	0.00	0.00	0.00	8
5032	0.00	0.00	0.00	12
5033	0.00	0.00	0.00	13
5034	0.00	0.00	0.00	8
5035	0.00	0.00	0.00	11
5036	0.00	0.00	0.00	11
5037	0.00	0.00	0.00	12
5038	0.00	0.00	0.00	12
5039	0.00	0.00	0.00	17
5040	0.00	0.00	0.00	8
5041	0.00	0.00	0.00	9
5042	0.00	0.00	0.00	9
5043	0.00	0.00	0.00	14
5044	0.00	0.00	0.00	11
5045	0.00	0.00	0.00	9
5046	0.00	0.00	0.00	10
5047	0.00	0.00	0.00	10
5048	0.00	0.00	0.00	7
5049	0.00	0.00	0.00	9
5050	0.00	0.00	0.00	5
5051	0.00	0.00	0.00	10
5052	0.00	0.00	0.00	10
5053	0.00	0.00	0.00	14
5054	0.00	0.00	0.00	13
5055	0.00	0.00	0.00	7
5056	0.00	0.00	0.00	15
5057	0.00	0.00	0.00	8
5058	0.00	0.00	0.00	11
5059	0.00	0.00	0.00	9
5060	0.00	0.00	0.00	13
5061	0.00	0.00	0.00	13
5062	0.00	0.00	0.00	7
5063	0.00	0.00	0.00	14
5064	0.00	0.00	0.00	8
5065	0.00	0.00	0.00	6
5066	0.00	0.00	0.00	7
5067	0.00	0.00	0.00	10
5068	0.00	0.00	0.00	12
5069	0.00	0.00	0.00	9
5070	0.00	0.00	0.00	11
5071	0.00	0.00	0.00	8
5072	0.00	0.00	0.00	4
5073	0.00	0.00	0.00	14
5074	0.00	0.00	0.00	11
5075	0.00	0.00	0.00	14
5076	0.00	0.00	0.00	7
5077	0.00	0.00	0.00	10
5078	0.00	0.00	0.00	11
5079	0.00	0.00	0.00	10
5080	0.00	0.00	0.00	13
5081	0.00	0.00	0.00	12
5082	0.00	0.00	0.00	8
5083	0.00	0.00	0.00	15
5084	0.00	0.00	0.00	15
5085	0.00	0.00	0.00	11
5086	0.00	0.00	0.00	12
5087	0.00	0.00	0.00	9
5088	0.00	0.00	0.00	4
5089	0.00	0.00	0.00	8
5090	0.00	0.00	0.00	11
5091	0.00	0.00	0.00	6
5092	0.00	0.00	0.00	9
5093	0.00	0.00	0.00	10
5094	0.00	0.00	0.00	18
5095	0.00	0.00	0.00	6
5096	0.00	0.00	0.00	12
5097	0.00	0.00	0.00	9
5098	0.00	0.00	0.00	11
5099	0.00	0.00	0.00	7
5100	0.00	0.00	0.00	12
5101	0.00	0.00	0.00	7
5102	0.00	0.00	0.00	5
5103	0.00	0.00	0.00	11
5104	0.00	0.00	0.00	13
5105	0.00	0.00	0.00	10
5106	0.00	0.00	0.00	12

5107	0.00	0.00	0.00	7
5108	0.00	0.00	0.00	14
5109	0.00	0.00	0.00	11
5110	0.00	0.00	0.00	8
5111	0.00	0.00	0.00	10
5112	0.00	0.00	0.00	10
5113	0.00	0.00	0.00	9
5114	0.00	0.00	0.00	13
5115	0.00	0.00	0.00	8
5116	0.00	0.00	0.00	10
5117	0.00	0.00	0.00	8
5118	0.00	0.00	0.00	12
5119	0.00	0.00	0.00	8
5120	0.00	0.00	0.00	7
5121	0.00	0.00	0.00	12
5122	0.00	0.00	0.00	9
5123	0.00	0.00	0.00	9
5124	0.00	0.00	0.00	8
5125	0.00	0.00	0.00	8
5126	0.00	0.00	0.00	8
5127	0.00	0.00	0.00	13
5128	0.00	0.00	0.00	8
5129	0.00	0.00	0.00	9
5130	0.00	0.00	0.00	8
5131	0.00	0.00	0.00	10
5132	0.00	0.00	0.00	11
5133	0.00	0.00	0.00	11
5134	0.00	0.00	0.00	6
5135	0.00	0.00	0.00	11
5136	0.00	0.00	0.00	11
5137	0.00	0.00	0.00	12
5138	0.00	0.00	0.00	8
5139	0.00	0.00	0.00	10
5140	0.00	0.00	0.00	10
5141	0.00	0.00	0.00	10
5142	0.00	0.00	0.00	10
5143	0.00	0.00	0.00	5
5144	0.00	0.00	0.00	13
5145	0.00	0.00	0.00	11
5146	0.00	0.00	0.00	12
5147	0.00	0.00	0.00	9
5148	0.00	0.00	0.00	12
5149	0.00	0.00	0.00	8
5150	0.00	0.00	0.00	11
5151	0.00	0.00	0.00	10
5152	0.00	0.00	0.00	12
5153	0.00	0.00	0.00	12
5154	0.00	0.00	0.00	10
5155	0.00	0.00	0.00	10
5156	0.00	0.00	0.00	9
5157	0.00	0.00	0.00	13
5158	0.00	0.00	0.00	10
5159	0.00	0.00	0.00	6
5160	0.00	0.00	0.00	10
5161	0.00	0.00	0.00	12
5162	0.00	0.00	0.00	8
5163	0.00	0.00	0.00	10
5164	0.00	0.00	0.00	9
5165	0.00	0.00	0.00	11
5166	0.00	0.00	0.00	8
5167	0.00	0.00	0.00	9
5168	0.00	0.00	0.00	9
5169	0.00	0.00	0.00	8
5170	0.00	0.00	0.00	12
5171	0.00	0.00	0.00	6
5172	0.00	0.00	0.00	13
5173	0.00	0.00	0.00	11
5174	0.00	0.00	0.00	7
5175	0.00	0.00	0.00	7
5176	0.00	0.00	0.00	15
5177	0.00	0.00	0.00	10
5178	0.00	0.00	0.00	9
5179	0.00	0.00	0.00	7
5180	0.00	0.00	0.00	7
5181	0.00	0.00	0.00	11
5182	0.00	0.00	0.00	5
5183	0.00	0.00	0.00	17

5184	0.00	0.00	0.00	4
5185	0.00	0.00	0.00	7
5186	0.00	0.00	0.00	7
5187	0.00	0.00	0.00	10
5188	0.00	0.00	0.00	11
5189	0.00	0.00	0.00	13
5190	1.00	0.10	0.18	10
5191	0.00	0.00	0.00	8
5192	0.00	0.00	0.00	14
5193	0.00	0.00	0.00	12
5194	0.00	0.00	0.00	18
5195	0.00	0.00	0.00	10
5196	0.00	0.00	0.00	8
5197	0.00	0.00	0.00	8
5198	0.00	0.00	0.00	8
5199	0.00	0.00	0.00	11
5200	0.00	0.00	0.00	14
5201	0.00	0.00	0.00	12
5202	0.00	0.00	0.00	14
5203	0.00	0.00	0.00	13
5204	0.00	0.00	0.00	8
5205	0.00	0.00	0.00	10
5206	0.00	0.00	0.00	16
5207	0.00	0.00	0.00	9
5208	0.00	0.00	0.00	6
5209	0.00	0.00	0.00	8
5210	0.00	0.00	0.00	11
5211	0.00	0.00	0.00	11
5212	0.00	0.00	0.00	14
5213	0.00	0.00	0.00	6
5214	0.00	0.00	0.00	8
5215	0.00	0.00	0.00	11
5216	0.00	0.00	0.00	11
5217	0.00	0.00	0.00	9
5218	0.00	0.00	0.00	9
5219	0.00	0.00	0.00	10
5220	0.00	0.00	0.00	10
5221	0.00	0.00	0.00	10
5222	0.00	0.00	0.00	8
5223	0.00	0.00	0.00	8
5224	0.00	0.00	0.00	7
5225	0.00	0.00	0.00	7
5226	0.00	0.00	0.00	8
5227	0.00	0.00	0.00	13
5228	0.00	0.00	0.00	7
5229	0.00	0.00	0.00	6
5230	0.00	0.00	0.00	7
5231	0.00	0.00	0.00	10
5232	0.00	0.00	0.00	7
5233	0.00	0.00	0.00	9
5234	0.00	0.00	0.00	5
5235	0.00	0.00	0.00	1
5236	0.00	0.00	0.00	16
5237	0.00	0.00	0.00	7
5238	0.00	0.00	0.00	10
5239	0.00	0.00	0.00	14
5240	0.00	0.00	0.00	8
5241	0.00	0.00	0.00	8
5242	0.00	0.00	0.00	8
5243	0.00	0.00	0.00	5
5244	0.00	0.00	0.00	11
5245	0.00	0.00	0.00	8
5246	0.00	0.00	0.00	11
5247	0.00	0.00	0.00	11
5248	0.00	0.00	0.00	10
5249	0.00	0.00	0.00	13
5250	0.00	0.00	0.00	10
5251	0.00	0.00	0.00	12
5252	0.00	0.00	0.00	11
5253	0.00	0.00	0.00	12
5254	0.00	0.00	0.00	12
5255	0.00	0.00	0.00	10
5256	0.00	0.00	0.00	12
5257	0.00	0.00	0.00	11
5258	0.00	0.00	0.00	10
5259	0.00	0.00	0.00	8
5260	0.00	0.00	0.00	11

5261	0.00	0.00	0.00	10
5262	0.00	0.00	0.00	9
5263	0.00	0.00	0.00	10
5264	0.00	0.00	0.00	12
5265	1.00	0.09	0.17	11
5266	0.00	0.00	0.00	8
5267	0.00	0.00	0.00	12
5268	0.00	0.00	0.00	7
5269	0.00	0.00	0.00	9
5270	0.00	0.00	0.00	11
5271	0.00	0.00	0.00	9
5272	0.00	0.00	0.00	11
5273	0.00	0.00	0.00	7
5274	0.00	0.00	0.00	11
5275	0.00	0.00	0.00	11
5276	0.00	0.00	0.00	9
5277	0.00	0.00	0.00	7
5278	0.00	0.00	0.00	7
5279	0.00	0.00	0.00	8
5280	0.00	0.00	0.00	5
5281	0.00	0.00	0.00	8
5282	0.00	0.00	0.00	8
5283	0.00	0.00	0.00	13
5284	0.00	0.00	0.00	11
5285	0.00	0.00	0.00	6
5286	0.00	0.00	0.00	13
5287	0.00	0.00	0.00	15
5288	0.00	0.00	0.00	7
5289	0.00	0.00	0.00	8
5290	0.00	0.00	0.00	6
5291	0.00	0.00	0.00	9
5292	0.00	0.00	0.00	6
5293	0.00	0.00	0.00	9
5294	0.00	0.00	0.00	13
5295	0.00	0.00	0.00	11
5296	0.00	0.00	0.00	10
5297	0.00	0.00	0.00	13
5298	0.00	0.00	0.00	14
5299	0.00	0.00	0.00	10
5300	0.00	0.00	0.00	14
5301	0.00	0.00	0.00	11
5302	0.00	0.00	0.00	6
5303	0.00	0.00	0.00	6
5304	0.00	0.00	0.00	7
5305	0.00	0.00	0.00	9
5306	0.00	0.00	0.00	6
5307	0.00	0.00	0.00	10
5308	0.00	0.00	0.00	11
5309	0.00	0.00	0.00	11
5310	0.00	0.00	0.00	14
5311	0.00	0.00	0.00	10
5312	0.00	0.00	0.00	11
5313	0.00	0.00	0.00	11
5314	0.00	0.00	0.00	11
5315	0.00	0.00	0.00	11
5316	0.00	0.00	0.00	2
5317	0.00	0.00	0.00	5
5318	0.00	0.00	0.00	11
5319	0.00	0.00	0.00	12
5320	0.00	0.00	0.00	7
5321	0.00	0.00	0.00	7
5322	0.00	0.00	0.00	9
5323	0.00	0.00	0.00	9
5324	0.00	0.00	0.00	8
5325	0.00	0.00	0.00	10
5326	0.00	0.00	0.00	3
5327	0.00	0.00	0.00	13
5328	0.00	0.00	0.00	13
5329	0.00	0.00	0.00	7
5330	0.00	0.00	0.00	8
5331	0.00	0.00	0.00	9
5332	0.00	0.00	0.00	8
5333	0.00	0.00	0.00	11
5334	0.00	0.00	0.00	11
5335	0.00	0.00	0.00	6
5336	0.00	0.00	0.00	6
5337	0.00	0.00	0.00	6

5338	0.00	0.00	0.00	11
5339	0.00	0.00	0.00	12
5340	0.00	0.00	0.00	9
5341	0.00	0.00	0.00	8
5342	0.00	0.00	0.00	8
5343	0.00	0.00	0.00	7
5344	0.00	0.00	0.00	5
5345	0.00	0.00	0.00	11
5346	0.00	0.00	0.00	13
5347	0.00	0.00	0.00	10
5348	0.00	0.00	0.00	11
5349	0.00	0.00	0.00	7
5350	0.00	0.00	0.00	10
5351	0.00	0.00	0.00	7
5352	0.00	0.00	0.00	7
5353	0.00	0.00	0.00	11
5354	0.00	0.00	0.00	12
5355	0.00	0.00	0.00	12
5356	0.00	0.00	0.00	10
5357	0.00	0.00	0.00	9
5358	0.00	0.00	0.00	8
5359	0.00	0.00	0.00	7
5360	0.00	0.00	0.00	10
5361	0.00	0.00	0.00	6
5362	0.00	0.00	0.00	6
5363	0.00	0.00	0.00	9
5364	0.00	0.00	0.00	9
5365	0.00	0.00	0.00	17
5366	0.00	0.00	0.00	8
5367	0.00	0.00	0.00	9
5368	0.00	0.00	0.00	8
5369	0.00	0.00	0.00	8
5370	0.00	0.00	0.00	18
5371	0.00	0.00	0.00	14
5372	0.00	0.00	0.00	10
5373	0.00	0.00	0.00	7
5374	0.00	0.00	0.00	6
5375	0.00	0.00	0.00	12
5376	0.00	0.00	0.00	13
5377	0.00	0.00	0.00	9
5378	0.00	0.00	0.00	10
5379	0.00	0.00	0.00	10
5380	0.00	0.00	0.00	9
5381	0.00	0.00	0.00	7
5382	0.00	0.00	0.00	10
5383	0.00	0.00	0.00	9
5384	0.00	0.00	0.00	12
5385	0.00	0.00	0.00	15
5386	0.00	0.00	0.00	7
5387	0.00	0.00	0.00	8
5388	0.00	0.00	0.00	4
5389	0.00	0.00	0.00	7
5390	0.00	0.00	0.00	8
5391	0.00	0.00	0.00	4
5392	0.00	0.00	0.00	10
5393	0.00	0.00	0.00	7
5394	0.00	0.00	0.00	8
5395	0.00	0.00	0.00	16
5396	0.00	0.00	0.00	13
5397	0.00	0.00	0.00	11
5398	0.00	0.00	0.00	5
5399	0.00	0.00	0.00	5
5400	0.00	0.00	0.00	12
5401	0.00	0.00	0.00	7
5402	0.00	0.00	0.00	5
5403	0.00	0.00	0.00	12
5404	0.00	0.00	0.00	5
5405	0.00	0.00	0.00	10
5406	0.00	0.00	0.00	7
5407	0.00	0.00	0.00	12
5408	0.00	0.00	0.00	9
5409	0.00	0.00	0.00	9
5410	0.00	0.00	0.00	8
5411	0.00	0.00	0.00	6
5412	0.00	0.00	0.00	8
5413	0.00	0.00	0.00	6
5414	0.00	0.00	0.00	8

5414	0.00	0.00	0.00	9
5415	0.00	0.00	0.00	16
5416	0.00	0.00	0.00	9
5417	0.00	0.00	0.00	11
5418	0.00	0.00	0.00	9
5419	0.00	0.00	0.00	14
5420	0.00	0.00	0.00	6
5421	0.00	0.00	0.00	11
5422	0.00	0.00	0.00	12
5423	0.00	0.00	0.00	8
5424	0.00	0.00	0.00	13
5425	0.00	0.00	0.00	4
5426	0.00	0.00	0.00	10
5427	0.00	0.00	0.00	9
5428	0.00	0.00	0.00	12
5429	0.00	0.00	0.00	11
5430	0.00	0.00	0.00	9
5431	0.00	0.00	0.00	15
5432	0.00	0.00	0.00	12
5433	0.00	0.00	0.00	8
5434	0.00	0.00	0.00	6
5435	0.00	0.00	0.00	12
5436	0.00	0.00	0.00	11
5437	0.00	0.00	0.00	10
5438	0.00	0.00	0.00	7
5439	0.00	0.00	0.00	9
5440	0.00	0.00	0.00	12
5441	0.00	0.00	0.00	10
5442	0.00	0.00	0.00	7
5443	0.00	0.00	0.00	12
5444	0.00	0.00	0.00	7
5445	0.00	0.00	0.00	9
5446	0.00	0.00	0.00	7
5447	0.00	0.00	0.00	6
5448	0.00	0.00	0.00	12
5449	0.00	0.00	0.00	9
5450	0.00	0.00	0.00	10
5451	0.00	0.00	0.00	6
5452	0.00	0.00	0.00	11
5453	0.00	0.00	0.00	7
5454	0.00	0.00	0.00	9
5455	0.00	0.00	0.00	11
5456	0.00	0.00	0.00	7
5457	0.00	0.00	0.00	9
5458	0.00	0.00	0.00	8
5459	0.00	0.00	0.00	11
5460	0.00	0.00	0.00	7
5461	0.00	0.00	0.00	11
5462	0.00	0.00	0.00	10
5463	0.00	0.00	0.00	9
5464	0.00	0.00	0.00	9
5465	0.00	0.00	0.00	7
5466	0.00	0.00	0.00	9
5467	0.00	0.00	0.00	14
5468	0.00	0.00	0.00	9
5469	0.00	0.00	0.00	12
5470	0.00	0.00	0.00	11
5471	0.00	0.00	0.00	8
5472	0.00	0.00	0.00	15
5473	0.00	0.00	0.00	4
5474	0.00	0.00	0.00	8
5475	0.00	0.00	0.00	9
5476	0.00	0.00	0.00	11
5477	0.00	0.00	0.00	8
5478	0.00	0.00	0.00	6
5479	0.00	0.00	0.00	7
5480	0.00	0.00	0.00	7
5481	0.00	0.00	0.00	10
5482	0.00	0.00	0.00	12
5483	0.00	0.00	0.00	6
5484	0.00	0.00	0.00	9
5485	0.00	0.00	0.00	8
5486	0.00	0.00	0.00	8
5487	0.00	0.00	0.00	9
5488	0.00	0.00	0.00	7
5489	0.00	0.00	0.00	10
5490	0.00	0.00	0.00	12
5491	0.00	0.00	0.00	6

```
       5492       0.00      0.00      0.00         8
       5493       0.00      0.00      0.00        13
       5494       0.00      0.00      0.00         6
       5495       0.00      0.00      0.00        10
       5496       0.00      0.00      0.00         7
       5497       0.00      0.00      0.00         9
       5498       0.00      0.00      0.00         6
       5499       0.00      0.00      0.00        13

avg / total       0.53      0.26      0.33    530065
```

In [ ]:

```
from sklearn.externals import joblib
joblib.dump(classifier, 'lr_with_equal_weight.pkl')
```

4.5 Modeling with less data points (0.5M data points) and more weight to title and 500 tags only.

In [6]:

```
sql_create_table = """CREATE TABLE IF NOT EXISTS QuestionsProcessed (question text NOT NULL, code
text, tags text, words_pre integer, words_post integer, is_code integer);"""
create_database_table("Titlemoreweight.db", sql_create_table)
```

```
Tables in the databse:
QuestionsProcessed
```

In [7]:

```
# http://www.sqlitetutorial.net/sqlite-delete/
# https://stackoverflow.com/questions/2279706/select-random-row-from-a-sqlite-table

read_db = 'train_no_dup.db'
write_db = 'Titlemoreweight.db'
train_datasize = 300000
if os.path.isfile(read_db):
    conn_r = create_connection(read_db)
    if conn_r is not None:
        reader =conn_r.cursor()
        # for selecting first 0.5M rows
        reader.execute("SELECT Title, Body, Tags From no_dup_train LIMIT 400001;")
        # for selecting random points
        #reader.execute("SELECT Title, Body, Tags From no_dup_train ORDER BY RANDOM() LIMIT
500001;")

if os.path.isfile(write_db):
    conn_w = create_connection(write_db)
    if conn_w is not None:
        tables = checkTableExists(conn_w)
        writer =conn_w.cursor()
        if tables != 0:
            writer.execute("DELETE FROM QuestionsProcessed WHERE 1")
            print("Cleared All the rows")
```

```
Tables in the databse:
QuestionsProcessed
Cleared All the rows
```

4.5.1 Preprocessing of questions

1. Separate Code from Body
2. Remove Spcial characters from Question title and description (not in code)
3. **Give more weightage to title : Add title three times to the question**
4. Remove stop words (Except 'C')
5. Remove HTML Tags

6. Convert all the characters into small letters
7. Use SnowballStemmer to stem the words

In [8]:

```
#http://www.bernzilla.com/2008/05/13/selecting-a-random-row-from-an-sqlite-table/
start = datetime.now()
preprocessed_data_list=[]
reader.fetchone()
questions_with_code=0
len_pre=0
len_post=0
questions_proccesed = 0
for row in reader:

    is_code = 0

    title, question, tags = row[0], row[1], str(row[2])

    if '<code>' in question:
        questions_with_code+=1
        is_code = 1
    x = len(question)+len(title)
    len_pre+=x

    code = str(re.findall(r'<code>(.*?)</code>', question, flags=re.DOTALL))

    question=re.sub('<code>(.*?)</code>', '', question, flags=re.MULTILINE|re.DOTALL)
    question=striphtml(question.encode('utf-8'))

    title=title.encode('utf-8')

    # adding title three time to the data to increase its weight
    # add tags string to the training data

    question=str(title)+" "+str(title)+" "+str(title)+" "+question

#     if questions_proccesed<=train_datasize:
#         question=str(title)+" "+str(title)+" "+str(title)+" "+question+" "+str(tags)
#     else:
#         question=str(title)+" "+str(title)+" "+str(title)+" "+question

    question=re.sub(r'[^A-Za-z0-9#+.\-]+',' ',question)
    words=word_tokenize(str(question.lower()))

    #Removing all single letter and and stopwords from question exceptt for the letter 'c'
    question=' '.join(str(stemmer.stem(j)) for j in words if j not in stop_words and (len(j)!=1 or
j=='c'))

    len_post+=len(question)
    tup = (question,code,tags,x,len(question),is_code)
    questions_proccesed += 1
    writer.execute("insert into
QuestionsProcessed(question,code,tags,words_pre,words_post,is_code) values (?,?,?,?,?,?)",tup)
    if (questions_proccesed%100000==0):
        print("number of questions completed=",questions_proccesed)

no_dup_avg_len_pre=(len_pre*1.0)/questions_proccesed
no_dup_avg_len_post=(len_post*1.0)/questions_proccesed

print( "Avg. length of questions(Title+Body) before processing: %d"%no_dup_avg_len_pre)
print( "Avg. length of questions(Title+Body) after processing: %d"%no_dup_avg_len_post)
print ("Percent of questions containing code: %d"%((questions_with_code*100.0)/questions_proccesed)
)

print("Time taken to run this cell :", datetime.now() - start)
```

```
number of questions completed= 100000
number of questions completed= 200000
number of questions completed= 300000
number of questions completed= 400000
Avg. length of questions(Title+Body) before processing: 1267
Avg. length of questions(Title+Body) after processing: 429
Percent of questions containing code: 57
Time taken to run this cell : 0:22:16.301066
```

In [9]:

```
# never forget to close the conections or else we will end up with database locks
conn_r.commit()
conn_w.commit()
conn_r.close()
conn_w.close()
```

Sample quesitons after preprocessing of data

In [0]:

```
if os.path.isfile(write_db):
    conn_r = create_connection(write_db)
    if conn_r is not None:
        reader =conn_r.cursor()
        reader.execute("SELECT question From QuestionsProcessed LIMIT 10")
        print("Questions after preprocessed")
        print('='*100)
        reader.fetchone()
        for row in reader:
            print(row)
            print('-'*100)
conn_r.commit()
conn_r.close()
```

```
Questions after preprocessed
====================================================================================================

('dynam datagrid bind silverlight dynam datagrid bind silverlight dynam datagrid bind silverlight
bind datagrid dynam code wrote code debug code block seem bind correct grid come column form come
grid column although necessari bind nthank repli advance..',)
----------------------------------------------------------------------------------------------------
('java.lang.noclassdeffounderror javax servlet jsp tagext taglibraryvalid
java.lang.noclassdeffounderror javax servlet jsp tagext taglibraryvalid
java.lang.noclassdeffounderror javax servlet jsp tagext taglibraryvalid follow guid link instal js
tl got follow error tri launch jsp page java.lang.noclassdeffounderror javax servlet jsp tagext ta
glibraryvalid taglib declar instal jstl 1.1 tomcat webapp tri project work also tri version 1.2 js
tl still messag caus solv',)
----------------------------------------------------------------------------------------------------
('java.sql.sqlexcept microsoft odbc driver manag invalid descriptor index java.sql.sqlexcept
microsoft odbc driver manag invalid descriptor index java.sql.sqlexcept microsoft odbc driver
manag invalid descriptor index use follow code display caus solv',)
----------------------------------------------------------------------------------------------------
('better way updat feed fb php sdk better way updat feed fb php sdk better way updat feed fb php s
dk novic facebook api read mani tutori still confused.i find post feed api method like correct sec
ond way use curl someth like way better',)
----------------------------------------------------------------------------------------------------
('btnadd click event open two window record ad btnadd click event open two window record ad btnadd
click event open two window record ad open window search.aspx use code hav add button search.aspx
nwhen insert record btnadd click event open anoth window nafter insert record close window',)
----------------------------------------------------------------------------------------------------
('sql inject issu prevent correct form submiss php sql inject issu prevent correct form submiss ph
p sql inject issu prevent correct form submiss php check everyth think make sure input field safe
type sql inject good news safe bad news one tag mess form submiss place even touch life figur exac
t html use templat file forgiv okay entir php script get execut see data post none forum field pos
t problem use someth titl field none data get post current use print post see submit noth work fla
wless statement though also mention script work flawless local machin use host come across problem
state list input test mess',)
----------------------------------------------------------------------------------------------------
('countabl subaddit lebesgu measur countabl subaddit lebesgu measur countabl subaddit lebesgu meas
ur let lbrace rbrace sequenc set sigma -algebra mathcal want show left bigcup right leq sum left r
ight countabl addit measur defin set sigma algebra mathcal think use monoton properti somewher pro
of start appreci littl help nthank ad han answer make follow addit construct given han answer clea
r bigcup bigcup cap emptyset neq left bigcup right left bigcup right sum left right also construct
subset monoton left right leq left right final would sum leq sum result follow',)
----------------------------------------------------------------------------------------------------
('hql equival sql queri hql equival sql queri hql equival sql queri hql queri replac name class pr
operti name error occur hql error',)
----------------------------------------------------------------------------------------------------
('undefin symbol architectur i386 objc class skpsmtpmessag referenc error undefin symbol
architectur i386 objc class skpsmtpmessag referenc error undefin symbol architectur i386 objc
class skpsmtpmessag referenc error import framework send email applic background import framework
```

```
i.e skpsmtpmessag somebodi suggest get error collect2 ld return exit status import framework corre
ct sorc taken framework follow mfmailcomposeviewcontrol question lock field updat answer drag drop
folder project click copi nthat',)
--------------------------------------------------------------------------------------------------------
```

Saving Preprocessed data to a Database

In [10]:

```
#Taking 0.5 Million entries to a dataframe.
write_db = 'Titlemoreweight.db'
if os.path.isfile(write_db):
    conn_r = create_connection(write_db)
    if conn_r is not None:
        preprocessed_data = pd.read_sql_query("""SELECT question, Tags FROM QuestionsProcessed""",
conn_r)
conn_r.commit()
conn_r.close()
```

In [11]:

```
preprocessed_data.head()
```

Out[11]:

	question	tags
0	dynam datagrid bind silverlight dynam datagrid...	c# silverlight data-binding
1	dynam datagrid bind silverlight dynam datagrid...	c# silverlight data-binding columns
2	java.lang.noclassdeffounderror javax servlet j...	jsp jstl
3	java.sql.sqlexcept microsoft odbc driver manag...	java jdbc
4	better way updat feed fb php sdk better way up...	facebook api facebook-php-sdk

In [12]:

```
print("number of data points in sample :", preprocessed_data.shape[0])
print("number of dimensions :", preprocessed_data.shape[1])
```

```
number of data points in sample : 400000
number of dimensions : 2
```

Converting string Tags to multilable output variables

In [13]:

```
vectorizer = CountVectorizer(tokenizer = lambda x: x.split(), binary='true')
multilabel_y = vectorizer.fit_transform(preprocessed_data['tags'])
```

Selecting 500 Tags

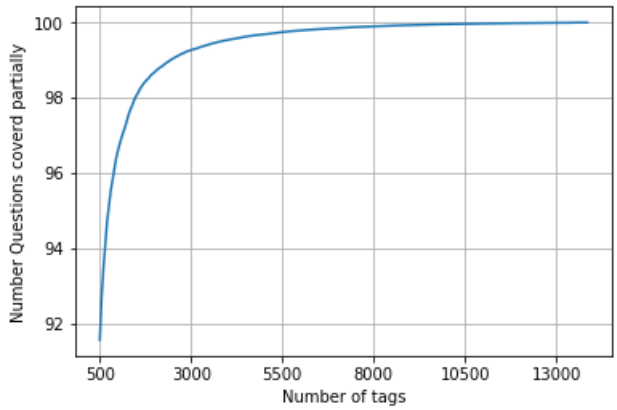
In [14]:

```
questions_explained = []
total_tags=multilabel_y.shape[1]
total_qs=preprocessed_data.shape[0]
for i in range(500, total_tags, 100):
    questions_explained.append(np.round(((total_qs-questions_explained_fn(i))/total_qs)*100,3))
```

In [15]:

```
fig, ax = plt.subplots()
ax.plot(questions_explained)
xlabel = list(500+np.array(range(-50,450,50))*50)
```

```
ax.set_xticklabels(xlabel)
plt.xlabel("Number of tags")
plt.ylabel("Number Questions coverd partially")
plt.grid()
plt.show()
# you can choose any number of tags based on your computing power, minimun is 500(it covers 90% of
the tags)
print("with ",5500,"tags we are covering ",questions_explained[50],"% of questions")
print("with ",500,"tags we are covering ",questions_explained[0],"% of questions")
```




```
with  5500 tags we are covering  99.267 % of questions
with  500 tags we are covering  91.572 % of questions
```

In [16]:

```
# we will be taking 500 tags
multilabel_yx = tags_to_choose(500)
print("number of questions that are not covered :", questions_explained_fn(500),"out of ", total_q
s)
```

```
number of questions that are not covered : 33710 out of  400000
```

In [17]:

```
x_train=preprocessed_data.head(train_datasize)
x_test=preprocessed_data.tail(preprocessed_data.shape[0] - 300000)

y_train = multilabel_yx[0:train_datasize,:]
y_test = multilabel_yx[train_datasize:preprocessed_data.shape[0],:]
```

In [18]:

```
print("Number of data points in train data :", y_train.shape)
print("Number of data points in test data :", y_test.shape)
```

```
Number of data points in train data : (300000, 500)
Number of data points in test data : (100000, 500)
```

4.5.2 Featurizing data with Tfidf vectorizer

In [ ]:

```
start = datetime.now()
vectorizer = TfidfVectorizer(min_df=0.00009, max_features=200000, smooth_idf=True, norm="l2", \
                             tokenizer = lambda x: x.split(), sublinear_tf=False, ngram_range=(1,3))
x_train_multilabel = vectorizer.fit_transform(x_train['question'])
x_test_multilabel = vectorizer.transform(x_test['question'])
print("Time taken to run this cell :", datetime.now() - start)
```

In [ ]:

```
print("Dimensions of train data X:",x_train_multilabel.shape, "Y :",y_train.shape)
print("Dimensions of test data X:",x_test_multilabel.shape,"Y:",y_test.shape)
```

```
print( Dimensions of test data X: ,x_test_multilabel.shape, Y: ,y_test.shape)
```

4.5.3 Applying Logistic Regression with OneVsRest Classifier

In [0]:

```
start = datetime.now()
classifier = OneVsRestClassifier(SGDClassifier(loss='log', alpha=0.00001, penalty='l1'), n_jobs=-1)
classifier.fit(x_train_multilabel, y_train)
predictions = classifier.predict (x_test_multilabel)


print("Accuracy :",metrics.accuracy_score(y_test, predictions))
print("Hamming loss ",metrics.hamming_loss(y_test,predictions))


precision = precision_score(y_test, predictions, average='micro')
recall = recall_score(y_test, predictions, average='micro')
f1 = f1_score(y_test, predictions, average='micro')

print("Micro-average quality numbers")
print("Precision: {:.4f}, Recall: {:.4f}, F1-measure: {:.4f}".format(precision, recall, f1))

precision = precision_score(y_test, predictions, average='macro')
recall = recall_score(y_test, predictions, average='macro')
f1 = f1_score(y_test, predictions, average='macro')

print("Macro-average quality numbers")
print("Precision: {:.4f}, Recall: {:.4f}, F1-measure: {:.4f}".format(precision, recall, f1))

print (metrics.classification_report(y_test, predictions))
print("Time taken to run this cell :", datetime.now() - start)
```

```
Accuracy : 0.23623
Hamming loss  0.00278088
Micro-average quality numbers
Precision: 0.7216, Recall: 0.3256, F1-measure: 0.4488
Macro-average quality numbers
Precision: 0.5473, Recall: 0.2572, F1-measure: 0.3339
              precision    recall  f1-score   support

           0       0.94      0.64      0.76      5519
           1       0.69      0.26      0.38      8190
           2       0.81      0.37      0.51      6529
           3       0.81      0.43      0.56      3231
           4       0.81      0.40      0.54      6430
           5       0.82      0.33      0.47      2879
           6       0.87      0.50      0.63      5086
           7       0.87      0.54      0.67      4533
           8       0.60      0.13      0.22      3000
           9       0.81      0.53      0.64      2765
          10       0.59      0.17      0.26      3051
          11       0.70      0.33      0.45      3009
          12       0.64      0.24      0.35      2630
          13       0.71      0.23      0.35      1426
          14       0.90      0.53      0.67      2548
          15       0.66      0.18      0.28      2371
          16       0.65      0.23      0.34       873
          17       0.89      0.61      0.72      2151
          18       0.62      0.23      0.33      2204
          19       0.71      0.40      0.51       831
          20       0.77      0.41      0.53      1860
          21       0.27      0.07      0.11      2023
          22       0.49      0.23      0.31      1513
          23       0.91      0.49      0.64      1207
          24       0.56      0.29      0.38       506
          25       0.68      0.30      0.42       425
          26       0.65      0.40      0.49       793
          27       0.60      0.32      0.42      1291
          28       0.75      0.36      0.48      1208
          29       0.42      0.09      0.15       406
          30       0.75      0.18      0.29       504
          31       0.29      0.10      0.14       732
          32       0.59      0.24      0.35       441
          33       0.56      0.18      0.27      1645
```

33	0.56	0.18	0.27	1645
34	0.71	0.25	0.37	1058
35	0.83	0.54	0.66	946
36	0.69	0.21	0.32	644
37	0.96	0.68	0.79	136
38	0.64	0.37	0.47	570
39	0.85	0.29	0.43	766
40	0.62	0.28	0.38	1132
41	0.46	0.19	0.27	174
42	0.81	0.51	0.63	210
43	0.80	0.41	0.54	433
44	0.66	0.50	0.57	626
45	0.75	0.32	0.45	852
46	0.75	0.42	0.54	534
47	0.34	0.14	0.20	350
48	0.74	0.51	0.60	496
49	0.79	0.62	0.70	785
50	0.16	0.04	0.06	475
51	0.33	0.10	0.15	305
52	0.50	0.04	0.07	251
53	0.68	0.40	0.50	914
54	0.45	0.16	0.23	728
55	0.31	0.02	0.03	258
56	0.46	0.19	0.27	821
57	0.47	0.09	0.15	541
58	0.78	0.27	0.41	748
59	0.94	0.62	0.75	724
60	0.34	0.07	0.12	660
61	0.83	0.19	0.31	235
62	0.91	0.71	0.80	718
63	0.83	0.63	0.71	468
64	0.55	0.33	0.41	191
65	0.36	0.11	0.17	429
66	0.29	0.05	0.08	415
67	0.76	0.49	0.60	274
68	0.82	0.52	0.64	510
69	0.67	0.45	0.54	466
70	0.30	0.06	0.10	305
71	0.49	0.15	0.23	247
72	0.79	0.47	0.59	401
73	0.98	0.73	0.84	86
74	0.73	0.36	0.48	120
75	0.89	0.68	0.77	129
76	0.50	0.00	0.01	473
77	0.36	0.25	0.30	143
78	0.79	0.44	0.57	347
79	0.72	0.23	0.35	479
80	0.53	0.30	0.39	279
81	0.78	0.18	0.29	461
82	0.16	0.01	0.02	298
83	0.77	0.45	0.56	396
84	0.55	0.33	0.41	184
85	0.67	0.21	0.32	573
86	0.48	0.05	0.09	325
87	0.48	0.27	0.35	273
88	0.43	0.21	0.28	135
89	0.28	0.06	0.10	232
90	0.55	0.30	0.39	409
91	0.63	0.25	0.36	420
92	0.76	0.53	0.63	408
93	0.69	0.49	0.58	241
94	0.31	0.04	0.07	211
95	0.34	0.08	0.12	277
96	0.26	0.03	0.05	410
97	0.90	0.33	0.48	501
98	0.76	0.57	0.65	136
99	0.54	0.31	0.40	239
100	0.55	0.13	0.21	324
101	0.93	0.59	0.72	277
102	0.92	0.70	0.79	613
103	0.48	0.17	0.25	157
104	0.21	0.05	0.09	295
105	0.84	0.34	0.49	334
106	0.77	0.12	0.21	335
107	0.75	0.50	0.60	389
108	0.58	0.24	0.34	251
109	0.54	0.40	0.46	317
110	0.78	0.07	0.14	187

110	0.78	0.07	0.14	187
111	0.54	0.10	0.17	140
112	0.56	0.24	0.34	154
113	0.64	0.18	0.28	332
114	0.44	0.27	0.33	323
115	0.47	0.22	0.30	344
116	0.77	0.49	0.60	370
117	0.57	0.22	0.32	313
118	0.78	0.68	0.73	874
119	0.50	0.21	0.29	293
120	0.00	0.00	0.00	200
121	0.77	0.48	0.59	463
122	0.40	0.10	0.16	119
123	0.75	0.01	0.02	256
124	0.91	0.70	0.79	195
125	0.40	0.12	0.18	138
126	0.79	0.49	0.60	376
127	0.14	0.03	0.05	122
128	0.14	0.03	0.05	252
129	0.45	0.10	0.16	144
130	0.44	0.08	0.14	150
131	0.14	0.01	0.02	210
132	0.66	0.26	0.37	361
133	0.94	0.54	0.69	453
134	0.89	0.72	0.79	124
135	0.31	0.04	0.08	91
136	0.68	0.27	0.38	128
137	0.57	0.35	0.43	218
138	0.77	0.15	0.25	243
139	0.39	0.18	0.25	149
140	0.76	0.43	0.55	318
141	0.29	0.11	0.16	159
142	0.66	0.36	0.47	274
143	0.86	0.72	0.79	362
144	0.59	0.17	0.26	118
145	0.65	0.36	0.46	164
146	0.58	0.27	0.37	461
147	0.66	0.39	0.49	159
148	0.32	0.13	0.19	166
149	0.98	0.46	0.62	346
150	0.62	0.08	0.14	350
151	0.90	0.64	0.74	55
152	0.79	0.45	0.58	387
153	0.52	0.10	0.17	150
154	0.60	0.12	0.20	281
155	0.30	0.05	0.09	202
156	0.76	0.62	0.68	130
157	0.26	0.07	0.11	245
158	0.88	0.58	0.70	177
159	0.49	0.26	0.34	130
160	0.50	0.13	0.21	336
161	0.93	0.57	0.71	220
162	0.12	0.02	0.03	229
163	0.90	0.41	0.56	316
164	0.74	0.34	0.47	283
165	0.63	0.32	0.43	197
166	0.48	0.24	0.32	101
167	0.47	0.18	0.26	231
168	0.58	0.21	0.31	370
169	0.44	0.20	0.27	258
170	0.29	0.05	0.08	101
171	0.39	0.22	0.29	89
172	0.50	0.32	0.39	193
173	0.44	0.22	0.29	309
174	0.51	0.14	0.22	172
175	0.94	0.71	0.81	95
176	0.94	0.59	0.73	346
177	0.92	0.45	0.60	322
178	0.64	0.46	0.54	232
179	0.35	0.06	0.11	125
180	0.56	0.27	0.36	145
181	0.37	0.09	0.15	77
182	0.17	0.02	0.04	182
183	0.61	0.32	0.42	257
184	0.08	0.01	0.02	216
185	0.36	0.07	0.11	242
186	0.39	0.16	0.23	165
187	0.76	0.57	0.65	263

187	0.76	0.57	0.65	263
188	0.31	0.10	0.15	174
189	0.71	0.29	0.41	136
190	0.88	0.49	0.63	202
191	0.42	0.16	0.23	134
192	0.71	0.40	0.51	230
193	0.44	0.18	0.25	90
194	0.57	0.47	0.52	185
195	0.16	0.04	0.06	156
196	0.41	0.07	0.13	160
197	0.57	0.06	0.11	266
198	0.39	0.05	0.09	284
199	0.35	0.06	0.10	145
200	0.94	0.70	0.80	212
201	0.67	0.21	0.32	317
202	0.78	0.53	0.63	427
203	0.31	0.08	0.13	232
204	0.51	0.23	0.32	217
205	0.48	0.43	0.45	527
206	0.13	0.02	0.03	124
207	0.52	0.11	0.18	103
208	0.89	0.49	0.63	287
209	0.33	0.08	0.13	193
210	0.72	0.31	0.44	220
211	0.82	0.19	0.31	140
212	0.14	0.02	0.03	161
213	0.52	0.21	0.30	72
214	0.60	0.44	0.51	396
215	0.87	0.34	0.49	134
216	0.53	0.06	0.11	400
217	0.53	0.24	0.33	75
218	0.97	0.76	0.85	219
219	0.74	0.36	0.48	210
220	0.90	0.59	0.71	298
221	0.97	0.59	0.73	266
222	0.78	0.41	0.54	290
223	0.09	0.01	0.01	128
224	0.80	0.40	0.53	159
225	0.59	0.29	0.39	164
226	0.63	0.36	0.46	144
227	0.56	0.32	0.40	276
228	0.15	0.02	0.03	235
229	0.23	0.01	0.03	216
230	0.36	0.18	0.24	228
231	0.70	0.47	0.56	64
232	0.44	0.07	0.12	103
233	0.71	0.30	0.42	216
234	0.71	0.09	0.15	116
235	0.60	0.40	0.48	77
236	0.96	0.64	0.77	67
237	0.54	0.06	0.11	218
238	0.26	0.05	0.08	139
239	0.17	0.01	0.02	94
240	0.55	0.30	0.39	77
241	0.50	0.08	0.14	167
242	0.83	0.28	0.42	86
243	0.40	0.14	0.21	58
244	0.64	0.19	0.29	269
245	0.19	0.05	0.08	112
246	0.95	0.73	0.83	255
247	0.46	0.19	0.27	58
248	0.25	0.02	0.04	81
249	0.00	0.00	0.00	131
250	0.40	0.20	0.27	93
251	0.67	0.28	0.39	154
252	0.40	0.05	0.08	129
253	0.61	0.30	0.40	83
254	0.38	0.09	0.14	191
255	0.15	0.02	0.04	219
256	0.35	0.05	0.08	130
257	0.46	0.29	0.36	93
258	0.69	0.41	0.52	217
259	0.32	0.09	0.14	141
260	0.95	0.13	0.23	143
261	0.52	0.11	0.17	219
262	0.53	0.28	0.37	107
263	0.39	0.23	0.29	236

264	0.26	0.17	0.21	119
265	0.34	0.14	0.20	72
266	0.00	0.00	0.00	70
267	0.28	0.12	0.17	107
268	0.66	0.41	0.51	169
269	0.29	0.09	0.14	129
270	0.74	0.52	0.61	159
271	0.82	0.33	0.47	190
272	0.62	0.22	0.33	248
273	0.91	0.70	0.79	264
274	0.92	0.63	0.75	105
275	0.62	0.08	0.14	104
276	0.14	0.02	0.03	115
277	0.83	0.60	0.70	170
278	0.66	0.24	0.35	145
279	0.91	0.60	0.72	230
280	0.57	0.41	0.48	80
281	0.67	0.55	0.61	217
282	0.74	0.47	0.58	175
283	0.33	0.06	0.11	269
284	0.65	0.27	0.38	74
285	0.86	0.50	0.63	206
286	0.90	0.59	0.71	227
287	0.85	0.30	0.44	130
288	0.35	0.06	0.11	129
289	0.50	0.03	0.05	80
290	0.13	0.06	0.08	99
291	0.77	0.31	0.44	208
292	0.25	0.03	0.05	67
293	0.81	0.43	0.56	109
294	0.40	0.24	0.30	140
295	0.24	0.08	0.12	241
296	0.22	0.08	0.12	72
297	0.22	0.04	0.06	107
298	0.77	0.38	0.51	61
299	0.93	0.35	0.51	77
300	0.18	0.06	0.09	111
301	0.00	0.00	0.00	126
302	0.00	0.00	0.00	73
303	0.57	0.35	0.44	176
304	0.96	0.71	0.82	230
305	0.95	0.60	0.74	156
306	0.51	0.37	0.43	146
307	0.29	0.08	0.13	98
308	0.00	0.00	0.00	78
309	0.78	0.07	0.14	94
310	0.76	0.35	0.48	162
311	0.81	0.52	0.63	116
312	0.48	0.26	0.34	57
313	0.75	0.05	0.09	65
314	0.50	0.36	0.42	138
315	0.54	0.21	0.30	195
316	0.43	0.23	0.30	69
317	0.35	0.10	0.15	134
318	0.49	0.34	0.40	148
319	0.85	0.44	0.58	161
320	0.20	0.14	0.17	104
321	0.86	0.55	0.67	156
322	0.59	0.33	0.42	134
323	0.56	0.36	0.44	232
324	0.41	0.17	0.24	92
325	0.45	0.30	0.36	197
326	0.10	0.02	0.03	126
327	0.45	0.04	0.08	115
328	0.98	0.64	0.77	198
329	0.61	0.30	0.40	125
330	0.78	0.17	0.28	81
331	0.50	0.09	0.15	94
332	1.00	0.02	0.04	56
333	0.15	0.03	0.05	260
334	0.20	0.03	0.06	60
335	0.28	0.07	0.12	110
336	0.64	0.42	0.51	71
337	0.13	0.03	0.05	66
338	0.45	0.31	0.37	150
339	0.00	0.00	0.00	54
340	0.85	0.53	0.65	195

341	0.93	0.18	0.30	79
342	0.41	0.18	0.25	38
343	0.68	0.40	0.50	43
344	0.52	0.22	0.31	68
345	0.69	0.40	0.50	73
346	0.27	0.03	0.05	116
347	0.89	0.36	0.51	111
348	0.30	0.10	0.14	63
349	0.83	0.62	0.71	104
350	0.63	0.43	0.51	44
351	0.70	0.17	0.28	40
352	0.98	0.39	0.56	136
353	0.44	0.22	0.30	54
354	0.43	0.04	0.08	134
355	0.59	0.28	0.38	120
356	0.51	0.21	0.29	228
357	0.66	0.28	0.39	269
358	0.69	0.36	0.48	80
359	0.87	0.41	0.56	140
360	0.37	0.13	0.19	125
361	0.89	0.61	0.72	169
362	0.11	0.04	0.05	56
363	0.94	0.66	0.77	154
364	0.45	0.09	0.14	58
365	0.23	0.11	0.15	71
366	1.00	0.63	0.77	54
367	0.33	0.04	0.08	116
368	0.00	0.00	0.00	54
369	0.00	0.00	0.00	71
370	0.20	0.03	0.06	61
371	0.40	0.06	0.10	71
372	0.66	0.48	0.56	52
373	0.79	0.36	0.50	150
374	0.33	0.13	0.19	93
375	0.14	0.03	0.05	67
376	0.00	0.00	0.00	76
377	0.73	0.18	0.29	106
378	0.27	0.03	0.06	86
379	0.33	0.07	0.12	14
380	1.00	0.40	0.57	122
381	0.19	0.03	0.05	104
382	0.28	0.08	0.12	66
383	0.50	0.28	0.36	110
384	0.00	0.00	0.00	155
385	0.36	0.08	0.13	50
386	0.25	0.11	0.15	64
387	0.36	0.05	0.09	93
388	0.59	0.28	0.38	102
389	0.07	0.01	0.02	108
390	0.96	0.65	0.78	178
391	0.62	0.17	0.27	115
392	0.78	0.43	0.55	42
393	0.00	0.00	0.00	134
394	0.50	0.02	0.03	112
395	0.38	0.11	0.17	176
396	0.48	0.10	0.16	125
397	0.73	0.21	0.33	224
398	0.90	0.56	0.69	63
399	0.00	0.00	0.00	59
400	0.47	0.30	0.37	63
401	0.46	0.17	0.25	98
402	0.57	0.17	0.26	162
403	0.41	0.14	0.21	83
404	0.73	0.84	0.78	19
405	0.30	0.07	0.11	92
406	0.83	0.12	0.21	41
407	0.64	0.33	0.43	43
408	0.82	0.34	0.48	160
409	0.14	0.08	0.10	50
410	0.00	0.00	0.00	19
411	0.37	0.10	0.15	175
412	0.33	0.06	0.10	72
413	0.56	0.05	0.10	95
414	0.19	0.03	0.05	97
415	0.33	0.17	0.22	48
416	0.45	0.30	0.36	83
417	0.50	0.07	0.13	40

418	0.33	0.07	0.11	91
419	0.51	0.30	0.38	90
420	0.29	0.22	0.25	37
421	0.00	0.00	0.00	66
422	0.61	0.34	0.44	73
423	0.48	0.25	0.33	56
424	0.93	0.82	0.87	33
425	0.00	0.00	0.00	76
426	0.25	0.05	0.08	81
427	0.99	0.67	0.80	150
428	0.95	0.66	0.78	29
429	0.99	0.70	0.82	389
430	0.63	0.35	0.45	167
431	0.48	0.08	0.14	123
432	0.43	0.33	0.38	39
433	0.30	0.16	0.21	82
434	1.00	0.64	0.78	66
435	0.66	0.45	0.54	93
436	0.51	0.25	0.34	87
437	0.22	0.05	0.08	86
438	0.74	0.47	0.58	104
439	0.62	0.13	0.21	100
440	0.20	0.01	0.01	141
441	0.43	0.24	0.31	110
442	0.37	0.13	0.19	123
443	0.47	0.11	0.18	71
444	0.39	0.06	0.11	109
445	0.39	0.19	0.25	48
446	0.43	0.25	0.32	76
447	0.28	0.13	0.18	38
448	0.68	0.52	0.59	81
449	0.53	0.14	0.23	132
450	0.47	0.28	0.35	81
451	0.88	0.29	0.44	76
452	0.00	0.00	0.00	44
453	0.00	0.00	0.00	44
454	0.94	0.43	0.59	70
455	0.30	0.04	0.07	155
456	0.47	0.16	0.24	43
457	0.48	0.19	0.28	72
458	0.31	0.08	0.13	62
459	0.71	0.14	0.24	69
460	0.08	0.01	0.02	119
461	0.79	0.14	0.24	79
462	0.69	0.23	0.35	47
463	0.20	0.04	0.06	104
464	0.66	0.33	0.44	106
465	0.50	0.11	0.18	64
466	0.56	0.28	0.37	173
467	0.81	0.36	0.50	107
468	0.82	0.11	0.20	126
469	0.00	0.00	0.00	114
470	0.94	0.79	0.86	140
471	0.92	0.28	0.43	79
472	0.41	0.30	0.35	143
473	0.69	0.30	0.42	158
474	0.36	0.07	0.11	138
475	0.00	0.00	0.00	59
476	0.57	0.30	0.39	88
477	0.86	0.56	0.68	176
478	0.94	0.71	0.81	24
479	0.09	0.01	0.02	92
480	0.82	0.50	0.62	100
481	0.47	0.17	0.26	103
482	0.47	0.23	0.31	74
483	0.85	0.57	0.68	105
484	0.25	0.02	0.04	83
485	0.17	0.01	0.02	82
486	0.36	0.11	0.17	71
487	0.43	0.18	0.26	120
488	0.33	0.02	0.04	105
489	0.72	0.30	0.42	87
490	1.00	0.81	0.90	32
491	0.00	0.00	0.00	69
492	0.00	0.00	0.00	49
493	0.00	0.00	0.00	117
494	0.52	0.18	0.27	61

```
         495       0.98      0.65      0.78       344
         496       0.36      0.19      0.25        52
         497       0.60      0.18      0.28       137
         498       0.33      0.04      0.07        98
         499       0.65      0.16      0.26        79

avg / total       0.67      0.33      0.43    173812

Time taken to run this cell : 0:10:14.264591
```

In [0]:

```
joblib.dump(classifier, 'lr_with_more_title_weight.pkl')
```

Out[0]:

```
['lr_with_more_title_weight.pkl']
```

In [0]:

```
start = datetime.now()
classifier_2 = OneVsRestClassifier(LogisticRegression(penalty='l1'), n_jobs=-1)
classifier_2.fit(x_train_multilabel, y_train)
predictions_2 = classifier_2.predict(x_test_multilabel)
print("Accuracy :",metrics.accuracy_score(y_test, predictions_2))
print("Hamming loss ",metrics.hamming_loss(y_test,predictions_2))


precision = precision_score(y_test, predictions_2, average='micro')
recall = recall_score(y_test, predictions_2, average='micro')
f1 = f1_score(y_test, predictions_2, average='micro')

print("Micro-average quality numbers")
print("Precision: {:.4f}, Recall: {:.4f}, F1-measure: {:.4f}".format(precision, recall, f1))

precision = precision_score(y_test, predictions_2, average='macro')
recall = recall_score(y_test, predictions_2, average='macro')
f1 = f1_score(y_test, predictions_2, average='macro')

print("Macro-average quality numbers")
print("Precision: {:.4f}, Recall: {:.4f}, F1-measure: {:.4f}".format(precision, recall, f1))

print (metrics.classification_report(y_test, predictions_2))
print("Time taken to run this cell :", datetime.now() - start)
```

```
Accuracy : 0.25108
Hamming loss  0.00270302
Micro-average quality numbers
Precision: 0.7172, Recall: 0.3672, F1-measure: 0.4858
Macro-average quality numbers
Precision: 0.5570, Recall: 0.2950, F1-measure: 0.3710
             precision    recall  f1-score   support

          0       0.94      0.72      0.82      5519
          1       0.70      0.34      0.45      8190
          2       0.80      0.42      0.55      6529
          3       0.82      0.49      0.61      3231
          4       0.80      0.44      0.57      6430
          5       0.82      0.38      0.52      2879
          6       0.86      0.53      0.66      5086
          7       0.87      0.58      0.70      4533
          8       0.60      0.13      0.22      3000
          9       0.82      0.57      0.67      2765
         10       0.60      0.20      0.30      3051
         11       0.68      0.38      0.49      3009
         12       0.62      0.29      0.40      2630
         13       0.73      0.30      0.43      1426
         14       0.89      0.57      0.70      2548
         15       0.65      0.23      0.34      2371
         16       0.65      0.25      0.37       873
         17       0.89      0.63      0.74      2151
         18       0.60      0.25      0.35      2204
         19       0.71      0.41      0.52       831
         20       0.76      0.47      0.58      1860
```

21	0.29	0.09	0.14	2023
22	0.52	0.24	0.33	1513
23	0.89	0.55	0.68	1207
24	0.56	0.28	0.38	506
25	0.69	0.34	0.45	425
26	0.65	0.43	0.52	793
27	0.62	0.38	0.47	1291
28	0.74	0.39	0.51	1208
29	0.46	0.10	0.17	406
30	0.76	0.21	0.33	504
31	0.26	0.08	0.12	732
32	0.60	0.29	0.39	441
33	0.60	0.27	0.38	1645
34	0.69	0.26	0.38	1058
35	0.83	0.58	0.68	946
36	0.65	0.24	0.35	644
37	0.98	0.65	0.78	136
38	0.62	0.38	0.47	570
39	0.84	0.31	0.45	766
40	0.59	0.35	0.44	1132
41	0.47	0.18	0.26	174
42	0.76	0.49	0.59	210
43	0.75	0.42	0.54	433
44	0.66	0.52	0.58	626
45	0.71	0.36	0.47	852
46	0.77	0.45	0.57	534
47	0.37	0.15	0.22	350
48	0.75	0.52	0.62	496
49	0.78	0.64	0.71	785
50	0.21	0.06	0.09	475
51	0.37	0.13	0.19	305
52	0.42	0.03	0.06	251
53	0.66	0.40	0.50	914
54	0.49	0.17	0.26	728
55	0.47	0.03	0.05	258
56	0.45	0.24	0.31	821
57	0.46	0.10	0.17	541
58	0.76	0.31	0.45	748
59	0.94	0.66	0.77	724
60	0.35	0.10	0.15	660
61	0.78	0.20	0.31	235
62	0.92	0.74	0.82	718
63	0.83	0.69	0.75	468
64	0.55	0.36	0.43	191
65	0.33	0.11	0.17	429
66	0.29	0.06	0.10	415
67	0.74	0.50	0.59	274
68	0.82	0.53	0.64	510
69	0.67	0.45	0.54	466
70	0.30	0.09	0.13	305
71	0.49	0.17	0.25	247
72	0.78	0.53	0.64	401
73	0.99	0.77	0.86	86
74	0.72	0.42	0.53	120
75	0.92	0.67	0.78	129
76	0.47	0.02	0.04	473
77	0.40	0.29	0.33	143
78	0.79	0.49	0.60	347
79	0.69	0.25	0.36	479
80	0.56	0.34	0.43	279
81	0.70	0.23	0.34	461
82	0.34	0.04	0.07	298
83	0.78	0.50	0.61	396
84	0.55	0.29	0.38	184
85	0.61	0.24	0.35	573
86	0.50	0.07	0.12	325
87	0.51	0.29	0.37	273
88	0.49	0.21	0.30	135
89	0.36	0.11	0.17	232
90	0.56	0.34	0.43	409
91	0.61	0.27	0.37	420
92	0.78	0.57	0.66	408
93	0.66	0.44	0.53	241
94	0.30	0.04	0.07	211
95	0.37	0.10	0.15	277
96	0.28	0.04	0.07	410
97	0.86	0.43	0.57	501

98	0.75	0.63	0.69	136
99	0.54	0.34	0.42	239
100	0.57	0.15	0.24	324
101	0.91	0.68	0.78	277
102	0.91	0.75	0.82	613
103	0.47	0.17	0.25	157
104	0.22	0.06	0.10	295
105	0.75	0.43	0.55	334
106	0.88	0.28	0.43	335
107	0.75	0.54	0.63	389
108	0.58	0.27	0.37	251
109	0.58	0.45	0.51	317
110	0.68	0.10	0.18	187
111	0.73	0.11	0.20	140
112	0.67	0.43	0.52	154
113	0.58	0.20	0.29	332
114	0.46	0.27	0.34	323
115	0.47	0.26	0.33	344
116	0.75	0.55	0.63	370
117	0.58	0.24	0.34	313
118	0.78	0.73	0.75	874
119	0.45	0.21	0.29	293
120	0.11	0.01	0.01	200
121	0.77	0.51	0.61	463
122	0.32	0.10	0.15	119
123	0.67	0.02	0.03	256
124	0.91	0.70	0.79	195
125	0.44	0.14	0.21	138
126	0.81	0.53	0.64	376
127	0.27	0.03	0.06	122
128	0.20	0.04	0.07	252
129	0.48	0.22	0.30	144
130	0.42	0.11	0.18	150
131	0.33	0.03	0.06	210
132	0.65	0.28	0.39	361
133	0.92	0.59	0.72	453
134	0.89	0.77	0.82	124
135	0.31	0.05	0.09	91
136	0.69	0.28	0.40	128
137	0.55	0.38	0.45	218
138	0.67	0.18	0.28	243
139	0.45	0.18	0.26	149
140	0.77	0.46	0.58	318
141	0.32	0.10	0.15	159
142	0.63	0.38	0.47	274
143	0.85	0.79	0.82	362
144	0.54	0.21	0.30	118
145	0.63	0.39	0.48	164
146	0.54	0.31	0.39	461
147	0.68	0.45	0.54	159
148	0.30	0.12	0.17	166
149	0.97	0.55	0.70	346
150	0.64	0.13	0.21	350
151	0.93	0.67	0.78	55
152	0.78	0.52	0.63	387
153	0.51	0.17	0.25	150
154	0.58	0.12	0.21	281
155	0.25	0.06	0.10	202
156	0.81	0.67	0.73	130
157	0.28	0.06	0.10	245
158	0.93	0.63	0.75	177
159	0.53	0.34	0.41	130
160	0.48	0.18	0.26	336
161	0.90	0.65	0.75	220
162	0.28	0.06	0.09	229
163	0.87	0.44	0.58	316
164	0.78	0.44	0.56	283
165	0.60	0.34	0.44	197
166	0.65	0.43	0.51	101
167	0.45	0.18	0.26	231
168	0.56	0.27	0.36	370
169	0.40	0.21	0.27	258
170	0.36	0.08	0.13	101
171	0.38	0.24	0.29	89
172	0.53	0.36	0.43	193
173	0.47	0.26	0.33	309
174	0.62	0.14	0.23	172

175	0.92	0.73	0.81	95
176	0.93	0.62	0.74	346
177	0.86	0.57	0.69	322
178	0.65	0.51	0.57	232
179	0.20	0.04	0.07	125
180	0.65	0.33	0.44	145
181	0.44	0.10	0.17	77
182	0.26	0.06	0.10	182
183	0.60	0.32	0.41	257
184	0.21	0.03	0.05	216
185	0.35	0.09	0.14	242
186	0.43	0.18	0.25	165
187	0.75	0.59	0.66	263
188	0.39	0.12	0.18	174
189	0.75	0.40	0.53	136
190	0.89	0.55	0.68	202
191	0.44	0.16	0.24	134
192	0.68	0.40	0.51	230
193	0.44	0.18	0.25	90
194	0.57	0.48	0.52	185
195	0.26	0.05	0.09	156
196	0.33	0.07	0.11	160
197	0.49	0.10	0.16	266
198	0.47	0.13	0.20	284
199	0.32	0.04	0.07	145
200	0.93	0.74	0.82	212
201	0.65	0.26	0.37	317
202	0.78	0.59	0.67	427
203	0.36	0.11	0.17	232
204	0.51	0.29	0.37	217
205	0.50	0.46	0.48	527
206	0.24	0.03	0.06	124
207	0.50	0.17	0.26	103
208	0.85	0.53	0.65	287
209	0.33	0.11	0.16	193
210	0.75	0.38	0.50	220
211	0.72	0.21	0.32	140
212	0.12	0.02	0.03	161
213	0.63	0.43	0.51	72
214	0.64	0.45	0.53	396
215	0.87	0.34	0.49	134
216	0.61	0.17	0.27	400
217	0.51	0.24	0.33	75
218	0.96	0.76	0.85	219
219	0.77	0.42	0.54	210
220	0.88	0.64	0.74	298
221	0.96	0.70	0.81	266
222	0.76	0.45	0.57	290
223	0.11	0.01	0.01	128
224	0.78	0.45	0.57	159
225	0.55	0.29	0.38	164
226	0.58	0.31	0.41	144
227	0.56	0.29	0.38	276
228	0.19	0.03	0.05	235
229	0.33	0.03	0.06	216
230	0.40	0.17	0.23	228
231	0.70	0.48	0.57	64
232	0.48	0.10	0.16	103
233	0.72	0.35	0.47	216
234	0.72	0.11	0.19	116
235	0.54	0.36	0.43	77
236	0.90	0.67	0.77	67
237	0.57	0.12	0.20	218
238	0.40	0.14	0.20	139
239	0.00	0.00	0.00	94
240	0.54	0.34	0.42	77
241	0.47	0.08	0.14	167
242	0.78	0.37	0.50	86
243	0.40	0.10	0.16	58
244	0.62	0.27	0.38	269
245	0.16	0.04	0.07	112
246	0.95	0.76	0.84	255
247	0.44	0.24	0.31	58
248	0.44	0.05	0.09	81
249	0.23	0.02	0.04	131
250	0.43	0.24	0.31	93
251	0.61	0.29	0.39	154

252	0.36	0.04	0.07	129
253	0.69	0.40	0.50	83
254	0.34	0.08	0.13	191
255	0.15	0.03	0.05	219
256	0.32	0.05	0.09	130
257	0.48	0.26	0.34	93
258	0.65	0.48	0.55	217
259	0.41	0.13	0.20	141
260	0.86	0.17	0.29	143
261	0.62	0.17	0.27	219
262	0.55	0.27	0.36	107
263	0.41	0.27	0.32	236
264	0.33	0.22	0.26	119
265	0.57	0.24	0.33	72
266	0.00	0.00	0.00	70
267	0.36	0.14	0.20	107
268	0.67	0.44	0.53	169
269	0.32	0.14	0.19	129
270	0.74	0.53	0.62	159
271	0.88	0.48	0.62	190
272	0.61	0.27	0.37	248
273	0.90	0.75	0.82	264
274	0.90	0.68	0.77	105
275	0.52	0.12	0.20	104
276	0.08	0.01	0.02	115
277	0.83	0.63	0.72	170
278	0.74	0.41	0.52	145
279	0.90	0.70	0.78	230
280	0.58	0.42	0.49	80
281	0.66	0.54	0.59	217
282	0.75	0.50	0.60	175
283	0.33	0.13	0.18	269
284	0.65	0.32	0.43	74
285	0.82	0.49	0.61	206
286	0.89	0.66	0.75	227
287	0.84	0.41	0.55	130
288	0.32	0.07	0.11	129
289	0.57	0.05	0.09	80
290	0.21	0.09	0.13	99
291	0.76	0.35	0.48	208
292	0.42	0.07	0.13	67
293	0.84	0.48	0.61	109
294	0.46	0.26	0.34	140
295	0.24	0.12	0.16	241
296	0.31	0.12	0.18	72
297	0.44	0.11	0.18	107
298	0.77	0.49	0.60	61
299	0.89	0.51	0.64	77
300	0.21	0.08	0.12	111
301	0.00	0.00	0.00	126
302	0.25	0.01	0.03	73
303	0.57	0.43	0.49	176
304	0.91	0.79	0.85	230
305	0.92	0.72	0.81	156
306	0.50	0.37	0.43	146
307	0.34	0.11	0.17	98
308	0.00	0.00	0.00	78
309	0.80	0.13	0.22	94
310	0.74	0.41	0.53	162
311	0.79	0.51	0.62	116
312	0.52	0.28	0.36	57
313	0.83	0.08	0.14	65
314	0.52	0.36	0.42	138
315	0.54	0.22	0.31	195
316	0.56	0.35	0.43	69
317	0.29	0.13	0.18	134
318	0.56	0.39	0.46	148
319	0.84	0.50	0.63	161
320	0.24	0.19	0.21	104
321	0.82	0.61	0.70	156
322	0.60	0.37	0.46	134
323	0.58	0.44	0.50	232
324	0.34	0.15	0.21	92
325	0.41	0.24	0.31	197
326	0.14	0.03	0.05	126
327	0.20	0.03	0.05	115
328	0.99	0.70	0.82	198

329	0.59	0.32	0.41	125
330	0.73	0.20	0.31	81
331	0.45	0.10	0.16	94
332	0.54	0.12	0.20	56
333	0.19	0.05	0.08	260
334	0.42	0.13	0.20	60
335	0.35	0.08	0.13	110
336	0.62	0.49	0.55	71
337	0.18	0.05	0.07	66
338	0.47	0.36	0.41	150
339	0.00	0.00	0.00	54
340	0.84	0.57	0.68	195
341	0.91	0.52	0.66	79
342	0.38	0.26	0.31	38
343	0.62	0.42	0.50	43
344	0.56	0.29	0.38	68
345	0.62	0.33	0.43	73
346	0.14	0.03	0.04	116
347	0.86	0.43	0.57	111
348	0.33	0.11	0.17	63
349	0.84	0.65	0.74	104
350	0.62	0.48	0.54	44
351	0.57	0.30	0.39	40
352	0.93	0.57	0.70	136
353	0.38	0.15	0.21	54
354	0.39	0.09	0.15	134
355	0.64	0.35	0.45	120
356	0.54	0.29	0.38	228
357	0.66	0.36	0.47	269
358	0.62	0.38	0.47	80
359	0.84	0.59	0.69	140
360	0.39	0.18	0.24	125
361	0.90	0.71	0.79	169
362	0.14	0.05	0.08	56
363	0.92	0.73	0.82	154
364	0.46	0.10	0.17	58
365	0.22	0.08	0.12	71
366	1.00	0.69	0.81	54
367	0.30	0.07	0.11	116
368	0.38	0.06	0.10	54
369	0.33	0.03	0.05	71
370	0.00	0.00	0.00	61
371	0.40	0.08	0.14	71
372	0.72	0.44	0.55	52
373	0.78	0.41	0.54	150
374	0.41	0.14	0.21	93
375	0.20	0.04	0.07	67
376	0.00	0.00	0.00	76
377	0.58	0.28	0.38	106
378	0.25	0.02	0.04	86
379	0.50	0.14	0.22	14
380	0.93	0.52	0.67	122
381	0.23	0.07	0.10	104
382	0.46	0.20	0.28	66
383	0.54	0.35	0.42	110
384	0.14	0.01	0.01	155
385	0.69	0.22	0.33	50
386	0.20	0.06	0.10	64
387	0.32	0.08	0.12	93
388	0.53	0.24	0.33	102
389	0.07	0.01	0.02	108
390	0.96	0.68	0.80	178
391	0.49	0.17	0.26	115
392	0.81	0.40	0.54	42
393	0.00	0.00	0.00	134
394	0.22	0.04	0.06	112
395	0.54	0.27	0.36	176
396	0.47	0.13	0.20	125
397	0.74	0.37	0.49	224
398	0.84	0.67	0.74	63
399	0.30	0.05	0.09	59
400	0.51	0.32	0.39	63
401	0.49	0.23	0.32	98
402	0.51	0.19	0.27	162
403	0.38	0.14	0.21	83
404	0.76	0.84	0.80	19
405	0.34	0.11	0.17	92

406	0.69	0.22	0.33	41
407	0.64	0.37	0.47	43
408	0.80	0.46	0.58	160
409	0.20	0.12	0.15	50
410	0.00	0.00	0.00	19
411	0.35	0.11	0.17	175
412	0.28	0.07	0.11	72
413	0.38	0.05	0.09	95
414	0.12	0.02	0.04	97
415	0.33	0.10	0.16	48
416	0.53	0.35	0.42	83
417	0.43	0.07	0.13	40
418	0.48	0.16	0.25	91
419	0.53	0.37	0.43	90
420	0.38	0.27	0.32	37
421	0.04	0.02	0.02	66
422	0.69	0.45	0.55	73
423	0.48	0.25	0.33	56
424	0.94	0.88	0.91	33
425	0.00	0.00	0.00	76
426	0.27	0.05	0.08	81
427	0.98	0.73	0.84	150
428	0.95	0.69	0.80	29
429	0.99	0.93	0.96	389
430	0.63	0.40	0.49	167
431	0.57	0.11	0.18	123
432	0.52	0.31	0.39	39
433	0.33	0.21	0.25	82
434	1.00	0.70	0.82	66
435	0.55	0.38	0.45	93
436	0.56	0.37	0.44	87
437	0.10	0.02	0.04	86
438	0.72	0.53	0.61	104
439	0.54	0.13	0.21	100
440	0.38	0.04	0.06	141
441	0.43	0.33	0.37	110
442	0.37	0.15	0.22	123
443	0.57	0.18	0.28	71
444	0.32	0.06	0.11	109
445	0.45	0.31	0.37	48
446	0.47	0.29	0.36	76
447	0.39	0.18	0.25	38
448	0.67	0.54	0.60	81
449	0.67	0.26	0.37	132
450	0.42	0.27	0.33	81
451	0.89	0.32	0.47	76
452	0.00	0.00	0.00	44
453	0.00	0.00	0.00	44
454	0.84	0.51	0.64	70
455	0.39	0.18	0.25	155
456	0.50	0.21	0.30	43
457	0.54	0.28	0.37	72
458	0.35	0.13	0.19	62
459	0.63	0.25	0.35	69
460	0.00	0.00	0.00	119
461	0.71	0.19	0.30	79
462	0.61	0.23	0.34	47
463	0.39	0.14	0.21	104
464	0.70	0.42	0.52	106
465	0.64	0.22	0.33	64
466	0.55	0.35	0.43	173
467	0.78	0.42	0.55	107
468	0.56	0.26	0.36	126
469	0.20	0.01	0.02	114
470	0.93	0.81	0.87	140
471	0.85	0.42	0.56	79
472	0.40	0.35	0.37	143
473	0.67	0.37	0.47	158
474	0.48	0.10	0.17	138
475	0.00	0.00	0.00	59
476	0.63	0.33	0.43	88
477	0.83	0.65	0.73	176
478	0.95	0.79	0.86	24
479	0.22	0.04	0.07	92
480	0.79	0.50	0.61	100
481	0.51	0.28	0.36	103
482	0.40	0.22	0.28	74

```
          483       0.78      0.63      0.69       105
          484       0.20      0.02      0.04        83
          485       0.20      0.02      0.04        82
          486       0.48      0.15      0.23        71
          487       0.45      0.21      0.29       120
          488       0.50      0.06      0.10       105
          489       0.73      0.37      0.49        87
          490       1.00      0.81      0.90        32
          491       0.33      0.03      0.05        69
          492       0.33      0.02      0.04        49
          493       0.11      0.02      0.03       117
          494       0.52      0.23      0.32        61
          495       0.95      0.79      0.87       344
          496       0.32      0.13      0.19        52
          497       0.59      0.28      0.38       137
          498       0.31      0.10      0.15        98
          499       0.48      0.20      0.29        79

avg / total       0.67      0.37      0.46    173812

Time taken to run this cell : 1:09:41.236859
```

5. Assignments

1. Use bag of words upto 4 grams and compute the micro f1 score with Logistic regression(OvR)
2. Perform hyperparam tuning on alpha (or lambda) for Logistic regression to improve the performance using GridSearch
3. Try OneVsRestClassifier with Linear-SVM (SGDClassifier with loss-hinge)

BOW

In [19]:

```
start = datetime.now()
vectorizer = CountVectorizer(min_df=0.00009, max_features=50000, \
                             tokenizer = lambda x: x.split(),  ngram_range=(1,3))
x_train_multilabel = vectorizer.fit_transform(x_train['question'])
x_test_multilabel = vectorizer.transform(x_test['question'])
print("Time taken to run this cell :", datetime.now() - start)
```

```
Time taken to run this cell : 0:30:09.463701
```

In [ ]:

```
from sklearn.linear_model import LogisticRegression
from tqdm import tqdm

tr_acc=[]
cv_acc=[]
loglamdas=[]

lambdainv=[0.00001,0.0001,0.001,0.01,0.1,1,10,100,1000,10000]

for i in tqdm(lambdainv):
    start = datetime.now()
    classifier = OneVsRestClassifier(LogisticRegression(C=i,penalty='l1'))
    classifier.fit(x_train_multilabel, y_train)
    predictions = classifier.predict (x_test_multilabel)

    print("Accuracy :",metrics.accuracy_score(y_test, predictions))
    print("Hamming loss ",metrics.hamming_loss(y_test,predictions))


    precision = precision_score(y_test, predictions, average='micro')
    recall = recall_score(y_test, predictions, average='micro')
    f1 = f1_score(y_test, predictions, average='micro')

    print("Micro-average quality numbers")
    print("Precision: {:.4f}, Recall: {:.4f}, F1-measure: {:.4f}".format(precision, recall, f1))
```

```
  0%|          | 0/10 [00:00<?, ?it/s]/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143: UndefinedMetricWarning: Precision is ill-defined and being set to 0.0 due to no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143: UndefinedMetricWarning: F-score is ill-defined and being set to 0.0 due to no predicted samples.
  'precision', 'predicted', average, warn_for)
 10%|▉         | 1/10 [17:30<2:37:30, 1050.10s/it]
```

```
Accuracy : 0.11033
Hamming loss  0.0035904
Micro-average quality numbers
Precision: 0.0000, Recall: 0.0000, F1-measure: 0.0000
```

```
 20%|██        | 2/10 [43:51<2:41:15, 1209.44s/it]
```

```
Accuracy : 0.11666
Hamming loss  0.00354844
Micro-average quality numbers
Precision: 0.8754, Recall: 0.0136, F1-measure: 0.0268
```

```
 30%|███       | 3/10 [1:17:02<2:48:28, 1444.06s/it]
```

```
Accuracy : 0.15281
Hamming loss  0.00328618
Micro-average quality numbers
Precision: 0.7925, Recall: 0.1148, F1-measure: 0.2005
```

```
 40%|████      | 4/10 [2:04:52<3:07:11, 1871.86s/it]
```

```
Accuracy : 0.19789
Hamming loss  0.003043
Micro-average quality numbers
Precision: 0.7189, Recall: 0.2504, F1-measure: 0.3714
```

```
 50%|█████     | 5/10 [12:06:31<16:51:38, 12139.80s/it]
```

```
Accuracy : 0.2281
Hamming loss  0.00291064
Micro-average quality numbers
Precision: 0.6945, Recall: 0.3380, F1-measure: 0.4547
```

```
 60%|██████    | 6/10 [14:48:34<12:40:58, 11414.73s/it]
```

```
Accuracy : 0.20188
Hamming loss  0.00328332
Micro-average quality numbers
Precision: 0.5589, Recall: 0.4055, F1-measure: 0.4700
```

```
 70%|███████   | 7/10 [18:24:33<9:53:54, 11878.07s/it]
```

```
Accuracy : 0.17269
Hamming loss  0.00365364
Micro-average quality numbers
Precision: 0.4898, Recall: 0.4235, F1-measure: 0.4543
```

In [22]:

```
from tqdm import tqdm

lambdainv=[0.0001,0.001,0.01,0.1,1,10,100]

for i in tqdm(lambdainv):
    start = datetime.now()
```

```
    classifier = OneVsRestClassifier(SGDClassifier(loss='hinge', alpha=i))
    classifier.fit(x_train_multilabel, y_train)
    predictions = classifier.predict (x_test_multilabel)


    print("Accuracy :",metrics.accuracy_score(y_test, predictions))
    print("Hamming loss ",metrics.hamming_loss(y_test,predictions))


    precision = precision_score(y_test, predictions, average='micro')
    recall = recall_score(y_test, predictions, average='micro')
    f1 = f1_score(y_test, predictions, average='micro')

    print("Micro-average quality numbers")
    print("Precision: {:.4f}, Recall: {:.4f}, F1-measure: {:.4f}".format(precision, recall, f1))

    precision = precision_score(y_test, predictions, average='macro')
    recall = recall_score(y_test, predictions, average='macro')
    f1 = f1_score(y_test, predictions, average='macro')

    print("Macro-average quality numbers")
    print("Precision: {:.4f}, Recall: {:.4f}, F1-measure: {:.4f}".format(precision, recall, f1))

    print (metrics.classification_report(y_test, predictions))
    print("Time taken to run this cell :", datetime.now() - start)
```

```
  0%|          | 0/7 [00:00<?, ?it/s]
```

```
Accuracy : 0.22092
Hamming loss  0.00297816
Micro-average quality numbers
Precision: 0.6941, Recall: 0.4371, F1-measure: 0.5364
Macro-average quality numbers
Precision: 0.4945, Recall: 0.2888, F1-measure: 0.3473
```

```
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in samples with
no predicted labels.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1145:
UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in samples with no
true labels.
  'recall', 'true', average, warn_for)

 14%|          | 1/7 [09:42<58:15, 582.62s/it]
```

	precision	recall	f1-score	support
0	0.82	0.68	0.75	2858
1	0.84	0.61	0.71	22917
2	0.58	0.39	0.46	3660
3	0.93	0.86	0.89	14867
4	0.67	0.32	0.43	2382
5	0.53	0.41	0.46	3643
6	0.61	0.44	0.51	4086
7	0.35	0.13	0.19	3831
8	0.90	0.89	0.89	9219
9	0.72	0.50	0.59	2609
10	0.43	0.31	0.36	4064
11	0.65	0.21	0.31	1652
12	0.67	0.48	0.56	5162
13	0.52	0.26	0.34	1497
14	0.57	0.27	0.37	587
15	0.47	0.21	0.29	1470
16	0.84	0.55	0.66	1409
17	0.62	0.43	0.51	566
18	0.68	0.50	0.58	1336
19	0.50	0.28	0.36	1181
20	0.64	0.53	0.58	685
21	0.54	0.18	0.26	1187
22	0.26	0.07	0.11	1268
23	0.79	0.57	0.67	2048
24	0.50	0.44	0.46	1316
25	0.68	0.26	0.37	231
26	0.92	0.93	0.93	3330

26	0.92	0.93	0.93	3930
27	0.30	0.16	0.20	187
28	0.69	0.44	0.54	767
29	0.44	0.19	0.27	127
30	0.46	0.21	0.29	306
31	0.25	0.09	0.14	571
32	0.43	0.22	0.29	828
33	0.78	0.43	0.55	150
34	0.56	0.36	0.44	1636
35	0.66	0.49	0.56	1182
36	0.74	0.37	0.49	498
37	0.55	0.28	0.37	672
38	0.66	0.39	0.49	135
39	0.65	0.49	0.56	374
40	0.77	0.32	0.45	478
41	0.45	0.30	0.36	545
42	0.47	0.14	0.22	1198
43	0.50	0.24	0.33	560
44	0.63	0.34	0.44	486
45	0.18	0.09	0.12	96
46	0.35	0.16	0.22	727
47	0.56	0.37	0.45	214
48	0.26	0.04	0.07	838
49	0.64	0.58	0.61	332
50	0.18	0.09	0.12	608
51	0.58	0.21	0.31	477
52	0.85	0.47	0.60	1597
53	0.53	0.24	0.33	742
54	0.36	0.09	0.15	306
55	0.68	0.28	0.39	232
56	0.66	0.59	0.62	197
57	0.32	0.12	0.17	628
58	0.83	0.75	0.79	604
59	0.16	0.05	0.08	216
60	0.93	0.72	0.81	69
61	0.87	0.63	0.73	251
62	0.31	0.16	0.21	526
63	0.38	0.19	0.25	445
64	0.29	0.22	0.25	525
65	0.62	0.32	0.43	302
66	0.55	0.36	0.44	44
67	0.93	0.85	0.89	1459
68	0.74	0.56	0.64	156
69	0.68	0.69	0.68	295
70	0.42	0.28	0.33	247
71	0.64	0.51	0.57	877
72	0.29	0.05	0.08	765
73	0.31	0.28	0.29	277
74	0.28	0.16	0.21	232
75	0.57	0.38	0.46	1049
76	0.80	0.56	0.66	921
77	0.83	0.51	0.63	693
78	0.58	0.25	0.35	282
79	0.77	0.71	0.74	1237
80	0.75	0.51	0.60	191
81	0.28	0.04	0.07	462
82	0.69	0.46	0.55	528
83	0.00	0.00	0.00	469
84	0.42	0.40	0.41	534
85	0.27	0.06	0.10	304
86	0.66	0.57	0.61	593
87	0.46	0.21	0.29	105
88	0.29	0.10	0.14	397
89	0.34	0.19	0.24	513
90	0.12	0.03	0.05	251
91	0.53	0.28	0.37	148
92	0.59	0.31	0.41	249
93	0.57	0.28	0.38	272
94	0.98	0.64	0.77	144
95	0.75	0.16	0.27	350
96	0.29	0.15	0.19	96
97	0.67	0.43	0.53	129
98	0.55	0.37	0.44	255
99	0.35	0.12	0.18	264
100	0.19	0.02	0.04	243
101	0.47	0.19	0.27	112
102	0.72	0.42	0.53	144
103	0.09	0.07	0.08	59

103	0.09	0.07	0.08	59
104	0.43	0.15	0.23	430
105	0.33	0.11	0.16	402
106	0.40	0.15	0.22	112
107	0.23	0.08	0.12	587
108	0.00	0.00	0.00	150
109	0.89	0.48	0.62	81
110	0.21	0.06	0.09	321
111	0.60	0.28	0.38	274
112	0.32	0.07	0.12	510
113	0.75	0.63	0.69	57
114	0.27	0.13	0.18	127
115	0.38	0.13	0.20	279
116	0.68	0.60	0.64	336
117	0.46	0.05	0.08	789
118	0.77	0.69	0.73	119
119	0.65	0.22	0.33	301
120	0.21	0.08	0.11	490
121	0.75	0.75	0.75	40
122	0.44	0.10	0.16	327
123	0.56	0.14	0.23	174
124	0.80	0.39	0.52	162
125	0.56	0.25	0.35	565
126	0.50	0.52	0.51	415
127	0.57	0.10	0.17	634
128	0.48	0.24	0.32	331
129	0.44	0.21	0.28	241
130	0.51	0.24	0.33	181
131	0.66	0.45	0.53	390
132	0.49	0.14	0.21	146
133	0.31	0.11	0.16	101
134	0.22	0.05	0.08	243
135	0.70	0.37	0.48	232
136	0.21	0.15	0.18	39
137	0.64	0.58	0.61	179
138	0.66	0.53	0.58	40
139	0.49	0.52	0.50	248
140	0.60	0.10	0.18	316
141	0.55	0.47	0.51	176
142	0.34	0.05	0.09	818
143	0.39	0.22	0.28	59
144	0.35	0.08	0.13	547
145	0.39	0.16	0.23	44
146	0.86	0.84	0.85	467
147	0.35	0.18	0.23	154
148	0.68	0.67	0.68	126
149	0.80	0.58	0.67	565
150	0.89	0.81	0.85	727
151	0.42	0.03	0.05	466
152	0.53	0.24	0.33	133
153	0.62	0.48	0.54	225
154	0.16	0.10	0.12	60
155	0.59	0.46	0.52	167
156	0.78	0.41	0.54	275
157	0.48	0.17	0.25	317
158	0.46	0.31	0.37	61
159	0.72	0.58	0.64	48
160	0.27	0.38	0.32	24
161	0.53	0.14	0.23	278
162	0.33	0.01	0.03	138
163	0.22	0.05	0.08	228
164	0.36	0.13	0.19	198
165	0.46	0.28	0.35	137
166	0.36	0.23	0.28	238
167	0.66	0.41	0.51	136
168	0.70	0.60	0.65	276
169	0.42	0.11	0.17	285
170	0.30	0.08	0.13	262
171	0.25	0.13	0.17	203
172	0.82	0.57	0.68	120
173	0.32	0.14	0.20	42
174	0.48	0.29	0.36	242
175	0.34	0.17	0.22	103
176	0.32	0.18	0.23	165
177	0.62	0.36	0.45	154
178	0.00	0.00	0.00	83
179	0.93	0.67	0.78	147
180	0.53	0.47	0.50	103

180	0.53	0.47	0.50	103
181	0.57	0.24	0.34	401
182	0.30	0.06	0.09	213
183	0.14	0.02	0.04	284
184	0.53	0.50	0.51	20
185	0.34	0.05	0.08	273
186	0.83	0.59	0.69	213
187	0.04	0.08	0.06	142
188	0.52	0.17	0.25	95
189	0.91	0.44	0.60	225
190	0.68	0.41	0.51	142
191	0.81	0.63	0.71	278
192	0.71	0.30	0.43	82
193	0.99	0.92	0.95	656
194	0.22	0.10	0.14	371
195	0.50	0.32	0.39	38
196	0.26	0.09	0.14	97
197	0.37	0.05	0.09	136
198	0.73	0.47	0.57	180
199	0.00	0.00	0.00	214
200	0.51	0.33	0.40	392
201	0.38	0.07	0.11	270
202	0.53	0.39	0.45	93
203	0.45	0.18	0.26	127
204	0.64	0.37	0.46	205
205	0.82	0.64	0.72	117
206	0.23	0.22	0.23	124
207	0.45	0.11	0.18	271
208	0.63	0.42	0.50	77
209	0.45	0.15	0.23	228
210	0.73	0.61	0.66	417
211	0.58	0.06	0.11	114
212	0.47	0.34	0.39	139
213	0.54	0.40	0.46	47
214	0.63	0.26	0.37	65
215	0.88	0.58	0.70	146
216	0.42	0.31	0.36	84
217	0.57	0.35	0.43	158
218	0.25	0.05	0.09	93
219	0.00	0.00	0.00	33
220	0.50	0.59	0.54	76
221	0.72	0.26	0.38	332
222	0.19	0.07	0.10	70
223	0.76	0.58	0.66	106
224	0.61	0.29	0.40	365
225	0.38	0.17	0.24	199
226	0.41	0.34	0.37	315
227	0.97	0.61	0.75	186
228	0.38	0.27	0.31	71
229	0.34	0.14	0.20	245
230	0.14	0.01	0.02	112
231	0.56	0.28	0.37	272
232	0.34	0.11	0.17	142
233	0.16	0.33	0.21	15
234	0.64	0.25	0.36	412
235	0.20	0.07	0.10	115
236	0.15	0.04	0.07	189
237	0.68	0.49	0.57	107
238	0.16	0.11	0.13	340
239	0.50	0.02	0.04	93
240	0.40	0.18	0.25	92
241	0.62	0.51	0.56	116
242	0.73	0.16	0.26	139
243	0.21	0.07	0.11	163
244	0.83	0.05	0.10	92
245	0.88	0.54	0.67	91
246	0.46	0.38	0.42	157
247	0.57	0.35	0.43	296
248	0.61	0.37	0.46	415
249	0.40	0.33	0.36	249
250	0.50	0.33	0.40	49
251	0.50	0.24	0.32	102
252	0.33	0.22	0.27	215
253	0.25	0.34	0.29	91
254	0.85	0.52	0.65	453
255	0.65	0.44	0.53	59
256	0.42	0.08	0.13	162
257	0.65	0.72	0.68	30

257	0.65	0.72	0.68	39
258	0.30	0.09	0.13	92
259	0.46	0.29	0.36	164
260	0.90	0.53	0.67	136
261	0.29	0.22	0.25	93
262	0.00	0.00	0.00	57
263	0.54	0.44	0.48	32
264	0.32	0.20	0.25	217
265	0.27	0.03	0.06	219
266	0.38	0.09	0.15	274
267	0.20	0.11	0.14	92
268	0.37	0.56	0.44	27
269	0.00	0.00	0.00	75
270	0.77	0.32	0.46	74
271	0.75	0.56	0.64	64
272	0.12	0.03	0.05	34
273	0.59	0.40	0.48	122
274	0.77	0.51	0.61	188
275	0.04	0.01	0.02	145
276	0.66	0.41	0.51	317
277	0.53	0.35	0.42	249
278	0.22	0.03	0.06	61
279	0.75	0.41	0.53	138
280	0.32	0.41	0.36	75
281	0.29	0.01	0.02	250
282	0.66	0.65	0.65	109
283	0.54	0.18	0.27	78
284	0.31	0.11	0.16	121
285	0.85	0.73	0.78	82
286	0.28	0.02	0.05	202
287	0.78	0.58	0.67	96
288	0.35	0.04	0.07	269
289	0.48	0.60	0.53	250
290	0.36	0.09	0.15	85
291	0.42	0.09	0.15	206
292	0.80	0.50	0.61	135
293	0.36	0.21	0.26	48
294	0.49	0.22	0.31	251
295	0.73	0.38	0.50	58
296	0.71	0.64	0.67	195
297	0.45	0.30	0.36	81
298	0.72	0.45	0.55	95
299	0.07	0.01	0.02	92
300	0.78	0.45	0.57	77
301	0.11	0.01	0.02	113
302	0.69	0.51	0.59	291
303	0.72	0.26	0.38	367
304	0.22	0.05	0.09	37
305	0.40	0.16	0.23	99
306	0.41	0.19	0.26	141
307	0.43	0.36	0.39	231
308	0.82	0.61	0.69	314
309	0.68	0.46	0.55	65
310	0.67	0.50	0.57	8
311	0.18	0.08	0.11	24
312	0.28	0.02	0.03	465
313	0.44	0.28	0.34	86
314	1.00	0.06	0.12	48
315	0.64	0.42	0.51	85
316	0.33	0.08	0.13	12
317	0.54	0.17	0.26	333
318	0.34	0.15	0.21	102
319	0.25	0.04	0.06	28
320	0.17	0.01	0.01	141
321	0.69	0.49	0.57	193
322	0.38	0.20	0.26	91
323	0.91	0.70	0.79	169
324	0.41	0.24	0.30	134
325	0.60	0.49	0.54	59
326	0.67	0.43	0.52	91
327	0.24	0.18	0.21	72
328	0.75	1.00	0.86	6
329	0.24	0.11	0.15	54
330	0.52	0.43	0.47	103
331	0.45	0.02	0.04	238
332	0.61	0.41	0.49	188
333	0.63	0.39	0.48	74
334	0.00	0.74	0.00	85

334	0.92	0.74	0.82	95
335	0.63	0.39	0.48	115
336	0.50	0.29	0.37	181
337	0.64	0.46	0.54	78
338	0.75	0.38	0.51	55
339	0.66	0.28	0.39	68
340	1.00	0.33	0.50	3
341	0.51	0.52	0.51	93
342	0.12	0.07	0.09	56
343	0.20	0.02	0.03	186
344	0.31	0.02	0.04	435
345	0.71	0.36	0.48	166
346	0.83	0.70	0.76	84
347	0.78	0.47	0.58	75
348	0.83	0.51	0.63	89
349	0.44	0.02	0.04	218
350	0.60	0.60	0.60	5
351	0.74	0.29	0.41	378
352	0.25	0.05	0.09	74
353	0.91	0.67	0.77	78
354	0.32	0.06	0.10	171
355	0.90	0.69	0.78	241
356	0.74	0.25	0.37	290
357	0.11	0.01	0.01	174
358	0.46	0.15	0.22	242
359	0.14	0.07	0.09	15
360	0.07	0.02	0.03	249
361	0.67	0.57	0.62	42
362	0.39	0.16	0.23	43
363	0.32	0.18	0.23	33
364	0.41	0.10	0.16	123
365	0.25	0.15	0.19	20
366	0.54	0.41	0.47	220
367	0.96	0.86	0.91	404
368	0.59	0.18	0.28	164
369	0.98	0.85	0.91	392
370	0.05	0.01	0.01	143
371	0.57	0.47	0.52	34
372	0.15	0.04	0.07	70
373	0.54	0.30	0.39	190
374	0.56	0.37	0.44	49
375	0.49	0.16	0.24	325
376	0.44	0.09	0.16	148
377	0.43	0.13	0.19	119
378	0.17	0.08	0.11	59
379	0.31	0.07	0.11	169
380	0.57	0.23	0.33	255
381	0.11	0.06	0.08	50
382	0.29	0.22	0.25	9
383	0.86	0.37	0.52	100
384	0.93	0.75	0.83	55
385	0.17	0.04	0.06	28
386	0.74	0.57	0.65	210
387	0.46	0.05	0.08	131
388	0.48	0.20	0.28	144
389	0.40	0.16	0.23	62
390	0.13	0.01	0.02	154
391	0.33	0.07	0.12	185
392	0.21	0.04	0.07	134
393	0.86	0.62	0.72	68
394	0.27	0.07	0.11	162
395	0.87	0.53	0.66	62
396	0.59	0.26	0.36	149
397	0.14	0.06	0.08	18
398	0.61	0.22	0.32	203
399	0.52	0.28	0.36	134
400	0.22	0.02	0.04	100
401	0.64	0.36	0.46	162
402	0.28	0.07	0.12	108
403	0.25	0.03	0.05	79
404	0.13	0.09	0.11	80
405	0.00	0.00	0.00	17
406	0.91	0.20	0.32	219
407	0.57	0.29	0.39	92
408	0.52	0.28	0.37	301
409	0.29	0.02	0.03	129
410	0.55	0.20	0.29	86

411	1.00	0.62	0.76	13
412	0.60	0.60	0.60	10
413	0.91	0.64	0.75	67
414	0.20	0.02	0.04	89
415	0.41	0.07	0.12	128
416	0.59	0.14	0.23	245
417	0.72	0.59	0.65	83
418	0.62	0.35	0.45	186
419	0.21	0.10	0.13	83
420	0.53	0.15	0.23	117
421	0.21	0.05	0.08	158
422	0.55	0.45	0.49	78
423	0.88	0.60	0.71	75
424	0.58	0.23	0.33	213
425	0.86	0.55	0.67	11
426	0.76	0.56	0.64	45
427	0.33	0.09	0.14	77
428	0.26	0.09	0.13	115
429	0.17	0.11	0.13	64
430	0.91	0.66	0.76	284
431	0.54	0.49	0.52	192
432	0.86	0.65	0.74	48
433	0.32	0.36	0.34	59
434	0.79	0.26	0.39	239
435	0.00	0.00	0.00	49
436	0.53	0.24	0.33	195
437	0.55	0.33	0.41	160
438	0.54	0.43	0.48	189
439	0.53	0.48	0.50	171
440	0.73	0.32	0.44	222
441	0.36	0.11	0.16	75
442	0.50	0.19	0.27	112
443	0.08	0.02	0.03	62
444	0.18	0.02	0.04	94
445	0.14	0.06	0.09	94
446	0.33	0.39	0.36	59
447	0.67	0.67	0.67	3
448	0.86	0.71	0.77	17
449	0.29	0.14	0.19	83
450	0.00	0.00	0.00	13
451	0.71	0.25	0.37	99
452	0.57	0.49	0.53	55
453	0.50	0.33	0.40	9
454	0.44	0.11	0.17	196
455	0.60	0.25	0.35	179
456	0.00	0.00	0.00	28
457	0.38	0.28	0.33	53
458	0.14	0.04	0.06	103
459	0.20	0.09	0.13	11
460	0.23	0.13	0.17	52
461	0.30	0.04	0.07	70
462	0.14	0.01	0.03	69
463	0.10	0.07	0.08	59
464	0.33	0.12	0.18	57
465	0.44	0.02	0.04	180
466	0.55	0.18	0.27	62
467	0.30	0.13	0.18	166
468	0.63	0.33	0.44	93
469	0.00	0.00	0.00	174
470	0.98	0.66	0.79	70
471	0.11	0.02	0.03	54
472	0.00	0.00	0.00	13
473	0.82	0.55	0.66	169
474	0.57	0.52	0.54	131
475	0.34	0.16	0.22	69
476	0.24	0.10	0.14	61
477	0.23	0.04	0.07	181
478	0.38	0.09	0.14	93
479	0.18	0.04	0.06	56
480	0.69	0.37	0.48	126
481	0.25	0.25	0.25	67
482	0.78	0.17	0.27	42
483	0.52	0.54	0.53	117
484	0.67	0.36	0.47	39
485	0.63	0.35	0.45	62
486	0.40	0.02	0.04	92
487	0.40	0.40	0.40	48

```
         488       0.25      0.09      0.13        11
         489       0.54      0.25      0.34        60
         490       0.49      0.40      0.44       108
         491       0.27      0.06      0.10        64
         492       0.62      0.12      0.19       113
         493       0.00      0.00      0.00         8
         494       0.84      0.74      0.79        43
         495       0.29      0.13      0.18        15
         496       0.50      0.06      0.11       149
         497       0.09      0.03      0.05        62
         498       0.38      0.18      0.24        17
         499       0.75      0.58      0.65        26

   micro avg       0.69      0.44      0.54    197099
   macro avg       0.49      0.29      0.35    197099
weighted avg       0.63      0.44      0.50    197099
 samples avg       0.56      0.44      0.46    197099

Time taken to run this cell : 0:09:42.617186
Accuracy : 0.24497
Hamming loss  0.0027042
Micro-average quality numbers
Precision: 0.8310, Recall: 0.3942, F1-measure: 0.5347
Macro-average quality numbers
Precision: 0.5161, Recall: 0.2262, F1-measure: 0.2860
```

```
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision is ill-defined and being set to 0.0 in labels with no predicted
samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: F-score is ill-defined and being set to 0.0 in labels with no predicted sa
mples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in samples with
no predicted labels.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1145:
UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in samples with no
true labels.
  'recall', 'true', average, warn_for)

 29%|██       | 2/7 [19:12<48:14, 578.88s/it]
```

```
              precision    recall  f1-score   support

           0       0.94      0.66      0.78      2858
           1       0.86      0.70      0.78     22917
           2       0.83      0.32      0.46      3660
           3       0.94      0.87      0.90     14867
           4       0.79      0.32      0.46      2382
           5       0.78      0.33      0.47      3643
           6       0.80      0.34      0.48      4086
           7       0.56      0.11      0.19      3831
           8       0.93      0.90      0.91      9219
           9       0.83      0.49      0.61      2609
          10       0.55      0.11      0.19      4064
          11       0.73      0.26      0.38      1652
          12       0.82      0.25      0.39      5162
          13       0.69      0.19      0.30      1497
          14       0.63      0.25      0.35       587
          15       0.75      0.15      0.25      1470
          16       0.88      0.55      0.68      1409
```

17	0.64	0.52	0.57	566
18	0.86	0.46	0.60	1336
19	0.67	0.30	0.41	1181
20	0.76	0.54	0.64	685
21	0.61	0.24	0.35	1187
22	0.00	0.00	0.00	1268
23	0.85	0.55	0.67	2048
24	0.62	0.12	0.21	1316
25	0.76	0.34	0.47	231
26	0.92	0.95	0.94	3330
27	0.60	0.02	0.03	187
28	0.70	0.50	0.58	767
29	0.62	0.28	0.38	127
30	0.78	0.23	0.36	306
31	0.50	0.00	0.00	571
32	0.60	0.21	0.31	828
33	0.80	0.45	0.58	150
34	0.73	0.25	0.37	1636
35	0.78	0.38	0.52	1182
36	0.88	0.38	0.53	498
37	0.63	0.20	0.31	672
38	0.89	0.37	0.52	135
39	0.67	0.49	0.57	374
40	0.84	0.32	0.46	478
41	0.68	0.25	0.37	545
42	0.56	0.01	0.02	1198
43	0.55	0.21	0.31	560
44	0.67	0.51	0.58	486
45	0.00	0.00	0.00	96
46	0.00	0.00	0.00	727
47	0.60	0.35	0.44	214
48	0.50	0.00	0.00	838
49	0.71	0.64	0.67	332
50	0.00	0.00	0.00	608
51	0.71	0.06	0.10	477
52	0.89	0.45	0.59	1597
53	0.73	0.21	0.32	742
54	0.48	0.05	0.09	306
55	0.66	0.35	0.46	232
56	0.69	0.62	0.65	197
57	0.58	0.05	0.09	628
58	0.89	0.70	0.79	604
59	0.50	0.00	0.01	216
60	0.94	0.71	0.81	69
61	0.92	0.61	0.74	251
62	0.78	0.12	0.21	526
63	0.47	0.02	0.03	445
64	0.50	0.00	0.01	525
65	0.62	0.35	0.45	302
66	0.47	0.39	0.42	44
67	0.92	0.80	0.86	1459
68	0.78	0.62	0.69	156
69	0.79	0.62	0.70	295
70	0.25	0.00	0.01	247
71	0.65	0.45	0.53	877
72	0.00	0.00	0.00	765
73	0.29	0.01	0.01	277
74	0.56	0.02	0.04	232
75	0.66	0.29	0.40	1049
76	0.89	0.25	0.39	921
77	0.84	0.56	0.67	693
78	0.59	0.29	0.39	282
79	0.81	0.61	0.69	1237
80	0.76	0.44	0.56	191
81	0.00	0.00	0.00	462
82	0.79	0.42	0.55	528
83	0.00	0.00	0.00	469
84	0.54	0.30	0.38	534
85	0.00	0.00	0.00	304
86	0.77	0.47	0.58	593
87	0.56	0.10	0.16	105
88	0.72	0.08	0.15	397
89	0.00	0.00	0.00	513
90	0.00	0.00	0.00	251
91	0.60	0.26	0.36	148
92	0.68	0.41	0.51	249
93	0.68	0.28	0.40	272

94	0.98	0.65	0.78	144
95	0.87	0.13	0.22	350
96	0.30	0.12	0.18	96
97	0.77	0.36	0.49	129
98	0.72	0.23	0.35	255
99	0.00	0.00	0.00	264
100	0.00	0.00	0.00	243
101	0.42	0.07	0.12	112
102	0.79	0.45	0.58	144
103	0.00	0.00	0.00	59
104	0.50	0.00	0.00	430
105	0.56	0.04	0.07	402
106	0.57	0.04	0.07	112
107	0.00	0.00	0.00	587
108	0.00	0.00	0.00	150
109	0.84	0.44	0.58	81
110	0.00	0.00	0.00	321
111	0.94	0.11	0.20	274
112	0.00	0.00	0.00	510
113	0.80	0.68	0.74	57
114	0.45	0.04	0.07	127
115	0.53	0.10	0.17	279
116	0.70	0.62	0.65	336
117	0.78	0.01	0.02	789
118	0.86	0.70	0.77	119
119	0.89	0.23	0.37	301
120	0.00	0.00	0.00	490
121	0.78	0.70	0.74	40
122	0.00	0.00	0.00	327
123	0.56	0.16	0.25	174
124	0.88	0.35	0.50	162
125	0.67	0.18	0.29	565
126	0.63	0.38	0.48	415
127	0.62	0.14	0.23	634
128	0.60	0.14	0.22	331
129	0.60	0.01	0.02	241
130	0.62	0.17	0.27	181
131	0.68	0.52	0.59	390
132	0.36	0.06	0.11	146
133	0.00	0.00	0.00	101
134	0.00	0.00	0.00	243
135	0.77	0.47	0.59	232
136	0.48	0.36	0.41	39
137	0.68	0.55	0.61	179
138	0.68	0.53	0.59	40
139	0.78	0.25	0.38	248
140	0.40	0.01	0.01	316
141	0.65	0.41	0.51	176
142	0.00	0.00	0.00	818
143	0.43	0.27	0.33	59
144	0.50	0.04	0.07	547
145	0.58	0.16	0.25	44
146	0.87	0.89	0.88	467
147	0.46	0.08	0.13	154
148	0.85	0.65	0.74	126
149	0.80	0.48	0.60	565
150	0.90	0.79	0.84	727
151	0.00	0.00	0.00	466
152	0.59	0.44	0.50	133
153	0.72	0.50	0.59	225
154	0.00	0.00	0.00	60
155	0.57	0.45	0.50	167
156	0.77	0.42	0.54	275
157	0.65	0.13	0.21	317
158	0.66	0.38	0.48	61
159	0.86	0.62	0.72	48
160	0.60	0.12	0.21	24
161	0.43	0.02	0.04	278
162	0.00	0.00	0.00	138
163	0.00	0.00	0.00	228
164	0.64	0.09	0.16	198
165	0.45	0.18	0.26	137
166	0.83	0.02	0.04	238
167	0.97	0.24	0.39	136
168	0.78	0.54	0.64	276
169	0.75	0.03	0.06	285
170	0.00	0.00	0.00	262

171	0.00	0.00	0.00	203
172	0.87	0.61	0.72	120
173	0.67	0.05	0.09	42
174	0.50	0.47	0.48	242
175	0.56	0.05	0.09	103
176	1.00	0.01	0.01	165
177	0.75	0.25	0.38	154
178	0.00	0.00	0.00	83
179	0.95	0.64	0.76	147
180	0.63	0.55	0.59	103
181	0.60	0.07	0.13	401
182	1.00	0.00	0.01	213
183	0.00	0.00	0.00	284
184	0.53	0.50	0.51	20
185	0.00	0.00	0.00	273
186	0.93	0.55	0.69	213
187	0.00	0.00	0.00	142
188	0.50	0.08	0.14	95
189	0.94	0.40	0.56	225
190	0.58	0.45	0.51	142
191	0.85	0.57	0.69	278
192	0.79	0.38	0.51	82
193	0.99	0.80	0.88	656
194	0.30	0.01	0.02	371
195	0.67	0.58	0.62	38
196	0.00	0.00	0.00	97
197	0.00	0.00	0.00	136
198	0.77	0.46	0.57	180
199	0.00	0.00	0.00	214
200	0.60	0.12	0.20	392
201	0.50	0.03	0.05	270
202	0.74	0.43	0.54	93
203	0.58	0.22	0.32	127
204	0.70	0.40	0.51	205
205	0.93	0.56	0.70	117
206	0.00	0.00	0.00	124
207	0.51	0.08	0.15	271
208	0.70	0.45	0.55	77
209	0.36	0.02	0.03	228
210	0.76	0.54	0.63	417
211	0.50	0.04	0.08	114
212	0.58	0.32	0.41	139
213	0.46	0.28	0.35	47
214	0.81	0.26	0.40	65
215	0.99	0.49	0.66	146
216	0.65	0.24	0.35	84
217	0.58	0.25	0.35	158
218	0.00	0.00	0.00	93
219	0.00	0.00	0.00	33
220	0.85	0.46	0.60	76
221	0.81	0.27	0.40	332
222	0.00	0.00	0.00	70
223	0.88	0.53	0.66	106
224	0.73	0.25	0.37	365
225	0.65	0.08	0.14	199
226	0.71	0.12	0.20	315
227	0.97	0.61	0.75	186
228	0.49	0.27	0.35	71
229	0.00	0.00	0.00	245
230	0.00	0.00	0.00	112
231	0.63	0.15	0.24	272
232	0.00	0.00	0.00	142
233	0.00	0.00	0.00	15
234	0.69	0.04	0.08	412
235	0.00	0.00	0.00	115
236	0.00	0.00	0.00	189
237	0.80	0.44	0.57	107
238	0.50	0.00	0.01	340
239	0.00	0.00	0.00	93
240	0.60	0.07	0.12	92
241	0.70	0.43	0.53	116
242	1.00	0.14	0.25	139
243	0.60	0.02	0.04	163
244	0.00	0.00	0.00	92
245	0.98	0.48	0.65	91
246	0.44	0.13	0.20	157
247	0.70	0.15	0.25	296

248	0.64	0.25	0.35	415
249	0.44	0.03	0.06	249
250	0.65	0.41	0.50	49
251	1.00	0.17	0.29	102
252	0.00	0.00	0.00	215
253	0.00	0.00	0.00	91
254	0.97	0.22	0.36	453
255	0.75	0.36	0.48	59
256	0.71	0.03	0.06	162
257	0.74	0.64	0.68	39
258	0.00	0.00	0.00	92
259	0.53	0.38	0.44	164
260	0.93	0.47	0.62	136
261	0.40	0.02	0.04	93
262	0.00	0.00	0.00	57
263	0.70	0.22	0.33	32
264	0.00	0.00	0.00	217
265	1.00	0.00	0.01	219
266	0.00	0.00	0.00	274
267	0.00	0.00	0.00	92
268	0.58	0.41	0.48	27
269	0.00	0.00	0.00	75
270	0.77	0.45	0.56	74
271	0.85	0.53	0.65	64
272	0.00	0.00	0.00	34
273	0.63	0.52	0.57	122
274	0.89	0.42	0.57	188
275	0.00	0.00	0.00	145
276	0.79	0.28	0.41	317
277	0.56	0.18	0.27	249
278	0.00	0.00	0.00	61
279	0.75	0.41	0.53	138
280	0.75	0.04	0.08	75
281	0.00	0.00	0.00	250
282	0.68	0.63	0.65	109
283	0.73	0.24	0.37	78
284	0.56	0.04	0.08	121
285	0.98	0.68	0.81	82
286	0.33	0.00	0.01	202
287	0.86	0.64	0.73	96
288	0.00	0.00	0.00	269
289	0.56	0.22	0.32	250
290	0.50	0.01	0.02	85
291	1.00	0.00	0.01	206
292	0.86	0.38	0.53	135
293	0.45	0.10	0.17	48
294	0.67	0.02	0.03	251
295	0.78	0.48	0.60	58
296	0.69	0.65	0.67	195
297	0.44	0.15	0.22	81
298	0.80	0.45	0.58	95
299	0.00	0.00	0.00	92
300	0.80	0.42	0.55	77
301	0.00	0.00	0.00	113
302	0.70	0.57	0.63	291
303	0.76	0.13	0.22	367
304	0.00	0.00	0.00	37
305	0.00	0.00	0.00	99
306	0.62	0.04	0.07	141
307	0.55	0.03	0.05	231
308	0.82	0.52	0.64	314
309	0.74	0.35	0.48	65
310	0.83	0.62	0.71	8
311	0.00	0.00	0.00	24
312	0.00	0.00	0.00	465
313	0.50	0.12	0.19	86
314	0.50	0.06	0.11	48
315	0.89	0.20	0.33	85
316	0.00	0.00	0.00	12
317	0.73	0.03	0.06	333
318	0.00	0.00	0.00	102
319	0.56	0.50	0.53	28
320	1.00	0.01	0.01	141
321	0.72	0.40	0.52	193
322	0.73	0.09	0.16	91
323	0.97	0.62	0.76	169
324	0.29	0.01	0.03	134

325	0.64	0.51	0.57	59
326	0.63	0.68	0.66	91
327	0.00	0.00	0.00	72
328	0.75	1.00	0.86	6
329	1.00	0.02	0.04	54
330	0.56	0.30	0.39	103
331	0.00	0.00	0.00	238
332	0.68	0.33	0.44	188
333	0.64	0.34	0.44	74
334	0.97	0.73	0.83	95
335	0.00	0.00	0.00	115
336	0.64	0.05	0.09	181
337	0.75	0.42	0.54	78
338	0.75	0.33	0.46	55
339	0.75	0.35	0.48	68
340	1.00	0.33	0.50	3
341	0.57	0.49	0.53	93
342	0.14	0.02	0.03	56
343	0.00	0.00	0.00	186
344	0.00	0.00	0.00	435
345	0.72	0.23	0.35	166
346	0.90	0.65	0.76	84
347	0.79	0.61	0.69	75
348	0.82	0.31	0.46	89
349	0.00	0.00	0.00	218
350	0.75	0.60	0.67	5
351	0.00	0.00	0.00	378
352	0.00	0.00	0.00	74
353	0.91	0.63	0.74	78
354	0.00	0.00	0.00	171
355	0.92	0.75	0.82	241
356	0.80	0.18	0.29	290
357	0.00	0.00	0.00	174
358	0.33	0.02	0.03	242
359	0.60	0.20	0.30	15
360	0.50	0.00	0.01	249
361	0.72	0.50	0.59	42
362	0.50	0.05	0.09	43
363	0.11	0.03	0.05	33
364	0.00	0.00	0.00	123
365	0.36	0.20	0.26	20
366	0.62	0.18	0.28	220
367	0.96	0.57	0.72	404
368	0.56	0.06	0.11	164
369	0.98	0.63	0.76	392
370	0.00	0.00	0.00	143
371	0.60	0.53	0.56	34
372	0.14	0.04	0.07	70
373	0.48	0.12	0.19	190
374	0.88	0.31	0.45	49
375	0.62	0.02	0.05	325
376	1.00	0.02	0.04	148
377	0.14	0.01	0.02	119
378	0.33	0.02	0.03	59
379	0.00	0.00	0.00	169
380	0.60	0.13	0.21	255
381	0.00	0.00	0.00	50
382	0.00	0.00	0.00	9
383	0.91	0.30	0.45	100
384	1.00	0.65	0.79	55
385	0.00	0.00	0.00	28
386	0.78	0.55	0.65	210
387	0.33	0.01	0.01	131
388	0.54	0.05	0.09	144
389	0.50	0.08	0.14	62
390	0.00	0.00	0.00	154
391	0.00	0.00	0.00	185
392	0.00	0.00	0.00	134
393	0.93	0.57	0.71	68
394	0.00	0.00	0.00	162
395	0.97	0.47	0.63	62
396	0.00	0.00	0.00	149
397	0.00	0.00	0.00	18
398	0.67	0.15	0.24	203
399	0.53	0.35	0.42	134
400	0.00	0.00	0.00	100
401	0.67	0.22	0.33	162

401	0.67	0.22	0.33	102
402	0.00	0.00	0.00	108
403	0.50	0.01	0.02	79
404	0.00	0.00	0.00	80
405	0.00	0.00	0.00	17
406	1.00	0.15	0.25	219
407	0.56	0.16	0.25	92
408	0.00	0.00	0.00	301
409	0.00	0.00	0.00	129
410	0.56	0.16	0.25	86
411	1.00	0.62	0.76	13
412	0.88	0.70	0.78	10
413	0.93	0.57	0.70	67
414	0.00	0.00	0.00	89
415	0.00	0.00	0.00	128
416	0.50	0.02	0.04	245
417	0.81	0.60	0.69	83
418	0.65	0.22	0.33	186
419	0.00	0.00	0.00	83
420	0.59	0.28	0.38	117
421	0.00	0.00	0.00	158
422	0.70	0.27	0.39	78
423	0.89	0.63	0.73	75
424	0.33	0.01	0.02	213
425	1.00	0.55	0.71	11
426	0.81	0.47	0.59	45
427	0.38	0.04	0.07	77
428	0.00	0.00	0.00	115
429	0.67	0.03	0.06	64
430	0.93	0.48	0.63	284
431	0.61	0.30	0.40	192
432	0.93	0.54	0.68	48
433	0.56	0.17	0.26	59
434	0.87	0.11	0.19	239
435	0.00	0.00	0.00	49
436	0.88	0.15	0.25	195
437	0.65	0.23	0.33	160
438	0.76	0.16	0.27	189
439	0.55	0.51	0.53	171
440	0.76	0.43	0.55	222
441	0.50	0.01	0.03	75
442	0.57	0.07	0.13	112
443	0.00	0.00	0.00	62
444	0.00	0.00	0.00	94
445	0.00	0.00	0.00	94
446	0.52	0.27	0.36	59
447	1.00	0.67	0.80	3
448	1.00	0.65	0.79	17
449	0.67	0.02	0.05	83
450	0.00	0.00	0.00	13
451	0.79	0.15	0.25	99
452	0.64	0.53	0.58	55
453	0.50	0.11	0.18	9
454	0.85	0.06	0.11	196
455	0.60	0.15	0.23	179
456	0.00	0.00	0.00	28
457	0.25	0.02	0.04	53
458	0.00	0.00	0.00	103
459	0.00	0.00	0.00	11
460	0.00	0.00	0.00	52
461	0.50	0.03	0.05	70
462	0.00	0.00	0.00	69
463	0.00	0.00	0.00	59
464	1.00	0.02	0.03	57
465	0.00	0.00	0.00	180
466	0.50	0.02	0.03	62
467	0.00	0.00	0.00	166
468	0.79	0.24	0.36	93
469	0.00	0.00	0.00	174
470	1.00	0.63	0.77	70
471	0.00	0.00	0.00	54
472	0.00	0.00	0.00	13
473	0.85	0.38	0.52	169
474	0.62	0.42	0.50	131
475	0.00	0.00	0.00	69
476	0.00	0.00	0.00	61
477	0.00	0.00	0.00	181
478	0.50	0.02	0.04	93

```
        479       0.50      0.02      0.03        56
        480       0.71      0.04      0.08       126
        481       0.50      0.12      0.19        67
        482       0.50      0.12      0.19        42
        483       0.54      0.36      0.43       117
        484       0.56      0.36      0.44        39
        485       0.71      0.27      0.40        62
        486       0.00      0.00      0.00        92
        487       0.42      0.33      0.37        48
        488       0.00      0.00      0.00        11
        489       0.75      0.20      0.32        60
        490       0.65      0.40      0.49       108
        491       0.00      0.00      0.00        64
        492       0.71      0.04      0.08       113
        493       0.00      0.00      0.00         8
        494       0.82      0.65      0.73        43
        495       0.00      0.00      0.00        15
        496       0.00      0.00      0.00       149
        497       0.00      0.00      0.00        62
        498       0.80      0.24      0.36        17
        499       0.76      0.50      0.60        26

   micro avg       0.83      0.39      0.53    197099
   macro avg       0.52      0.23      0.29    197099
weighted avg       0.68      0.39      0.46    197099
 samples avg       0.60      0.41      0.46    197099

Time taken to run this cell : 0:09:30.141110
Accuracy : 0.17628
Hamming loss  0.00314106
Micro-average quality numbers
Precision: 0.8425, Recall: 0.2499, F1-measure: 0.3854
Macro-average quality numbers
Precision: 0.4301, Recall: 0.0963, F1-measure: 0.1382
```

```
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision is ill-defined and being set to 0.0 in labels with no predicted
samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: F-score is ill-defined and being set to 0.0 in labels with no predicted sa
mples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in samples with
no predicted labels.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1145:
UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in samples with no
true labels.
  'recall', 'true', average, warn_for)

 43%|████      | 3/7 [28:34<38:15, 573.82s/it]
```

```
              precision    recall  f1-score   support

           0       0.94      0.56      0.70      2858
           1       0.88      0.39      0.54     22917
           2       0.82      0.31      0.45      3660
           3       0.94      0.79      0.86     14867
           4       0.83      0.27      0.41      2382
           5       0.80      0.30      0.44      3643
           6       0.85      0.29      0.43      4086
```

7	0.57	0.12	0.20	3831
8	0.94	0.86	0.89	9219
9	0.85	0.45	0.59	2609
10	0.61	0.08	0.15	4064
11	0.78	0.22	0.34	1652
12	0.79	0.07	0.13	5162
13	0.69	0.17	0.28	1497
14	0.62	0.29	0.39	587
15	0.90	0.05	0.10	1470
16	0.89	0.48	0.62	1409
17	0.64	0.47	0.54	566
18	0.87	0.41	0.56	1336
19	0.69	0.22	0.34	1181
20	0.79	0.40	0.53	685
21	0.58	0.15	0.24	1187
22	0.62	0.00	0.01	1268
23	0.91	0.30	0.46	2048
24	0.51	0.15	0.23	1316
25	0.78	0.23	0.36	231
26	0.92	0.09	0.17	3330
27	0.45	0.03	0.05	187
28	0.71	0.46	0.56	767
29	0.60	0.24	0.35	127
30	0.76	0.14	0.23	306
31	0.44	0.01	0.03	571
32	0.55	0.17	0.26	828
33	0.83	0.29	0.43	150
34	0.77	0.09	0.16	1636
35	0.70	0.35	0.47	1182
36	0.84	0.31	0.45	498
37	0.61	0.18	0.27	672
38	0.94	0.35	0.51	135
39	0.67	0.44	0.53	374
40	0.90	0.17	0.29	478
41	0.71	0.17	0.27	545
42	0.40	0.01	0.02	1198
43	0.55	0.15	0.24	560
44	0.68	0.34	0.45	486
45	0.00	0.00	0.00	96
46	0.41	0.02	0.04	727
47	0.57	0.29	0.39	214
48	0.00	0.00	0.00	838
49	0.74	0.52	0.61	332
50	0.40	0.00	0.01	608
51	0.67	0.00	0.01	477
52	0.86	0.00	0.01	1597
53	0.66	0.09	0.16	742
54	0.48	0.07	0.11	306
55	0.61	0.41	0.49	232
56	0.69	0.54	0.61	197
57	0.51	0.05	0.10	628
58	0.93	0.56	0.70	604
59	0.00	0.00	0.00	216
60	0.88	0.55	0.68	69
61	0.94	0.49	0.64	251
62	0.84	0.05	0.10	526
63	0.53	0.02	0.04	445
64	0.50	0.00	0.00	525
65	0.63	0.25	0.36	302
66	0.67	0.27	0.39	44
67	0.89	0.06	0.11	1459
68	0.78	0.40	0.53	156
69	0.76	0.48	0.59	295
70	0.50	0.02	0.04	247
71	0.60	0.42	0.49	877
72	0.00	0.00	0.00	765
73	0.19	0.01	0.02	277
74	0.46	0.08	0.14	232
75	0.64	0.07	0.13	1049
76	0.83	0.06	0.11	921
77	0.85	0.19	0.31	693
78	0.65	0.21	0.32	282
79	0.74	0.05	0.10	1237
80	0.77	0.25	0.37	191
81	0.29	0.00	0.01	462
82	0.77	0.23	0.35	528
83	0.00	0.00	0.00	469

84	0.49	0.13	0.21	534
85	0.00	0.00	0.00	304
86	0.79	0.28	0.42	593
87	0.42	0.10	0.17	105
88	1.00	0.00	0.01	397
89	0.25	0.00	0.00	513
90	0.00	0.00	0.00	251
91	0.50	0.07	0.12	148
92	0.61	0.18	0.27	249
93	0.64	0.11	0.18	272
94	0.95	0.41	0.57	144
95	1.00	0.01	0.01	350
96	0.20	0.01	0.02	96
97	1.00	0.02	0.05	129
98	0.70	0.22	0.34	255
99	0.00	0.00	0.00	264
100	0.00	0.00	0.00	243
101	0.48	0.14	0.22	112
102	0.80	0.31	0.44	144
103	0.50	0.02	0.03	59
104	0.20	0.00	0.00	430
105	0.62	0.02	0.05	402
106	0.35	0.05	0.09	112
107	0.00	0.00	0.00	587
108	0.00	0.00	0.00	150
109	0.85	0.27	0.41	81
110	0.00	0.00	0.00	321
111	1.00	0.00	0.01	274
112	0.00	0.00	0.00	510
113	0.86	0.54	0.67	57
114	0.00	0.00	0.00	127
115	0.43	0.04	0.07	279
116	0.67	0.33	0.44	336
117	0.00	0.00	0.00	789
118	0.85	0.51	0.64	119
119	0.84	0.14	0.23	301
120	0.00	0.00	0.00	490
121	0.81	0.53	0.64	40
122	0.50	0.01	0.01	327
123	0.65	0.06	0.12	174
124	0.67	0.01	0.02	162
125	0.86	0.01	0.02	565
126	0.60	0.19	0.29	415
127	0.64	0.01	0.02	634
128	0.33	0.01	0.02	331
129	0.38	0.03	0.06	241
130	0.67	0.04	0.08	181
131	0.66	0.33	0.44	390
132	0.07	0.01	0.01	146
133	0.00	0.00	0.00	101
134	0.00	0.00	0.00	243
135	0.72	0.34	0.46	232
136	0.52	0.38	0.44	39
137	0.62	0.42	0.50	179
138	0.65	0.38	0.48	40
139	0.33	0.01	0.02	248
140	0.33	0.00	0.01	316
141	0.51	0.12	0.20	176
142	0.00	0.00	0.00	818
143	0.45	0.17	0.25	59
144	0.00	0.00	0.00	547
145	0.50	0.02	0.04	44
146	0.87	0.61	0.72	467
147	0.35	0.04	0.07	154
148	0.81	0.46	0.59	126
149	0.78	0.06	0.11	565
150	0.90	0.04	0.07	727
151	0.25	0.00	0.01	466
152	0.54	0.26	0.35	133
153	0.70	0.19	0.29	225
154	0.33	0.02	0.03	60
155	0.55	0.20	0.30	167
156	0.77	0.07	0.13	275
157	0.67	0.02	0.04	317
158	0.80	0.13	0.23	61
159	0.95	0.42	0.58	48
160	0.57	0.17	0.26	24

161	0.25	0.00	0.01	278
162	0.00	0.00	0.00	138
163	0.00	0.00	0.00	228
164	0.00	0.00	0.00	198
165	0.51	0.14	0.22	137
166	0.56	0.04	0.07	238
167	0.90	0.07	0.12	136
168	0.85	0.19	0.31	276
169	0.00	0.00	0.00	285
170	0.00	0.00	0.00	262
171	0.38	0.02	0.05	203
172	0.90	0.45	0.60	120
173	0.00	0.00	0.00	42
174	0.57	0.27	0.37	242
175	0.33	0.02	0.04	103
176	0.50	0.01	0.01	165
177	0.71	0.06	0.12	154
178	0.00	0.00	0.00	83
179	0.98	0.27	0.43	147
180	0.71	0.28	0.40	103
181	0.00	0.00	0.00	401
182	0.00	0.00	0.00	213
183	0.00	0.00	0.00	284
184	0.54	0.35	0.42	20
185	0.00	0.00	0.00	273
186	0.94	0.29	0.44	213
187	0.00	0.00	0.00	142
188	0.00	0.00	0.00	95
189	0.96	0.11	0.19	225
190	0.56	0.31	0.40	142
191	0.84	0.19	0.31	278
192	0.62	0.06	0.11	82
193	0.80	0.01	0.01	656
194	0.33	0.00	0.01	371
195	0.71	0.39	0.51	38
196	0.25	0.02	0.04	97
197	0.00	0.00	0.00	136
198	0.80	0.18	0.29	180
199	0.00	0.00	0.00	214
200	0.53	0.05	0.09	392
201	1.00	0.00	0.01	270
202	0.64	0.08	0.13	93
203	0.50	0.06	0.10	127
204	0.69	0.20	0.32	205
205	0.95	0.31	0.46	117
206	0.33	0.01	0.02	124
207	0.60	0.02	0.04	271
208	0.65	0.22	0.33	77
209	0.00	0.00	0.00	228
210	0.77	0.12	0.20	417
211	0.29	0.02	0.03	114
212	0.69	0.14	0.24	139
213	0.00	0.00	0.00	47
214	0.00	0.00	0.00	65
215	1.00	0.12	0.21	146
216	0.60	0.07	0.13	84
217	0.60	0.11	0.19	158
218	0.00	0.00	0.00	93
219	0.00	0.00	0.00	33
220	1.00	0.28	0.43	76
221	0.67	0.01	0.01	332
222	0.00	0.00	0.00	70
223	0.89	0.24	0.37	106
224	0.75	0.01	0.02	365
225	0.00	0.00	0.00	199
226	1.00	0.00	0.01	315
227	1.00	0.30	0.46	186
228	0.31	0.13	0.18	71
229	0.00	0.00	0.00	245
230	0.00	0.00	0.00	112
231	0.50	0.06	0.11	272
232	1.00	0.01	0.01	142
233	0.00	0.00	0.00	15
234	0.55	0.01	0.03	412
235	0.00	0.00	0.00	115
236	0.00	0.00	0.00	189
237	0.95	0.20	0.33	107

238	0.50	0.00	0.01	340
239	0.00	0.00	0.00	93
240	0.33	0.01	0.02	92
241	1.00	0.12	0.22	116
242	1.00	0.06	0.11	139
243	0.00	0.00	0.00	163
244	0.00	0.00	0.00	92
245	1.00	0.18	0.30	91
246	0.43	0.06	0.11	157
247	0.20	0.00	0.01	296
248	0.62	0.02	0.04	415
249	0.00	0.00	0.00	249
250	0.50	0.02	0.04	49
251	0.00	0.00	0.00	102
252	0.00	0.00	0.00	215
253	0.00	0.00	0.00	91
254	0.00	0.00	0.00	453
255	0.86	0.10	0.18	59
256	0.00	0.00	0.00	162
257	0.80	0.41	0.54	39
258	0.00	0.00	0.00	92
259	0.44	0.13	0.20	164
260	0.75	0.02	0.04	136
261	0.00	0.00	0.00	93
262	0.00	0.00	0.00	57
263	0.50	0.06	0.11	32
264	0.00	0.00	0.00	217
265	0.67	0.01	0.02	219
266	1.00	0.00	0.01	274
267	0.00	0.00	0.00	92
268	0.57	0.15	0.24	27
269	0.00	0.00	0.00	75
270	0.77	0.14	0.23	74
271	0.80	0.25	0.38	64
272	0.00	0.00	0.00	34
273	0.66	0.33	0.44	122
274	1.00	0.01	0.02	188
275	0.00	0.00	0.00	145
276	0.50	0.00	0.01	317
277	0.52	0.06	0.11	249
278	0.00	0.00	0.00	61
279	0.89	0.12	0.22	138
280	0.00	0.00	0.00	75
281	0.00	0.00	0.00	250
282	0.67	0.31	0.42	109
283	0.00	0.00	0.00	78
284	1.00	0.01	0.02	121
285	0.97	0.34	0.50	82
286	0.00	0.00	0.00	202
287	0.90	0.27	0.42	96
288	0.00	0.00	0.00	269
289	0.40	0.02	0.03	250
290	0.00	0.00	0.00	85
291	0.00	0.00	0.00	206
292	0.50	0.01	0.03	135
293	0.67	0.04	0.08	48
294	0.43	0.01	0.02	251
295	0.90	0.16	0.26	58
296	0.80	0.10	0.18	195
297	0.27	0.05	0.08	81
298	0.77	0.11	0.19	95
299	0.00	0.00	0.00	92
300	0.67	0.05	0.10	77
301	0.00	0.00	0.00	113
302	0.71	0.08	0.14	291
303	0.00	0.00	0.00	367
304	0.00	0.00	0.00	37
305	0.00	0.00	0.00	99
306	0.00	0.00	0.00	141
307	0.33	0.00	0.01	231
308	0.78	0.02	0.04	314
309	1.00	0.03	0.06	65
310	0.67	0.25	0.36	8
311	0.00	0.00	0.00	24
312	0.00	0.00	0.00	465
313	0.67	0.05	0.09	86
314	0.20	0.02	0.04	48

315	0.00	0.00	0.00	85
316	0.00	0.00	0.00	12
317	1.00	0.00	0.01	333
318	0.00	0.00	0.00	102
319	0.61	0.39	0.48	28
320	0.00	0.00	0.00	141
321	0.86	0.03	0.06	193
322	0.00	0.00	0.00	91
323	0.93	0.08	0.14	169
324	0.00	0.00	0.00	134
325	0.80	0.14	0.23	59
326	0.58	0.33	0.42	91
327	0.00	0.00	0.00	72
328	1.00	1.00	1.00	6
329	0.00	0.00	0.00	54
330	0.59	0.10	0.17	103
331	0.00	0.00	0.00	238
332	0.67	0.01	0.02	188
333	0.56	0.07	0.12	74
334	1.00	0.07	0.14	95
335	0.00	0.00	0.00	115
336	0.67	0.02	0.04	181
337	1.00	0.03	0.05	78
338	1.00	0.02	0.04	55
339	0.60	0.13	0.22	68
340	1.00	0.33	0.50	3
341	0.54	0.30	0.39	93
342	0.00	0.00	0.00	56
343	0.00	0.00	0.00	186
344	0.00	0.00	0.00	435
345	0.29	0.01	0.02	166
346	0.85	0.13	0.23	84
347	0.79	0.20	0.32	75
348	0.89	0.09	0.16	89
349	0.00	0.00	0.00	218
350	0.00	0.00	0.00	5
351	0.00	0.00	0.00	378
352	0.00	0.00	0.00	74
353	1.00	0.14	0.25	78
354	0.00	0.00	0.00	171
355	1.00	0.06	0.11	241
356	0.00	0.00	0.00	290
357	0.00	0.00	0.00	174
358	0.00	0.00	0.00	242
359	0.00	0.00	0.00	15
360	0.00	0.00	0.00	249
361	0.69	0.26	0.38	42
362	0.50	0.05	0.09	43
363	0.67	0.06	0.11	33
364	0.00	0.00	0.00	123
365	0.50	0.10	0.17	20
366	0.67	0.05	0.10	220
367	0.00	0.00	0.00	404
368	0.00	0.00	0.00	164
369	0.00	0.00	0.00	392
370	0.00	0.00	0.00	143
371	0.60	0.18	0.27	34
372	0.14	0.01	0.03	70
373	0.00	0.00	0.00	190
374	1.00	0.04	0.08	49
375	0.00	0.00	0.00	325
376	0.50	0.01	0.01	148
377	0.00	0.00	0.00	119
378	0.00	0.00	0.00	59
379	0.00	0.00	0.00	169
380	0.00	0.00	0.00	255
381	0.00	0.00	0.00	50
382	0.00	0.00	0.00	9
383	1.00	0.01	0.02	100
384	1.00	0.25	0.41	55
385	0.00	0.00	0.00	28
386	0.57	0.02	0.04	210
387	0.00	0.00	0.00	131
388	1.00	0.01	0.01	144
389	0.00	0.00	0.00	62
390	0.00	0.00	0.00	154
391	0.00	0.00	0.00	185

392	0.00	0.00	0.00	134
393	1.00	0.16	0.28	68
394	0.00	0.00	0.00	162
395	0.80	0.06	0.12	62
396	0.00	0.00	0.00	149
397	0.00	0.00	0.00	18
398	0.00	0.00	0.00	203
399	0.73	0.08	0.15	134
400	0.00	0.00	0.00	100
401	0.40	0.01	0.02	162
402	0.00	0.00	0.00	108
403	0.00	0.00	0.00	79
404	0.00	0.00	0.00	80
405	0.00	0.00	0.00	17
406	0.00	0.00	0.00	219
407	0.50	0.04	0.08	92
408	0.00	0.00	0.00	301
409	0.00	0.00	0.00	129
410	0.67	0.02	0.04	86
411	1.00	0.38	0.56	13
412	0.67	0.40	0.50	10
413	1.00	0.22	0.37	67
414	0.00	0.00	0.00	89
415	0.00	0.00	0.00	128
416	0.00	0.00	0.00	245
417	0.88	0.08	0.15	83
418	0.00	0.00	0.00	186
419	0.00	0.00	0.00	83
420	0.65	0.21	0.31	117
421	0.00	0.00	0.00	158
422	0.86	0.08	0.14	78
423	1.00	0.04	0.08	75
424	0.00	0.00	0.00	213
425	1.00	0.36	0.53	11
426	0.00	0.00	0.00	45
427	0.20	0.03	0.05	77
428	0.00	0.00	0.00	115
429	0.00	0.00	0.00	64
430	0.00	0.00	0.00	284
431	0.67	0.01	0.02	192
432	1.00	0.23	0.37	48
433	0.00	0.00	0.00	59
434	0.00	0.00	0.00	239
435	0.00	0.00	0.00	49
436	0.00	0.00	0.00	195
437	0.00	0.00	0.00	160
438	0.50	0.01	0.01	189
439	0.50	0.03	0.06	171
440	0.80	0.02	0.04	222
441	0.00	0.00	0.00	75
442	0.50	0.02	0.03	112
443	0.00	0.00	0.00	62
444	0.00	0.00	0.00	94
445	0.00	0.00	0.00	94
446	0.33	0.02	0.03	59
447	1.00	0.67	0.80	3
448	1.00	0.18	0.30	17
449	0.00	0.00	0.00	83
450	0.00	0.00	0.00	13
451	0.86	0.06	0.11	99
452	0.33	0.02	0.03	55
453	0.00	0.00	0.00	9
454	0.00	0.00	0.00	196
455	1.00	0.01	0.01	179
456	0.00	0.00	0.00	28
457	0.33	0.02	0.04	53
458	0.00	0.00	0.00	103
459	0.00	0.00	0.00	11
460	0.00	0.00	0.00	52
461	0.00	0.00	0.00	70
462	0.00	0.00	0.00	69
463	0.00	0.00	0.00	59
464	0.00	0.00	0.00	57
465	0.00	0.00	0.00	180
466	0.00	0.00	0.00	62
467	0.00	0.00	0.00	166
468	0.33	0.01	0.02	93

```
         469       0.00      0.00      0.00       174
         470       1.00      0.11      0.21        70
         471       0.00      0.00      0.00        54
         472       0.00      0.00      0.00        13
         473       0.00      0.00      0.00       169
         474       1.00      0.01      0.02       131
         475       0.00      0.00      0.00        69
         476       1.00      0.02      0.03        61
         477       0.00      0.00      0.00       181
         478       0.00      0.00      0.00        93
         479       0.00      0.00      0.00        56
         480       1.00      0.01      0.02       126
         481       0.57      0.06      0.11        67
         482       0.75      0.07      0.13        42
         483       0.00      0.00      0.00       117
         484       1.00      0.03      0.05        39
         485       0.75      0.10      0.17        62
         486       0.00      0.00      0.00        92
         487       0.67      0.08      0.15        48
         488       0.00      0.00      0.00        11
         489       1.00      0.03      0.06        60
         490       0.00      0.00      0.00       108
         491       0.00      0.00      0.00        64
         492       0.00      0.00      0.00       113
         493       0.00      0.00      0.00         8
         494       1.00      0.05      0.09        43
         495       0.00      0.00      0.00        15
         496       0.00      0.00      0.00       149
         497       0.00      0.00      0.00        62
         498       0.00      0.00      0.00        17
         499       0.56      0.19      0.29        26

   micro avg       0.84      0.25      0.39    197099
   macro avg       0.43      0.10      0.14    197099
weighted avg       0.65      0.25      0.32    197099
 samples avg       0.42      0.26      0.31    197099

Time taken to run this cell : 0:09:22.011022
Accuracy : 0.10395
Hamming loss  0.00368056
Micro-average quality numbers
Precision: 0.8840, Recall: 0.0763, F1-measure: 0.1405
Macro-average quality numbers
Precision: 0.1011, Recall: 0.0093, F1-measure: 0.0152
```

```
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision is ill-defined and being set to 0.0 in labels with no predicted
samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: F-score is ill-defined and being set to 0.0 in labels with no predicted sa
mples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in samples with
no predicted labels.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1145:
UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in samples with no
true labels.
  'recall', 'true', average, warn_for)

 57%|█████▋    | 4/7 [39:39<30:03, 601.20s/it]
```

	precision	recall	f1-score	support
0	0.94	0.47	0.63	2858
1	0.82	0.05	0.09	22917
2	0.84	0.23	0.36	3660
3	0.95	0.24	0.38	14867
4	0.84	0.19	0.31	2382
5	0.84	0.20	0.32	3643
6	0.88	0.21	0.34	4086
7	0.56	0.06	0.11	3831
8	0.96	0.38	0.55	9219
9	0.89	0.31	0.46	2609
10	0.55	0.01	0.02	4064
11	0.83	0.06	0.12	1652
12	1.00	0.00	0.00	5162
13	0.68	0.02	0.04	1497
14	0.62	0.18	0.28	587
15	0.00	0.00	0.00	1470
16	0.91	0.23	0.37	1409
17	0.66	0.29	0.40	566
18	0.90	0.16	0.27	1336
19	0.67	0.01	0.02	1181
20	0.82	0.08	0.15	685
21	0.68	0.01	0.03	1187
22	0.00	0.00	0.00	1268
23	0.93	0.01	0.01	2048
24	0.52	0.05	0.09	1316
25	0.92	0.05	0.09	231
26	0.00	0.00	0.00	3330
27	0.00	0.00	0.00	187
28	0.78	0.08	0.15	767
29	0.70	0.06	0.10	127
30	0.00	0.00	0.00	306
31	0.43	0.01	0.01	571
32	0.60	0.03	0.05	828
33	0.93	0.09	0.17	150
34	0.00	0.00	0.00	1636
35	0.70	0.06	0.10	1182
36	0.57	0.01	0.02	498
37	0.43	0.03	0.06	672
38	0.96	0.16	0.28	135
39	0.75	0.06	0.12	374
40	0.00	0.00	0.00	478
41	0.00	0.00	0.00	545
42	0.00	0.00	0.00	1198
43	0.60	0.01	0.01	560
44	0.79	0.05	0.09	486
45	0.00	0.00	0.00	96
46	0.00	0.00	0.00	727
47	0.00	0.00	0.00	214
48	0.00	0.00	0.00	838
49	0.86	0.05	0.10	332
50	1.00	0.00	0.00	608
51	0.00	0.00	0.00	477
52	0.00	0.00	0.00	1597
53	0.50	0.01	0.01	742
54	1.00	0.00	0.01	306
55	0.56	0.02	0.04	232
56	0.82	0.07	0.13	197
57	1.00	0.00	0.00	628
58	0.33	0.00	0.00	604
59	0.00	0.00	0.00	216
60	1.00	0.04	0.08	69
61	1.00	0.02	0.04	251
62	0.00	0.00	0.00	526
63	0.00	0.00	0.00	445
64	0.00	0.00	0.00	525
65	1.00	0.00	0.01	302
66	0.00	0.00	0.00	44
67	0.00	0.00	0.00	1459
68	0.50	0.01	0.01	156
69	0.83	0.06	0.12	295
70	0.00	0.00	0.00	247
71	0.67	0.02	0.03	877
72	0.00	0.00	0.00	765
73	0.00	0.00	0.00	277
74	1.00	0.01	0.02	333

74	1.00	0.01	0.02	232
75	0.00	0.00	0.00	1049
76	0.00	0.00	0.00	921
77	0.00	0.00	0.00	693
78	0.00	0.00	0.00	282
79	1.00	0.00	0.00	1237
80	0.00	0.00	0.00	191
81	0.00	0.00	0.00	462
82	0.00	0.00	0.00	528
83	0.00	0.00	0.00	469
84	0.00	0.00	0.00	534
85	0.00	0.00	0.00	304
86	0.00	0.00	0.00	593
87	0.00	0.00	0.00	105
88	0.00	0.00	0.00	397
89	0.00	0.00	0.00	513
90	0.00	0.00	0.00	251
91	1.00	0.01	0.01	148
92	1.00	0.00	0.01	249
93	0.00	0.00	0.00	272
94	1.00	0.02	0.04	144
95	0.00	0.00	0.00	350
96	0.00	0.00	0.00	96
97	0.00	0.00	0.00	129
98	0.00	0.00	0.00	255
99	0.00	0.00	0.00	264
100	0.00	0.00	0.00	243
101	0.00	0.00	0.00	112
102	0.00	0.00	0.00	144
103	0.00	0.00	0.00	59
104	0.00	0.00	0.00	430
105	0.00	0.00	0.00	402
106	0.00	0.00	0.00	112
107	0.00	0.00	0.00	587
108	0.00	0.00	0.00	150
109	0.00	0.00	0.00	81
110	0.00	0.00	0.00	321
111	0.00	0.00	0.00	274
112	0.00	0.00	0.00	510
113	1.00	0.04	0.07	57
114	0.00	0.00	0.00	127
115	0.00	0.00	0.00	279
116	0.00	0.00	0.00	336
117	0.00	0.00	0.00	789
118	0.83	0.04	0.08	119
119	0.00	0.00	0.00	301
120	0.00	0.00	0.00	490
121	0.00	0.00	0.00	40
122	0.00	0.00	0.00	327
123	0.00	0.00	0.00	174
124	0.00	0.00	0.00	162
125	0.00	0.00	0.00	565
126	0.00	0.00	0.00	415
127	0.00	0.00	0.00	634
128	0.00	0.00	0.00	331
129	0.00	0.00	0.00	241
130	0.00	0.00	0.00	181
131	0.00	0.00	0.00	390
132	1.00	0.01	0.01	146
133	0.00	0.00	0.00	101
134	0.00	0.00	0.00	243
135	0.71	0.02	0.04	232
136	0.00	0.00	0.00	39
137	0.00	0.00	0.00	179
138	1.00	0.03	0.05	40
139	0.00	0.00	0.00	248
140	0.00	0.00	0.00	316
141	0.00	0.00	0.00	176
142	0.00	0.00	0.00	818
143	0.00	0.00	0.00	59
144	0.00	0.00	0.00	547
145	0.00	0.00	0.00	44
146	0.00	0.00	0.00	467
147	0.00	0.00	0.00	154
148	0.50	0.01	0.02	126
149	0.00	0.00	0.00	565
150	0.00	0.00	0.00	727
151	0.00	0.00	0.00	466

151	0.00	0.00	0.00	466
152	1.00	0.01	0.01	133
153	0.00	0.00	0.00	225
154	0.00	0.00	0.00	60
155	0.00	0.00	0.00	167
156	0.00	0.00	0.00	275
157	0.00	0.00	0.00	317
158	0.00	0.00	0.00	61
159	1.00	0.02	0.04	48
160	0.00	0.00	0.00	24
161	0.00	0.00	0.00	278
162	0.00	0.00	0.00	138
163	0.00	0.00	0.00	228
164	0.00	0.00	0.00	198
165	0.00	0.00	0.00	137
166	0.00	0.00	0.00	238
167	0.00	0.00	0.00	136
168	0.00	0.00	0.00	276
169	0.00	0.00	0.00	285
170	0.00	0.00	0.00	262
171	0.00	0.00	0.00	203
172	0.00	0.00	0.00	120
173	0.00	0.00	0.00	42
174	0.00	0.00	0.00	242
175	0.00	0.00	0.00	103
176	0.00	0.00	0.00	165
177	0.00	0.00	0.00	154
178	0.00	0.00	0.00	83
179	0.00	0.00	0.00	147
180	0.00	0.00	0.00	103
181	0.00	0.00	0.00	401
182	0.00	0.00	0.00	213
183	0.00	0.00	0.00	284
184	0.00	0.00	0.00	20
185	0.00	0.00	0.00	273
186	0.00	0.00	0.00	213
187	0.00	0.00	0.00	142
188	0.00	0.00	0.00	95
189	0.00	0.00	0.00	225
190	0.00	0.00	0.00	142
191	0.00	0.00	0.00	278
192	0.00	0.00	0.00	82
193	0.00	0.00	0.00	656
194	0.00	0.00	0.00	371
195	0.00	0.00	0.00	38
196	0.00	0.00	0.00	97
197	0.00	0.00	0.00	136
198	0.00	0.00	0.00	180
199	0.00	0.00	0.00	214
200	0.00	0.00	0.00	392
201	0.00	0.00	0.00	270
202	0.00	0.00	0.00	93
203	0.00	0.00	0.00	127
204	0.00	0.00	0.00	205
205	0.00	0.00	0.00	117
206	0.00	0.00	0.00	124
207	0.00	0.00	0.00	271
208	0.00	0.00	0.00	77
209	0.00	0.00	0.00	228
210	0.00	0.00	0.00	417
211	0.00	0.00	0.00	114
212	0.00	0.00	0.00	139
213	0.00	0.00	0.00	47
214	0.00	0.00	0.00	65
215	0.00	0.00	0.00	146
216	0.00	0.00	0.00	84
217	0.00	0.00	0.00	158
218	0.00	0.00	0.00	93
219	0.00	0.00	0.00	33
220	0.00	0.00	0.00	76
221	0.00	0.00	0.00	332
222	0.00	0.00	0.00	70
223	0.00	0.00	0.00	106
224	0.00	0.00	0.00	365
225	0.00	0.00	0.00	199
226	0.00	0.00	0.00	315
227	0.00	0.00	0.00	186

228	0.00	0.00	0.00	71
229	0.00	0.00	0.00	245
230	0.00	0.00	0.00	112
231	0.00	0.00	0.00	272
232	0.00	0.00	0.00	142
233	0.00	0.00	0.00	15
234	0.00	0.00	0.00	412
235	0.00	0.00	0.00	115
236	0.00	0.00	0.00	189
237	0.00	0.00	0.00	107
238	0.00	0.00	0.00	340
239	0.00	0.00	0.00	93
240	0.00	0.00	0.00	92
241	0.00	0.00	0.00	116
242	0.00	0.00	0.00	139
243	0.00	0.00	0.00	163
244	0.00	0.00	0.00	92
245	0.00	0.00	0.00	91
246	0.00	0.00	0.00	157
247	0.00	0.00	0.00	296
248	0.00	0.00	0.00	415
249	0.00	0.00	0.00	249
250	0.00	0.00	0.00	49
251	0.00	0.00	0.00	102
252	0.00	0.00	0.00	215
253	0.00	0.00	0.00	91
254	0.00	0.00	0.00	453
255	0.00	0.00	0.00	59
256	0.00	0.00	0.00	162
257	0.00	0.00	0.00	39
258	0.00	0.00	0.00	92
259	0.00	0.00	0.00	164
260	0.00	0.00	0.00	136
261	0.00	0.00	0.00	93
262	0.00	0.00	0.00	57
263	0.00	0.00	0.00	32
264	0.00	0.00	0.00	217
265	0.00	0.00	0.00	219
266	0.00	0.00	0.00	274
267	0.00	0.00	0.00	92
268	0.00	0.00	0.00	27
269	0.00	0.00	0.00	75
270	0.00	0.00	0.00	74
271	0.00	0.00	0.00	64
272	0.00	0.00	0.00	34
273	0.00	0.00	0.00	122
274	0.00	0.00	0.00	188
275	0.00	0.00	0.00	145
276	0.00	0.00	0.00	317
277	0.00	0.00	0.00	249
278	0.00	0.00	0.00	61
279	0.00	0.00	0.00	138
280	0.00	0.00	0.00	75
281	0.00	0.00	0.00	250
282	0.00	0.00	0.00	109
283	0.00	0.00	0.00	78
284	0.00	0.00	0.00	121
285	0.00	0.00	0.00	82
286	0.00	0.00	0.00	202
287	0.00	0.00	0.00	96
288	0.00	0.00	0.00	269
289	0.00	0.00	0.00	250
290	0.00	0.00	0.00	85
291	0.00	0.00	0.00	206
292	0.00	0.00	0.00	135
293	0.00	0.00	0.00	48
294	0.00	0.00	0.00	251
295	0.00	0.00	0.00	58
296	0.00	0.00	0.00	195
297	0.00	0.00	0.00	81
298	0.00	0.00	0.00	95
299	0.00	0.00	0.00	92
300	0.00	0.00	0.00	77
301	0.00	0.00	0.00	113
302	0.00	0.00	0.00	291
303	0.00	0.00	0.00	367
304	0.00	0.00	0.00	37

305	0.00	0.00	0.00	99
306	0.00	0.00	0.00	141
307	0.00	0.00	0.00	231
308	0.00	0.00	0.00	314
309	0.00	0.00	0.00	65
310	0.00	0.00	0.00	8
311	0.00	0.00	0.00	24
312	0.00	0.00	0.00	465
313	0.00	0.00	0.00	86
314	0.00	0.00	0.00	48
315	0.00	0.00	0.00	85
316	0.00	0.00	0.00	12
317	0.00	0.00	0.00	333
318	0.00	0.00	0.00	102
319	0.00	0.00	0.00	28
320	0.00	0.00	0.00	141
321	0.00	0.00	0.00	193
322	0.00	0.00	0.00	91
323	0.00	0.00	0.00	169
324	0.00	0.00	0.00	134
325	0.00	0.00	0.00	59
326	0.00	0.00	0.00	91
327	0.00	0.00	0.00	72
328	0.00	0.00	0.00	6
329	0.00	0.00	0.00	54
330	0.00	0.00	0.00	103
331	0.00	0.00	0.00	238
332	0.00	0.00	0.00	188
333	0.00	0.00	0.00	74
334	0.00	0.00	0.00	95
335	0.00	0.00	0.00	115
336	0.00	0.00	0.00	181
337	0.00	0.00	0.00	78
338	0.00	0.00	0.00	55
339	0.00	0.00	0.00	68
340	0.00	0.00	0.00	3
341	0.00	0.00	0.00	93
342	0.00	0.00	0.00	56
343	0.00	0.00	0.00	186
344	0.00	0.00	0.00	435
345	0.00	0.00	0.00	166
346	0.00	0.00	0.00	84
347	0.00	0.00	0.00	75
348	0.00	0.00	0.00	89
349	0.00	0.00	0.00	218
350	0.00	0.00	0.00	5
351	0.00	0.00	0.00	378
352	0.00	0.00	0.00	74
353	0.00	0.00	0.00	78
354	0.00	0.00	0.00	171
355	0.00	0.00	0.00	241
356	0.00	0.00	0.00	290
357	0.00	0.00	0.00	174
358	0.00	0.00	0.00	242
359	0.00	0.00	0.00	15
360	0.00	0.00	0.00	249
361	0.00	0.00	0.00	42
362	0.00	0.00	0.00	43
363	0.00	0.00	0.00	33
364	0.00	0.00	0.00	123
365	0.00	0.00	0.00	20
366	0.00	0.00	0.00	220
367	0.00	0.00	0.00	404
368	0.00	0.00	0.00	164
369	0.00	0.00	0.00	392
370	0.00	0.00	0.00	143
371	0.00	0.00	0.00	34
372	0.00	0.00	0.00	70
373	0.00	0.00	0.00	190
374	0.00	0.00	0.00	49
375	0.00	0.00	0.00	325
376	0.00	0.00	0.00	148
377	0.00	0.00	0.00	119
378	0.00	0.00	0.00	59
379	0.00	0.00	0.00	169
380	0.00	0.00	0.00	255
381	0.00	0.00	0.00	50

382	0.00	0.00	0.00	9
383	0.00	0.00	0.00	100
384	0.00	0.00	0.00	55
385	0.00	0.00	0.00	28
386	0.00	0.00	0.00	210
387	0.00	0.00	0.00	131
388	0.00	0.00	0.00	144
389	0.00	0.00	0.00	62
390	0.00	0.00	0.00	154
391	0.00	0.00	0.00	185
392	0.00	0.00	0.00	134
393	0.00	0.00	0.00	68
394	0.00	0.00	0.00	162
395	0.00	0.00	0.00	62
396	0.00	0.00	0.00	149
397	0.00	0.00	0.00	18
398	0.00	0.00	0.00	203
399	0.00	0.00	0.00	134
400	0.00	0.00	0.00	100
401	0.00	0.00	0.00	162
402	0.00	0.00	0.00	108
403	0.00	0.00	0.00	79
404	0.00	0.00	0.00	80
405	0.00	0.00	0.00	17
406	0.00	0.00	0.00	219
407	0.00	0.00	0.00	92
408	0.00	0.00	0.00	301
409	0.00	0.00	0.00	129
410	0.00	0.00	0.00	86
411	0.00	0.00	0.00	13
412	0.00	0.00	0.00	10
413	0.00	0.00	0.00	67
414	0.00	0.00	0.00	89
415	0.00	0.00	0.00	128
416	0.00	0.00	0.00	245
417	0.00	0.00	0.00	83
418	0.00	0.00	0.00	186
419	0.00	0.00	0.00	83
420	0.00	0.00	0.00	117
421	0.00	0.00	0.00	158
422	0.00	0.00	0.00	78
423	0.00	0.00	0.00	75
424	0.00	0.00	0.00	213
425	0.00	0.00	0.00	11
426	0.00	0.00	0.00	45
427	0.00	0.00	0.00	77
428	0.00	0.00	0.00	115
429	0.00	0.00	0.00	64
430	0.00	0.00	0.00	284
431	0.00	0.00	0.00	192
432	0.00	0.00	0.00	48
433	0.00	0.00	0.00	59
434	0.00	0.00	0.00	239
435	0.00	0.00	0.00	49
436	0.00	0.00	0.00	195
437	0.00	0.00	0.00	160
438	0.00	0.00	0.00	189
439	0.00	0.00	0.00	171
440	0.00	0.00	0.00	222
441	0.00	0.00	0.00	75
442	0.00	0.00	0.00	112
443	0.00	0.00	0.00	62
444	0.00	0.00	0.00	94
445	0.00	0.00	0.00	94
446	0.00	0.00	0.00	59
447	0.00	0.00	0.00	3
448	0.00	0.00	0.00	17
449	0.00	0.00	0.00	83
450	0.00	0.00	0.00	13
451	0.00	0.00	0.00	99
452	0.00	0.00	0.00	55
453	0.00	0.00	0.00	9
454	0.00	0.00	0.00	196
455	0.00	0.00	0.00	179
456	0.00	0.00	0.00	28
457	0.00	0.00	0.00	53
458	0.00	0.00	0.00	103

```
         459       0.00      0.00      0.00        11
         460       0.00      0.00      0.00        52
         461       0.00      0.00      0.00        70
         462       0.00      0.00      0.00        69
         463       0.00      0.00      0.00        59
         464       0.00      0.00      0.00        57
         465       0.00      0.00      0.00       180
         466       0.00      0.00      0.00        62
         467       0.00      0.00      0.00       166
         468       0.00      0.00      0.00        93
         469       0.00      0.00      0.00       174
         470       0.00      0.00      0.00        70
         471       0.00      0.00      0.00        54
         472       0.00      0.00      0.00        13
         473       0.00      0.00      0.00       169
         474       0.00      0.00      0.00       131
         475       0.00      0.00      0.00        69
         476       0.00      0.00      0.00        61
         477       0.00      0.00      0.00       181
         478       0.00      0.00      0.00        93
         479       0.00      0.00      0.00        56
         480       0.00      0.00      0.00       126
         481       0.00      0.00      0.00        67
         482       0.00      0.00      0.00        42
         483       0.00      0.00      0.00       117
         484       0.00      0.00      0.00        39
         485       0.00      0.00      0.00        62
         486       0.00      0.00      0.00        92
         487       0.00      0.00      0.00        48
         488       0.00      0.00      0.00        11
         489       0.00      0.00      0.00        60
         490       0.00      0.00      0.00       108
         491       0.00      0.00      0.00        64
         492       0.00      0.00      0.00       113
         493       0.00      0.00      0.00         8
         494       0.00      0.00      0.00        43
         495       0.00      0.00      0.00        15
         496       0.00      0.00      0.00       149
         497       0.00      0.00      0.00        62
         498       0.00      0.00      0.00        17
         499       0.00      0.00      0.00        26

   micro avg       0.88      0.08      0.14    197099
   macro avg       0.10      0.01      0.02    197099
weighted avg       0.46      0.08      0.12    197099
 samples avg       0.14      0.08      0.10    197099

Time taken to run this cell : 0:11:05.091181
Accuracy : 0.06934
Hamming loss  0.00391852
Micro-average quality numbers
Precision: 0.9303, Recall: 0.0064, F1-measure: 0.0128
Macro-average quality numbers
Precision: 0.0213, Recall: 0.0009, F1-measure: 0.0013
```

```
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision is ill-defined and being set to 0.0 in labels with no predicted
samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: F-score is ill-defined and being set to 0.0 in labels with no predicted sa
mples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in samples with
```

```
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in samples with
no predicted labels.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1145:
UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in samples with no
true labels.
  'recall', 'true', average, warn_for)

 71%|███████   | 5/7 [49:58<20:13, 606.52s/it]
```

	precision	recall	f1-score	support
0	0.93	0.41	0.57	2858
1	0.00	0.00	0.00	22917
2	0.90	0.00	0.01	3660
3	1.00	0.00	0.00	14867
4	0.92	0.01	0.02	2382
5	1.00	0.00	0.00	3643
6	0.88	0.00	0.01	4086
7	0.80	0.00	0.00	3831
8	0.80	0.00	0.00	9219
9	0.92	0.00	0.01	2609
10	0.00	0.00	0.00	4064
11	0.00	0.00	0.00	1652
12	0.00	0.00	0.00	5162
13	0.00	0.00	0.00	1497
14	0.50	0.00	0.01	587
15	0.00	0.00	0.00	1470
16	1.00	0.00	0.00	1409
17	0.00	0.00	0.00	566
18	1.00	0.00	0.00	1336
19	0.00	0.00	0.00	1181
20	0.00	0.00	0.00	685
21	0.00	0.00	0.00	1187
22	0.00	0.00	0.00	1268
23	0.00	0.00	0.00	2048
24	0.00	0.00	0.00	1316
25	0.00	0.00	0.00	231
26	0.00	0.00	0.00	3330
27	0.00	0.00	0.00	187
28	0.00	0.00	0.00	767
29	0.00	0.00	0.00	127
30	0.00	0.00	0.00	306
31	0.00	0.00	0.00	571
32	0.00	0.00	0.00	828
33	0.00	0.00	0.00	150
34	0.00	0.00	0.00	1636
35	0.00	0.00	0.00	1182
36	0.00	0.00	0.00	498
37	0.00	0.00	0.00	672
38	0.00	0.00	0.00	135
39	0.00	0.00	0.00	374
40	0.00	0.00	0.00	478
41	0.00	0.00	0.00	545
42	0.00	0.00	0.00	1198
43	0.00	0.00	0.00	560
44	0.00	0.00	0.00	486
45	0.00	0.00	0.00	96
46	0.00	0.00	0.00	727
47	0.00	0.00	0.00	214
48	0.00	0.00	0.00	838
49	0.00	0.00	0.00	332
50	0.00	0.00	0.00	608
51	0.00	0.00	0.00	477
52	0.00	0.00	0.00	1597
53	0.00	0.00	0.00	742
54	0.00	0.00	0.00	306
55	0.00	0.00	0.00	232
56	0.00	0.00	0.00	197
57	0.00	0.00	0.00	628
58	0.00	0.00	0.00	604
59	0.00	0.00	0.00	216
60	0.00	0.00	0.00	69
61	0.00	0.00	0.00	251
62	0.00	0.00	0.00	526
63	0.00	0.00	0.00	445
64	0.00	0.00	0.00	525

65	0.00	0.00	0.00	302
66	0.00	0.00	0.00	44
67	0.00	0.00	0.00	1459
68	0.00	0.00	0.00	156
69	0.00	0.00	0.00	295
70	0.00	0.00	0.00	247
71	0.00	0.00	0.00	877
72	0.00	0.00	0.00	765
73	0.00	0.00	0.00	277
74	0.00	0.00	0.00	232
75	0.00	0.00	0.00	1049
76	0.00	0.00	0.00	921
77	0.00	0.00	0.00	693
78	0.00	0.00	0.00	282
79	0.00	0.00	0.00	1237
80	0.00	0.00	0.00	191
81	0.00	0.00	0.00	462
82	0.00	0.00	0.00	528
83	0.00	0.00	0.00	469
84	0.00	0.00	0.00	534
85	0.00	0.00	0.00	304
86	0.00	0.00	0.00	593
87	0.00	0.00	0.00	105
88	0.00	0.00	0.00	397
89	0.00	0.00	0.00	513
90	0.00	0.00	0.00	251
91	0.00	0.00	0.00	148
92	0.00	0.00	0.00	249
93	0.00	0.00	0.00	272
94	0.00	0.00	0.00	144
95	0.00	0.00	0.00	350
96	0.00	0.00	0.00	96
97	0.00	0.00	0.00	129
98	0.00	0.00	0.00	255
99	0.00	0.00	0.00	264
100	0.00	0.00	0.00	243
101	0.00	0.00	0.00	112
102	0.00	0.00	0.00	144
103	0.00	0.00	0.00	59
104	0.00	0.00	0.00	430
105	0.00	0.00	0.00	402
106	0.00	0.00	0.00	112
107	0.00	0.00	0.00	587
108	0.00	0.00	0.00	150
109	0.00	0.00	0.00	81
110	0.00	0.00	0.00	321
111	0.00	0.00	0.00	274
112	0.00	0.00	0.00	510
113	0.00	0.00	0.00	57
114	0.00	0.00	0.00	127
115	0.00	0.00	0.00	279
116	0.00	0.00	0.00	336
117	0.00	0.00	0.00	789
118	0.00	0.00	0.00	119
119	0.00	0.00	0.00	301
120	0.00	0.00	0.00	490
121	0.00	0.00	0.00	40
122	0.00	0.00	0.00	327
123	0.00	0.00	0.00	174
124	0.00	0.00	0.00	162
125	0.00	0.00	0.00	565
126	0.00	0.00	0.00	415
127	0.00	0.00	0.00	634
128	0.00	0.00	0.00	331
129	0.00	0.00	0.00	241
130	0.00	0.00	0.00	181
131	0.00	0.00	0.00	390
132	0.00	0.00	0.00	146
133	0.00	0.00	0.00	101
134	0.00	0.00	0.00	243
135	0.00	0.00	0.00	232
136	0.00	0.00	0.00	39
137	0.00	0.00	0.00	179
138	0.00	0.00	0.00	40
139	0.00	0.00	0.00	248
140	0.00	0.00	0.00	316
141	0.00	0.00	0.00	176

142	0.00	0.00	0.00	818
143	0.00	0.00	0.00	59
144	0.00	0.00	0.00	547
145	0.00	0.00	0.00	44
146	0.00	0.00	0.00	467
147	0.00	0.00	0.00	154
148	0.00	0.00	0.00	126
149	0.00	0.00	0.00	565
150	0.00	0.00	0.00	727
151	0.00	0.00	0.00	466
152	0.00	0.00	0.00	133
153	0.00	0.00	0.00	225
154	0.00	0.00	0.00	60
155	0.00	0.00	0.00	167
156	0.00	0.00	0.00	275
157	0.00	0.00	0.00	317
158	0.00	0.00	0.00	61
159	0.00	0.00	0.00	48
160	0.00	0.00	0.00	24
161	0.00	0.00	0.00	278
162	0.00	0.00	0.00	138
163	0.00	0.00	0.00	228
164	0.00	0.00	0.00	198
165	0.00	0.00	0.00	137
166	0.00	0.00	0.00	238
167	0.00	0.00	0.00	136
168	0.00	0.00	0.00	276
169	0.00	0.00	0.00	285
170	0.00	0.00	0.00	262
171	0.00	0.00	0.00	203
172	0.00	0.00	0.00	120
173	0.00	0.00	0.00	42
174	0.00	0.00	0.00	242
175	0.00	0.00	0.00	103
176	0.00	0.00	0.00	165
177	0.00	0.00	0.00	154
178	0.00	0.00	0.00	83
179	0.00	0.00	0.00	147
180	0.00	0.00	0.00	103
181	0.00	0.00	0.00	401
182	0.00	0.00	0.00	213
183	0.00	0.00	0.00	284
184	0.00	0.00	0.00	20
185	0.00	0.00	0.00	273
186	0.00	0.00	0.00	213
187	0.00	0.00	0.00	142
188	0.00	0.00	0.00	95
189	0.00	0.00	0.00	225
190	0.00	0.00	0.00	142
191	0.00	0.00	0.00	278
192	0.00	0.00	0.00	82
193	0.00	0.00	0.00	656
194	0.00	0.00	0.00	371
195	0.00	0.00	0.00	38
196	0.00	0.00	0.00	97
197	0.00	0.00	0.00	136
198	0.00	0.00	0.00	180
199	0.00	0.00	0.00	214
200	0.00	0.00	0.00	392
201	0.00	0.00	0.00	270
202	0.00	0.00	0.00	93
203	0.00	0.00	0.00	127
204	0.00	0.00	0.00	205
205	0.00	0.00	0.00	117
206	0.00	0.00	0.00	124
207	0.00	0.00	0.00	271
208	0.00	0.00	0.00	77
209	0.00	0.00	0.00	228
210	0.00	0.00	0.00	417
211	0.00	0.00	0.00	114
212	0.00	0.00	0.00	139
213	0.00	0.00	0.00	47
214	0.00	0.00	0.00	65
215	0.00	0.00	0.00	146
216	0.00	0.00	0.00	84
217	0.00	0.00	0.00	158
218	0.00	0.00	0.00	93

218	0.00	0.00	0.00	95
219	0.00	0.00	0.00	33
220	0.00	0.00	0.00	76
221	0.00	0.00	0.00	332
222	0.00	0.00	0.00	70
223	0.00	0.00	0.00	106
224	0.00	0.00	0.00	365
225	0.00	0.00	0.00	199
226	0.00	0.00	0.00	315
227	0.00	0.00	0.00	186
228	0.00	0.00	0.00	71
229	0.00	0.00	0.00	245
230	0.00	0.00	0.00	112
231	0.00	0.00	0.00	272
232	0.00	0.00	0.00	142
233	0.00	0.00	0.00	15
234	0.00	0.00	0.00	412
235	0.00	0.00	0.00	115
236	0.00	0.00	0.00	189
237	0.00	0.00	0.00	107
238	0.00	0.00	0.00	340
239	0.00	0.00	0.00	93
240	0.00	0.00	0.00	92
241	0.00	0.00	0.00	116
242	0.00	0.00	0.00	139
243	0.00	0.00	0.00	163
244	0.00	0.00	0.00	92
245	0.00	0.00	0.00	91
246	0.00	0.00	0.00	157
247	0.00	0.00	0.00	296
248	0.00	0.00	0.00	415
249	0.00	0.00	0.00	249
250	0.00	0.00	0.00	49
251	0.00	0.00	0.00	102
252	0.00	0.00	0.00	215
253	0.00	0.00	0.00	91
254	0.00	0.00	0.00	453
255	0.00	0.00	0.00	59
256	0.00	0.00	0.00	162
257	0.00	0.00	0.00	39
258	0.00	0.00	0.00	92
259	0.00	0.00	0.00	164
260	0.00	0.00	0.00	136
261	0.00	0.00	0.00	93
262	0.00	0.00	0.00	57
263	0.00	0.00	0.00	32
264	0.00	0.00	0.00	217
265	0.00	0.00	0.00	219
266	0.00	0.00	0.00	274
267	0.00	0.00	0.00	92
268	0.00	0.00	0.00	27
269	0.00	0.00	0.00	75
270	0.00	0.00	0.00	74
271	0.00	0.00	0.00	64
272	0.00	0.00	0.00	34
273	0.00	0.00	0.00	122
274	0.00	0.00	0.00	188
275	0.00	0.00	0.00	145
276	0.00	0.00	0.00	317
277	0.00	0.00	0.00	249
278	0.00	0.00	0.00	61
279	0.00	0.00	0.00	138
280	0.00	0.00	0.00	75
281	0.00	0.00	0.00	250
282	0.00	0.00	0.00	109
283	0.00	0.00	0.00	78
284	0.00	0.00	0.00	121
285	0.00	0.00	0.00	82
286	0.00	0.00	0.00	202
287	0.00	0.00	0.00	96
288	0.00	0.00	0.00	269
289	0.00	0.00	0.00	250
290	0.00	0.00	0.00	85
291	0.00	0.00	0.00	206
292	0.00	0.00	0.00	135
293	0.00	0.00	0.00	48
294	0.00	0.00	0.00	251
295	0.00	0.00	0.00	58

295	0.00	0.00	0.00	58
296	0.00	0.00	0.00	195
297	0.00	0.00	0.00	81
298	0.00	0.00	0.00	95
299	0.00	0.00	0.00	92
300	0.00	0.00	0.00	77
301	0.00	0.00	0.00	113
302	0.00	0.00	0.00	291
303	0.00	0.00	0.00	367
304	0.00	0.00	0.00	37
305	0.00	0.00	0.00	99
306	0.00	0.00	0.00	141
307	0.00	0.00	0.00	231
308	0.00	0.00	0.00	314
309	0.00	0.00	0.00	65
310	0.00	0.00	0.00	8
311	0.00	0.00	0.00	24
312	0.00	0.00	0.00	465
313	0.00	0.00	0.00	86
314	0.00	0.00	0.00	48
315	0.00	0.00	0.00	85
316	0.00	0.00	0.00	12
317	0.00	0.00	0.00	333
318	0.00	0.00	0.00	102
319	0.00	0.00	0.00	28
320	0.00	0.00	0.00	141
321	0.00	0.00	0.00	193
322	0.00	0.00	0.00	91
323	0.00	0.00	0.00	169
324	0.00	0.00	0.00	134
325	0.00	0.00	0.00	59
326	0.00	0.00	0.00	91
327	0.00	0.00	0.00	72
328	0.00	0.00	0.00	6
329	0.00	0.00	0.00	54
330	0.00	0.00	0.00	103
331	0.00	0.00	0.00	238
332	0.00	0.00	0.00	188
333	0.00	0.00	0.00	74
334	0.00	0.00	0.00	95
335	0.00	0.00	0.00	115
336	0.00	0.00	0.00	181
337	0.00	0.00	0.00	78
338	0.00	0.00	0.00	55
339	0.00	0.00	0.00	68
340	0.00	0.00	0.00	3
341	0.00	0.00	0.00	93
342	0.00	0.00	0.00	56
343	0.00	0.00	0.00	186
344	0.00	0.00	0.00	435
345	0.00	0.00	0.00	166
346	0.00	0.00	0.00	84
347	0.00	0.00	0.00	75
348	0.00	0.00	0.00	89
349	0.00	0.00	0.00	218
350	0.00	0.00	0.00	5
351	0.00	0.00	0.00	378
352	0.00	0.00	0.00	74
353	0.00	0.00	0.00	78
354	0.00	0.00	0.00	171
355	0.00	0.00	0.00	241
356	0.00	0.00	0.00	290
357	0.00	0.00	0.00	174
358	0.00	0.00	0.00	242
359	0.00	0.00	0.00	15
360	0.00	0.00	0.00	249
361	0.00	0.00	0.00	42
362	0.00	0.00	0.00	43
363	0.00	0.00	0.00	33
364	0.00	0.00	0.00	123
365	0.00	0.00	0.00	20
366	0.00	0.00	0.00	220
367	0.00	0.00	0.00	404
368	0.00	0.00	0.00	164
369	0.00	0.00	0.00	392
370	0.00	0.00	0.00	143
371	0.00	0.00	0.00	34
372	0.00	0.00	0.00	70

372	0.00	0.00	0.00	70
373	0.00	0.00	0.00	190
374	0.00	0.00	0.00	49
375	0.00	0.00	0.00	325
376	0.00	0.00	0.00	148
377	0.00	0.00	0.00	119
378	0.00	0.00	0.00	59
379	0.00	0.00	0.00	169
380	0.00	0.00	0.00	255
381	0.00	0.00	0.00	50
382	0.00	0.00	0.00	9
383	0.00	0.00	0.00	100
384	0.00	0.00	0.00	55
385	0.00	0.00	0.00	28
386	0.00	0.00	0.00	210
387	0.00	0.00	0.00	131
388	0.00	0.00	0.00	144
389	0.00	0.00	0.00	62
390	0.00	0.00	0.00	154
391	0.00	0.00	0.00	185
392	0.00	0.00	0.00	134
393	0.00	0.00	0.00	68
394	0.00	0.00	0.00	162
395	0.00	0.00	0.00	62
396	0.00	0.00	0.00	149
397	0.00	0.00	0.00	18
398	0.00	0.00	0.00	203
399	0.00	0.00	0.00	134
400	0.00	0.00	0.00	100
401	0.00	0.00	0.00	162
402	0.00	0.00	0.00	108
403	0.00	0.00	0.00	79
404	0.00	0.00	0.00	80
405	0.00	0.00	0.00	17
406	0.00	0.00	0.00	219
407	0.00	0.00	0.00	92
408	0.00	0.00	0.00	301
409	0.00	0.00	0.00	129
410	0.00	0.00	0.00	86
411	0.00	0.00	0.00	13
412	0.00	0.00	0.00	10
413	0.00	0.00	0.00	67
414	0.00	0.00	0.00	89
415	0.00	0.00	0.00	128
416	0.00	0.00	0.00	245
417	0.00	0.00	0.00	83
418	0.00	0.00	0.00	186
419	0.00	0.00	0.00	83
420	0.00	0.00	0.00	117
421	0.00	0.00	0.00	158
422	0.00	0.00	0.00	78
423	0.00	0.00	0.00	75
424	0.00	0.00	0.00	213
425	0.00	0.00	0.00	11
426	0.00	0.00	0.00	45
427	0.00	0.00	0.00	77
428	0.00	0.00	0.00	115
429	0.00	0.00	0.00	64
430	0.00	0.00	0.00	284
431	0.00	0.00	0.00	192
432	0.00	0.00	0.00	48
433	0.00	0.00	0.00	59
434	0.00	0.00	0.00	239
435	0.00	0.00	0.00	49
436	0.00	0.00	0.00	195
437	0.00	0.00	0.00	160
438	0.00	0.00	0.00	189
439	0.00	0.00	0.00	171
440	0.00	0.00	0.00	222
441	0.00	0.00	0.00	75
442	0.00	0.00	0.00	112
443	0.00	0.00	0.00	62
444	0.00	0.00	0.00	94
445	0.00	0.00	0.00	94
446	0.00	0.00	0.00	59
447	0.00	0.00	0.00	3
448	0.00	0.00	0.00	17
449	0.00	0.00	0.00	83

449	0.00	0.00	0.00	83
450	0.00	0.00	0.00	13
451	0.00	0.00	0.00	99
452	0.00	0.00	0.00	55
453	0.00	0.00	0.00	9
454	0.00	0.00	0.00	196
455	0.00	0.00	0.00	179
456	0.00	0.00	0.00	28
457	0.00	0.00	0.00	53
458	0.00	0.00	0.00	103
459	0.00	0.00	0.00	11
460	0.00	0.00	0.00	52
461	0.00	0.00	0.00	70
462	0.00	0.00	0.00	69
463	0.00	0.00	0.00	59
464	0.00	0.00	0.00	57
465	0.00	0.00	0.00	180
466	0.00	0.00	0.00	62
467	0.00	0.00	0.00	166
468	0.00	0.00	0.00	93
469	0.00	0.00	0.00	174
470	0.00	0.00	0.00	70
471	0.00	0.00	0.00	54
472	0.00	0.00	0.00	13
473	0.00	0.00	0.00	169
474	0.00	0.00	0.00	131
475	0.00	0.00	0.00	69
476	0.00	0.00	0.00	61
477	0.00	0.00	0.00	181
478	0.00	0.00	0.00	93
479	0.00	0.00	0.00	56
480	0.00	0.00	0.00	126
481	0.00	0.00	0.00	67
482	0.00	0.00	0.00	42
483	0.00	0.00	0.00	117
484	0.00	0.00	0.00	39
485	0.00	0.00	0.00	62
486	0.00	0.00	0.00	92
487	0.00	0.00	0.00	48
488	0.00	0.00	0.00	11
489	0.00	0.00	0.00	60
490	0.00	0.00	0.00	108
491	0.00	0.00	0.00	64
492	0.00	0.00	0.00	113
493	0.00	0.00	0.00	8
494	0.00	0.00	0.00	43
495	0.00	0.00	0.00	15
496	0.00	0.00	0.00	149
497	0.00	0.00	0.00	62
498	0.00	0.00	0.00	17
499	0.00	0.00	0.00	26
micro avg	0.93	0.01	0.01	197099
macro avg	0.02	0.00	0.00	197099
weighted avg	0.23	0.01	0.01	197099
samples avg	0.01	0.01	0.01	197099

```
Time taken to run this cell : 0:10:18.922430
Accuracy : 0.06698
Hamming loss  0.00393546
Micro-average quality numbers
Precision: 0.9454, Recall: 0.0018, F1-measure: 0.0035
Macro-average quality numbers
Precision: 0.0059, Recall: 0.0002, F1-measure: 0.0004
```

```
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision is ill-defined and being set to 0.0 in labels with no predicted
samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: F-score is ill-defined and being set to 0.0 in labels with no predicted sa
mples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
```

```
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in samples with
no predicted labels.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1145:
UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in samples with no
true labels.
  'recall', 'true', average, warn_for)

 86%|████████  | 6/7 [1:01:07<10:25, 625.19s/it]
```

	precision	recall	f1-score	support
0	0.94	0.12	0.21	2858
1	0.00	0.00	0.00	22917
2	1.00	0.00	0.00	3660
3	0.00	0.00	0.00	14867
4	0.00	0.00	0.00	2382
5	0.00	0.00	0.00	3643
6	1.00	0.00	0.00	4086
7	0.00	0.00	0.00	3831
8	0.00	0.00	0.00	9219
9	0.00	0.00	0.00	2609
10	0.00	0.00	0.00	4064
11	0.00	0.00	0.00	1652
12	0.00	0.00	0.00	5162
13	0.00	0.00	0.00	1497
14	0.00	0.00	0.00	587
15	0.00	0.00	0.00	1470
16	0.00	0.00	0.00	1409
17	0.00	0.00	0.00	566
18	0.00	0.00	0.00	1336
19	0.00	0.00	0.00	1181
20	0.00	0.00	0.00	685
21	0.00	0.00	0.00	1187
22	0.00	0.00	0.00	1268
23	0.00	0.00	0.00	2048
24	0.00	0.00	0.00	1316
25	0.00	0.00	0.00	231
26	0.00	0.00	0.00	3330
27	0.00	0.00	0.00	187
28	0.00	0.00	0.00	767
29	0.00	0.00	0.00	127
30	0.00	0.00	0.00	306
31	0.00	0.00	0.00	571
32	0.00	0.00	0.00	828
33	0.00	0.00	0.00	150
34	0.00	0.00	0.00	1636
35	0.00	0.00	0.00	1182
36	0.00	0.00	0.00	498
37	0.00	0.00	0.00	672
38	0.00	0.00	0.00	135
39	0.00	0.00	0.00	374
40	0.00	0.00	0.00	478
41	0.00	0.00	0.00	545
42	0.00	0.00	0.00	1198
43	0.00	0.00	0.00	560
44	0.00	0.00	0.00	486
45	0.00	0.00	0.00	96
46	0.00	0.00	0.00	727
47	0.00	0.00	0.00	214
48	0.00	0.00	0.00	838
49	0.00	0.00	0.00	332
50	0.00	0.00	0.00	608
51	0.00	0.00	0.00	477
52	0.00	0.00	0.00	1597
53	0.00	0.00	0.00	742
54	0.00	0.00	0.00	306

55	0.00	0.00	0.00	232
56	0.00	0.00	0.00	197
57	0.00	0.00	0.00	628
58	0.00	0.00	0.00	604
59	0.00	0.00	0.00	216
60	0.00	0.00	0.00	69
61	0.00	0.00	0.00	251
62	0.00	0.00	0.00	526
63	0.00	0.00	0.00	445
64	0.00	0.00	0.00	525
65	0.00	0.00	0.00	302
66	0.00	0.00	0.00	44
67	0.00	0.00	0.00	1459
68	0.00	0.00	0.00	156
69	0.00	0.00	0.00	295
70	0.00	0.00	0.00	247
71	0.00	0.00	0.00	877
72	0.00	0.00	0.00	765
73	0.00	0.00	0.00	277
74	0.00	0.00	0.00	232
75	0.00	0.00	0.00	1049
76	0.00	0.00	0.00	921
77	0.00	0.00	0.00	693
78	0.00	0.00	0.00	282
79	0.00	0.00	0.00	1237
80	0.00	0.00	0.00	191
81	0.00	0.00	0.00	462
82	0.00	0.00	0.00	528
83	0.00	0.00	0.00	469
84	0.00	0.00	0.00	534
85	0.00	0.00	0.00	304
86	0.00	0.00	0.00	593
87	0.00	0.00	0.00	105
88	0.00	0.00	0.00	397
89	0.00	0.00	0.00	513
90	0.00	0.00	0.00	251
91	0.00	0.00	0.00	148
92	0.00	0.00	0.00	249
93	0.00	0.00	0.00	272
94	0.00	0.00	0.00	144
95	0.00	0.00	0.00	350
96	0.00	0.00	0.00	96
97	0.00	0.00	0.00	129
98	0.00	0.00	0.00	255
99	0.00	0.00	0.00	264
100	0.00	0.00	0.00	243
101	0.00	0.00	0.00	112
102	0.00	0.00	0.00	144
103	0.00	0.00	0.00	59
104	0.00	0.00	0.00	430
105	0.00	0.00	0.00	402
106	0.00	0.00	0.00	112
107	0.00	0.00	0.00	587
108	0.00	0.00	0.00	150
109	0.00	0.00	0.00	81
110	0.00	0.00	0.00	321
111	0.00	0.00	0.00	274
112	0.00	0.00	0.00	510
113	0.00	0.00	0.00	57
114	0.00	0.00	0.00	127
115	0.00	0.00	0.00	279
116	0.00	0.00	0.00	336
117	0.00	0.00	0.00	789
118	0.00	0.00	0.00	119
119	0.00	0.00	0.00	301
120	0.00	0.00	0.00	490
121	0.00	0.00	0.00	40
122	0.00	0.00	0.00	327
123	0.00	0.00	0.00	174
124	0.00	0.00	0.00	162
125	0.00	0.00	0.00	565
126	0.00	0.00	0.00	415
127	0.00	0.00	0.00	634
128	0.00	0.00	0.00	331
129	0.00	0.00	0.00	241
130	0.00	0.00	0.00	181
131	0.00	0.00	0.00	390

132	0.00	0.00	0.00	146
133	0.00	0.00	0.00	101
134	0.00	0.00	0.00	243
135	0.00	0.00	0.00	232
136	0.00	0.00	0.00	39
137	0.00	0.00	0.00	179
138	0.00	0.00	0.00	40
139	0.00	0.00	0.00	248
140	0.00	0.00	0.00	316
141	0.00	0.00	0.00	176
142	0.00	0.00	0.00	818
143	0.00	0.00	0.00	59
144	0.00	0.00	0.00	547
145	0.00	0.00	0.00	44
146	0.00	0.00	0.00	467
147	0.00	0.00	0.00	154
148	0.00	0.00	0.00	126
149	0.00	0.00	0.00	565
150	0.00	0.00	0.00	727
151	0.00	0.00	0.00	466
152	0.00	0.00	0.00	133
153	0.00	0.00	0.00	225
154	0.00	0.00	0.00	60
155	0.00	0.00	0.00	167
156	0.00	0.00	0.00	275
157	0.00	0.00	0.00	317
158	0.00	0.00	0.00	61
159	0.00	0.00	0.00	48
160	0.00	0.00	0.00	24
161	0.00	0.00	0.00	278
162	0.00	0.00	0.00	138
163	0.00	0.00	0.00	228
164	0.00	0.00	0.00	198
165	0.00	0.00	0.00	137
166	0.00	0.00	0.00	238
167	0.00	0.00	0.00	136
168	0.00	0.00	0.00	276
169	0.00	0.00	0.00	285
170	0.00	0.00	0.00	262
171	0.00	0.00	0.00	203
172	0.00	0.00	0.00	120
173	0.00	0.00	0.00	42
174	0.00	0.00	0.00	242
175	0.00	0.00	0.00	103
176	0.00	0.00	0.00	165
177	0.00	0.00	0.00	154
178	0.00	0.00	0.00	83
179	0.00	0.00	0.00	147
180	0.00	0.00	0.00	103
181	0.00	0.00	0.00	401
182	0.00	0.00	0.00	213
183	0.00	0.00	0.00	284
184	0.00	0.00	0.00	20
185	0.00	0.00	0.00	273
186	0.00	0.00	0.00	213
187	0.00	0.00	0.00	142
188	0.00	0.00	0.00	95
189	0.00	0.00	0.00	225
190	0.00	0.00	0.00	142
191	0.00	0.00	0.00	278
192	0.00	0.00	0.00	82
193	0.00	0.00	0.00	656
194	0.00	0.00	0.00	371
195	0.00	0.00	0.00	38
196	0.00	0.00	0.00	97
197	0.00	0.00	0.00	136
198	0.00	0.00	0.00	180
199	0.00	0.00	0.00	214
200	0.00	0.00	0.00	392
201	0.00	0.00	0.00	270
202	0.00	0.00	0.00	93
203	0.00	0.00	0.00	127
204	0.00	0.00	0.00	205
205	0.00	0.00	0.00	117
206	0.00	0.00	0.00	124
207	0.00	0.00	0.00	271
208	0.00	0.00	0.00	77

209	0.00	0.00	0.00	228
210	0.00	0.00	0.00	417
211	0.00	0.00	0.00	114
212	0.00	0.00	0.00	139
213	0.00	0.00	0.00	47
214	0.00	0.00	0.00	65
215	0.00	0.00	0.00	146
216	0.00	0.00	0.00	84
217	0.00	0.00	0.00	158
218	0.00	0.00	0.00	93
219	0.00	0.00	0.00	33
220	0.00	0.00	0.00	76
221	0.00	0.00	0.00	332
222	0.00	0.00	0.00	70
223	0.00	0.00	0.00	106
224	0.00	0.00	0.00	365
225	0.00	0.00	0.00	199
226	0.00	0.00	0.00	315
227	0.00	0.00	0.00	186
228	0.00	0.00	0.00	71
229	0.00	0.00	0.00	245
230	0.00	0.00	0.00	112
231	0.00	0.00	0.00	272
232	0.00	0.00	0.00	142
233	0.00	0.00	0.00	15
234	0.00	0.00	0.00	412
235	0.00	0.00	0.00	115
236	0.00	0.00	0.00	189
237	0.00	0.00	0.00	107
238	0.00	0.00	0.00	340
239	0.00	0.00	0.00	93
240	0.00	0.00	0.00	92
241	0.00	0.00	0.00	116
242	0.00	0.00	0.00	139
243	0.00	0.00	0.00	163
244	0.00	0.00	0.00	92
245	0.00	0.00	0.00	91
246	0.00	0.00	0.00	157
247	0.00	0.00	0.00	296
248	0.00	0.00	0.00	415
249	0.00	0.00	0.00	249
250	0.00	0.00	0.00	49
251	0.00	0.00	0.00	102
252	0.00	0.00	0.00	215
253	0.00	0.00	0.00	91
254	0.00	0.00	0.00	453
255	0.00	0.00	0.00	59
256	0.00	0.00	0.00	162
257	0.00	0.00	0.00	39
258	0.00	0.00	0.00	92
259	0.00	0.00	0.00	164
260	0.00	0.00	0.00	136
261	0.00	0.00	0.00	93
262	0.00	0.00	0.00	57
263	0.00	0.00	0.00	32
264	0.00	0.00	0.00	217
265	0.00	0.00	0.00	219
266	0.00	0.00	0.00	274
267	0.00	0.00	0.00	92
268	0.00	0.00	0.00	27
269	0.00	0.00	0.00	75
270	0.00	0.00	0.00	74
271	0.00	0.00	0.00	64
272	0.00	0.00	0.00	34
273	0.00	0.00	0.00	122
274	0.00	0.00	0.00	188
275	0.00	0.00	0.00	145
276	0.00	0.00	0.00	317
277	0.00	0.00	0.00	249
278	0.00	0.00	0.00	61
279	0.00	0.00	0.00	138
280	0.00	0.00	0.00	75
281	0.00	0.00	0.00	250
282	0.00	0.00	0.00	109
283	0.00	0.00	0.00	78
284	0.00	0.00	0.00	121
285	0.00	0.00	0.00	82

286	0.00	0.00	0.00	202
287	0.00	0.00	0.00	96
288	0.00	0.00	0.00	269
289	0.00	0.00	0.00	250
290	0.00	0.00	0.00	85
291	0.00	0.00	0.00	206
292	0.00	0.00	0.00	135
293	0.00	0.00	0.00	48
294	0.00	0.00	0.00	251
295	0.00	0.00	0.00	58
296	0.00	0.00	0.00	195
297	0.00	0.00	0.00	81
298	0.00	0.00	0.00	95
299	0.00	0.00	0.00	92
300	0.00	0.00	0.00	77
301	0.00	0.00	0.00	113
302	0.00	0.00	0.00	291
303	0.00	0.00	0.00	367
304	0.00	0.00	0.00	37
305	0.00	0.00	0.00	99
306	0.00	0.00	0.00	141
307	0.00	0.00	0.00	231
308	0.00	0.00	0.00	314
309	0.00	0.00	0.00	65
310	0.00	0.00	0.00	8
311	0.00	0.00	0.00	24
312	0.00	0.00	0.00	465
313	0.00	0.00	0.00	86
314	0.00	0.00	0.00	48
315	0.00	0.00	0.00	85
316	0.00	0.00	0.00	12
317	0.00	0.00	0.00	333
318	0.00	0.00	0.00	102
319	0.00	0.00	0.00	28
320	0.00	0.00	0.00	141
321	0.00	0.00	0.00	193
322	0.00	0.00	0.00	91
323	0.00	0.00	0.00	169
324	0.00	0.00	0.00	134
325	0.00	0.00	0.00	59
326	0.00	0.00	0.00	91
327	0.00	0.00	0.00	72
328	0.00	0.00	0.00	6
329	0.00	0.00	0.00	54
330	0.00	0.00	0.00	103
331	0.00	0.00	0.00	238
332	0.00	0.00	0.00	188
333	0.00	0.00	0.00	74
334	0.00	0.00	0.00	95
335	0.00	0.00	0.00	115
336	0.00	0.00	0.00	181
337	0.00	0.00	0.00	78
338	0.00	0.00	0.00	55
339	0.00	0.00	0.00	68
340	0.00	0.00	0.00	3
341	0.00	0.00	0.00	93
342	0.00	0.00	0.00	56
343	0.00	0.00	0.00	186
344	0.00	0.00	0.00	435
345	0.00	0.00	0.00	166
346	0.00	0.00	0.00	84
347	0.00	0.00	0.00	75
348	0.00	0.00	0.00	89
349	0.00	0.00	0.00	218
350	0.00	0.00	0.00	5
351	0.00	0.00	0.00	378
352	0.00	0.00	0.00	74
353	0.00	0.00	0.00	78
354	0.00	0.00	0.00	171
355	0.00	0.00	0.00	241
356	0.00	0.00	0.00	290
357	0.00	0.00	0.00	174
358	0.00	0.00	0.00	242
359	0.00	0.00	0.00	15
360	0.00	0.00	0.00	249
361	0.00	0.00	0.00	42
362	0.00	0.00	0.00	43

363	0.00	0.00	0.00	33
364	0.00	0.00	0.00	123
365	0.00	0.00	0.00	20
366	0.00	0.00	0.00	220
367	0.00	0.00	0.00	404
368	0.00	0.00	0.00	164
369	0.00	0.00	0.00	392
370	0.00	0.00	0.00	143
371	0.00	0.00	0.00	34
372	0.00	0.00	0.00	70
373	0.00	0.00	0.00	190
374	0.00	0.00	0.00	49
375	0.00	0.00	0.00	325
376	0.00	0.00	0.00	148
377	0.00	0.00	0.00	119
378	0.00	0.00	0.00	59
379	0.00	0.00	0.00	169
380	0.00	0.00	0.00	255
381	0.00	0.00	0.00	50
382	0.00	0.00	0.00	9
383	0.00	0.00	0.00	100
384	0.00	0.00	0.00	55
385	0.00	0.00	0.00	28
386	0.00	0.00	0.00	210
387	0.00	0.00	0.00	131
388	0.00	0.00	0.00	144
389	0.00	0.00	0.00	62
390	0.00	0.00	0.00	154
391	0.00	0.00	0.00	185
392	0.00	0.00	0.00	134
393	0.00	0.00	0.00	68
394	0.00	0.00	0.00	162
395	0.00	0.00	0.00	62
396	0.00	0.00	0.00	149
397	0.00	0.00	0.00	18
398	0.00	0.00	0.00	203
399	0.00	0.00	0.00	134
400	0.00	0.00	0.00	100
401	0.00	0.00	0.00	162
402	0.00	0.00	0.00	108
403	0.00	0.00	0.00	79
404	0.00	0.00	0.00	80
405	0.00	0.00	0.00	17
406	0.00	0.00	0.00	219
407	0.00	0.00	0.00	92
408	0.00	0.00	0.00	301
409	0.00	0.00	0.00	129
410	0.00	0.00	0.00	86
411	0.00	0.00	0.00	13
412	0.00	0.00	0.00	10
413	0.00	0.00	0.00	67
414	0.00	0.00	0.00	89
415	0.00	0.00	0.00	128
416	0.00	0.00	0.00	245
417	0.00	0.00	0.00	83
418	0.00	0.00	0.00	186
419	0.00	0.00	0.00	83
420	0.00	0.00	0.00	117
421	0.00	0.00	0.00	158
422	0.00	0.00	0.00	78
423	0.00	0.00	0.00	75
424	0.00	0.00	0.00	213
425	0.00	0.00	0.00	11
426	0.00	0.00	0.00	45
427	0.00	0.00	0.00	77
428	0.00	0.00	0.00	115
429	0.00	0.00	0.00	64
430	0.00	0.00	0.00	284
431	0.00	0.00	0.00	192
432	0.00	0.00	0.00	48
433	0.00	0.00	0.00	59
434	0.00	0.00	0.00	239
435	0.00	0.00	0.00	49
436	0.00	0.00	0.00	195
437	0.00	0.00	0.00	160
438	0.00	0.00	0.00	189
439	0.00	0.00	0.00	171

```
          440       0.00      0.00      0.00       222
          441       0.00      0.00      0.00        75
          442       0.00      0.00      0.00       112
          443       0.00      0.00      0.00        62
          444       0.00      0.00      0.00        94
          445       0.00      0.00      0.00        94
          446       0.00      0.00      0.00        59
          447       0.00      0.00      0.00         3
          448       0.00      0.00      0.00        17
          449       0.00      0.00      0.00        83
          450       0.00      0.00      0.00        13
          451       0.00      0.00      0.00        99
          452       0.00      0.00      0.00        55
          453       0.00      0.00      0.00         9
          454       0.00      0.00      0.00       196
          455       0.00      0.00      0.00       179
          456       0.00      0.00      0.00        28
          457       0.00      0.00      0.00        53
          458       0.00      0.00      0.00       103
          459       0.00      0.00      0.00        11
          460       0.00      0.00      0.00        52
          461       0.00      0.00      0.00        70
          462       0.00      0.00      0.00        69
          463       0.00      0.00      0.00        59
          464       0.00      0.00      0.00        57
          465       0.00      0.00      0.00       180
          466       0.00      0.00      0.00        62
          467       0.00      0.00      0.00       166
          468       0.00      0.00      0.00        93
          469       0.00      0.00      0.00       174
          470       0.00      0.00      0.00        70
          471       0.00      0.00      0.00        54
          472       0.00      0.00      0.00        13
          473       0.00      0.00      0.00       169
          474       0.00      0.00      0.00       131
          475       0.00      0.00      0.00        69
          476       0.00      0.00      0.00        61
          477       0.00      0.00      0.00       181
          478       0.00      0.00      0.00        93
          479       0.00      0.00      0.00        56
          480       0.00      0.00      0.00       126
          481       0.00      0.00      0.00        67
          482       0.00      0.00      0.00        42
          483       0.00      0.00      0.00       117
          484       0.00      0.00      0.00        39
          485       0.00      0.00      0.00        62
          486       0.00      0.00      0.00        92
          487       0.00      0.00      0.00        48
          488       0.00      0.00      0.00        11
          489       0.00      0.00      0.00        60
          490       0.00      0.00      0.00       108
          491       0.00      0.00      0.00        64
          492       0.00      0.00      0.00       113
          493       0.00      0.00      0.00         8
          494       0.00      0.00      0.00        43
          495       0.00      0.00      0.00        15
          496       0.00      0.00      0.00       149
          497       0.00      0.00      0.00        62
          498       0.00      0.00      0.00        17
          499       0.00      0.00      0.00        26

   micro avg       0.95      0.00      0.00    197099
   macro avg       0.01      0.00      0.00    197099
weighted avg       0.05      0.00      0.00    197099
 samples avg       0.00      0.00      0.00    197099

Time taken to run this cell : 0:11:08.728602
```

```
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision is ill-defined and being set to 0.0 in labels with no predicted
samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: F-score is ill-defined and being set to 0.0 in labels with no predicted sa
mples.
  'precision', 'predicted', average, warn_for)
```

```
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in labels with
no predicted samples.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1143:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to 0.0 in samples with
no predicted labels.
  'precision', 'predicted', average, warn_for)
/Users/upasna/anaconda3/lib/python3.7/site-packages/sklearn/metrics/classification.py:1145:
UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0 in samples with no
true labels.
  'recall', 'true', average, warn_for)
```

```
Accuracy : 0.06631
Hamming loss  0.00393992
Micro-average quality numbers
Precision: 0.7173, Recall: 0.0009, F1-measure: 0.0017
Macro-average quality numbers
Precision: 0.0020, Recall: 0.0001, F1-measure: 0.0002
              precision    recall  f1-score   support

           0       0.94      0.06      0.11      2858
           1       0.00      0.00      0.00     22917
           2       0.00      0.00      0.00      3660
           3       0.00      0.00      0.00     14867
           4       0.00      0.00      0.00      2382
           5       0.00      0.00      0.00      3643
           6       0.00      0.00      0.00      4086
           7       0.00      0.00      0.00      3831
           8       0.00      0.00      0.00      9219
           9       0.00      0.00      0.00      2609
          10       0.00      0.00      0.00      4064
          11       0.00      0.00      0.00      1652
          12       0.00      0.00      0.00      5162
          13       0.00      0.00      0.00      1497
          14       0.00      0.00      0.00       587
          15       0.00      0.00      0.00      1470
          16       0.00      0.00      0.00      1409
          17       0.00      0.00      0.00       566
          18       0.00      0.00      0.00      1336
          19       0.00      0.00      0.00      1181
          20       0.00      0.00      0.00       685
          21       0.00      0.00      0.00      1187
          22       0.00      0.00      0.00      1268
          23       0.00      0.00      0.00      2048
          24       0.00      0.00      0.00      1316
          25       0.00      0.00      0.00       231
          26       0.00      0.00      0.00      3330
          27       0.00      0.00      0.00       187
          28       0.00      0.00      0.00       767
          29       0.00      0.00      0.00       127
          30       0.00      0.00      0.00       306
          31       0.00      0.00      0.00       571
          32       0.05      0.00      0.00       828
          33       0.00      0.00      0.00       150
          34       0.00      0.00      0.00      1636
          35       0.00      0.00      0.00      1182
          36       0.00      0.00      0.00       498
          37       0.00      0.00      0.00       672
          38       0.00      0.00      0.00       135
          39       0.00      0.00      0.00       374
          40       0.00      0.00      0.00       478
          41       0.00      0.00      0.00       545
          42       0.00      0.00      0.00      1198
          43       0.00      0.00      0.00       560
          44       0.00      0.00      0.00       486
          45       0.00      0.00      0.00        96
```

46	0.00	0.00	0.00	727
47	0.00	0.00	0.00	214
48	0.00	0.00	0.00	838
49	0.00	0.00	0.00	332
50	0.00	0.00	0.00	608
51	0.00	0.00	0.00	477
52	0.00	0.00	0.00	1597
53	0.00	0.00	0.00	742
54	0.00	0.00	0.00	306
55	0.00	0.00	0.00	232
56	0.00	0.00	0.00	197
57	0.00	0.00	0.00	628
58	0.00	0.00	0.00	604
59	0.00	0.00	0.00	216
60	0.00	0.00	0.00	69
61	0.00	0.00	0.00	251
62	0.00	0.00	0.00	526
63	0.00	0.00	0.00	445
64	0.00	0.00	0.00	525
65	0.00	0.00	0.00	302
66	0.00	0.00	0.00	44
67	0.00	0.00	0.00	1459
68	0.00	0.00	0.00	156
69	0.00	0.00	0.00	295
70	0.00	0.00	0.00	247
71	0.00	0.00	0.00	877
72	0.00	0.00	0.00	765
73	0.00	0.00	0.00	277
74	0.00	0.00	0.00	232
75	0.00	0.00	0.00	1049
76	0.00	0.00	0.00	921
77	0.00	0.00	0.00	693
78	0.00	0.00	0.00	282
79	0.00	0.00	0.00	1237
80	0.00	0.00	0.00	191
81	0.00	0.00	0.00	462
82	0.00	0.00	0.00	528
83	0.00	0.00	0.00	469
84	0.00	0.00	0.00	534
85	0.00	0.00	0.00	304
86	0.00	0.00	0.00	593
87	0.00	0.00	0.00	105
88	0.00	0.00	0.00	397
89	0.00	0.00	0.00	513
90	0.00	0.00	0.00	251
91	0.00	0.00	0.00	148
92	0.00	0.00	0.00	249
93	0.00	0.00	0.00	272
94	0.00	0.00	0.00	144
95	0.00	0.00	0.00	350
96	0.00	0.00	0.00	96
97	0.00	0.00	0.00	129
98	0.00	0.00	0.00	255
99	0.00	0.00	0.00	264
100	0.00	0.00	0.00	243
101	0.00	0.00	0.00	112
102	0.00	0.00	0.00	144
103	0.00	0.00	0.00	59
104	0.00	0.00	0.00	430
105	0.00	0.00	0.00	402
106	0.00	0.00	0.00	112
107	0.00	0.00	0.00	587
108	0.00	0.00	0.00	150
109	0.00	0.00	0.00	81
110	0.00	0.00	0.00	321
111	0.00	0.00	0.00	274
112	0.00	0.00	0.00	510
113	0.00	0.00	0.00	57
114	0.00	0.00	0.00	127
115	0.00	0.00	0.00	279
116	0.00	0.00	0.00	336
117	0.00	0.00	0.00	789
118	0.00	0.00	0.00	119
119	0.00	0.00	0.00	301
120	0.00	0.00	0.00	490
121	0.00	0.00	0.00	40
122	0.00	0.00	0.00	327

123	0.00	0.00	0.00	174
124	0.00	0.00	0.00	162
125	0.00	0.00	0.00	565
126	0.00	0.00	0.00	415
127	0.00	0.00	0.00	634
128	0.00	0.00	0.00	331
129	0.00	0.00	0.00	241
130	0.00	0.00	0.00	181
131	0.00	0.00	0.00	390
132	0.00	0.00	0.00	146
133	0.00	0.00	0.00	101
134	0.00	0.00	0.00	243
135	0.00	0.00	0.00	232
136	0.00	0.00	0.00	39
137	0.00	0.00	0.00	179
138	0.00	0.00	0.00	40
139	0.00	0.00	0.00	248
140	0.00	0.00	0.00	316
141	0.00	0.00	0.00	176
142	0.00	0.00	0.00	818
143	0.00	0.00	0.00	59
144	0.00	0.00	0.00	547
145	0.00	0.00	0.00	44
146	0.00	0.00	0.00	467
147	0.00	0.00	0.00	154
148	0.00	0.00	0.00	126
149	0.00	0.00	0.00	565
150	0.00	0.00	0.00	727
151	0.00	0.00	0.00	466
152	0.00	0.00	0.00	133
153	0.00	0.00	0.00	225
154	0.00	0.00	0.00	60
155	0.00	0.00	0.00	167
156	0.00	0.00	0.00	275
157	0.00	0.00	0.00	317
158	0.00	0.00	0.00	61
159	0.00	0.00	0.00	48
160	0.00	0.00	0.00	24
161	0.00	0.00	0.00	278
162	0.00	0.00	0.00	138
163	0.00	0.00	0.00	228
164	0.00	0.00	0.00	198
165	0.00	0.00	0.00	137
166	0.00	0.00	0.00	238
167	0.00	0.00	0.00	136
168	0.00	0.00	0.00	276
169	0.00	0.00	0.00	285
170	0.00	0.00	0.00	262
171	0.00	0.00	0.00	203
172	0.00	0.00	0.00	120
173	0.00	0.00	0.00	42
174	0.00	0.00	0.00	242
175	0.00	0.00	0.00	103
176	0.00	0.00	0.00	165
177	0.00	0.00	0.00	154
178	0.00	0.00	0.00	83
179	0.00	0.00	0.00	147
180	0.00	0.00	0.00	103
181	0.00	0.00	0.00	401
182	0.00	0.00	0.00	213
183	0.00	0.00	0.00	284
184	0.00	0.00	0.00	20
185	0.00	0.00	0.00	273
186	0.00	0.00	0.00	213
187	0.00	0.00	0.00	142
188	0.00	0.00	0.00	95
189	0.00	0.00	0.00	225
190	0.00	0.00	0.00	142
191	0.00	0.00	0.00	278
192	0.00	0.00	0.00	82
193	0.00	0.00	0.00	656
194	0.00	0.00	0.00	371
195	0.00	0.00	0.00	38
196	0.00	0.00	0.00	97
197	0.00	0.00	0.00	136
198	0.00	0.00	0.00	180
199	0.00	0.00	0.00	214

200	0.00	0.00	0.00	392
201	0.00	0.00	0.00	270
202	0.00	0.00	0.00	93
203	0.00	0.00	0.00	127
204	0.00	0.00	0.00	205
205	0.00	0.00	0.00	117
206	0.00	0.00	0.00	124
207	0.00	0.00	0.00	271
208	0.00	0.00	0.00	77
209	0.00	0.00	0.00	228
210	0.00	0.00	0.00	417
211	0.00	0.00	0.00	114
212	0.00	0.00	0.00	139
213	0.00	0.00	0.00	47
214	0.00	0.00	0.00	65
215	0.00	0.00	0.00	146
216	0.00	0.00	0.00	84
217	0.00	0.00	0.00	158
218	0.00	0.00	0.00	93
219	0.00	0.00	0.00	33
220	0.00	0.00	0.00	76
221	0.00	0.00	0.00	332
222	0.00	0.00	0.00	70
223	0.00	0.00	0.00	106
224	0.00	0.00	0.00	365
225	0.00	0.00	0.00	199
226	0.00	0.00	0.00	315
227	0.00	0.00	0.00	186
228	0.00	0.00	0.00	71
229	0.00	0.00	0.00	245
230	0.00	0.00	0.00	112
231	0.00	0.00	0.00	272
232	0.00	0.00	0.00	142
233	0.00	0.00	0.00	15
234	0.00	0.00	0.00	412
235	0.00	0.00	0.00	115
236	0.00	0.00	0.00	189
237	0.00	0.00	0.00	107
238	0.00	0.00	0.00	340
239	0.00	0.00	0.00	93
240	0.00	0.00	0.00	92
241	0.00	0.00	0.00	116
242	0.00	0.00	0.00	139
243	0.00	0.00	0.00	163
244	0.00	0.00	0.00	92
245	0.00	0.00	0.00	91
246	0.00	0.00	0.00	157
247	0.00	0.00	0.00	296
248	0.00	0.00	0.00	415
249	0.00	0.00	0.00	249
250	0.00	0.00	0.00	49
251	0.00	0.00	0.00	102
252	0.00	0.00	0.00	215
253	0.00	0.00	0.00	91
254	0.00	0.00	0.00	453
255	0.00	0.00	0.00	59
256	0.00	0.00	0.00	162
257	0.00	0.00	0.00	39
258	0.00	0.00	0.00	92
259	0.00	0.00	0.00	164
260	0.00	0.00	0.00	136
261	0.00	0.00	0.00	93
262	0.00	0.00	0.00	57
263	0.00	0.00	0.00	32
264	0.00	0.00	0.00	217
265	0.00	0.00	0.00	219
266	0.00	0.00	0.00	274
267	0.00	0.00	0.00	92
268	0.00	0.00	0.00	27
269	0.00	0.00	0.00	75
270	0.00	0.00	0.00	74
271	0.00	0.00	0.00	64
272	0.00	0.00	0.00	34
273	0.00	0.00	0.00	122
274	0.00	0.00	0.00	188
275	0.00	0.00	0.00	145
276	0.00	0.00	0.00	317

277	0.00	0.00	0.00	249
278	0.00	0.00	0.00	61
279	0.00	0.00	0.00	138
280	0.00	0.00	0.00	75
281	0.00	0.00	0.00	250
282	0.00	0.00	0.00	109
283	0.00	0.00	0.00	78
284	0.00	0.00	0.00	121
285	0.00	0.00	0.00	82
286	0.00	0.00	0.00	202
287	0.00	0.00	0.00	96
288	0.00	0.00	0.00	269
289	0.00	0.00	0.00	250
290	0.00	0.00	0.00	85
291	0.00	0.00	0.00	206
292	0.00	0.00	0.00	135
293	0.00	0.00	0.00	48
294	0.00	0.00	0.00	251
295	0.00	0.00	0.00	58
296	0.00	0.00	0.00	195
297	0.00	0.00	0.00	81
298	0.00	0.00	0.00	95
299	0.00	0.00	0.00	92
300	0.00	0.00	0.00	77
301	0.00	0.00	0.00	113
302	0.00	0.00	0.00	291
303	0.00	0.00	0.00	367
304	0.00	0.00	0.00	37
305	0.00	0.00	0.00	99
306	0.00	0.00	0.00	141
307	0.00	0.00	0.00	231
308	0.00	0.00	0.00	314
309	0.00	0.00	0.00	65
310	0.00	0.00	0.00	8
311	0.00	0.00	0.00	24
312	0.00	0.00	0.00	465
313	0.00	0.00	0.00	86
314	0.00	0.00	0.00	48
315	0.00	0.00	0.00	85
316	0.00	0.00	0.00	12
317	0.00	0.00	0.00	333
318	0.00	0.00	0.00	102
319	0.00	0.00	0.00	28
320	0.00	0.00	0.00	141
321	0.00	0.00	0.00	193
322	0.00	0.00	0.00	91
323	0.00	0.00	0.00	169
324	0.00	0.00	0.00	134
325	0.00	0.00	0.00	59
326	0.00	0.00	0.00	91
327	0.00	0.00	0.00	72
328	0.00	0.00	0.00	6
329	0.00	0.00	0.00	54
330	0.00	0.00	0.00	103
331	0.00	0.00	0.00	238
332	0.00	0.00	0.00	188
333	0.00	0.00	0.00	74
334	0.00	0.00	0.00	95
335	0.00	0.00	0.00	115
336	0.00	0.00	0.00	181
337	0.00	0.00	0.00	78
338	0.00	0.00	0.00	55
339	0.00	0.00	0.00	68
340	0.00	0.00	0.00	3
341	0.00	0.00	0.00	93
342	0.00	0.00	0.00	56
343	0.00	0.00	0.00	186
344	0.00	0.00	0.00	435
345	0.00	0.00	0.00	166
346	0.00	0.00	0.00	84
347	0.00	0.00	0.00	75
348	0.00	0.00	0.00	89
349	0.00	0.00	0.00	218
350	0.00	0.00	0.00	5
351	0.00	0.00	0.00	378
352	0.00	0.00	0.00	74
353	0.00	0.00	0.00	78

354	0.00	0.00	0.00	171
355	0.00	0.00	0.00	241
356	0.00	0.00	0.00	290
357	0.00	0.00	0.00	174
358	0.00	0.00	0.00	242
359	0.00	0.00	0.00	15
360	0.00	0.00	0.00	249
361	0.00	0.00	0.00	42
362	0.00	0.00	0.00	43
363	0.00	0.00	0.00	33
364	0.00	0.00	0.00	123
365	0.00	0.00	0.00	20
366	0.00	0.00	0.00	220
367	0.00	0.00	0.00	404
368	0.00	0.00	0.00	164
369	0.00	0.00	0.00	392
370	0.00	0.00	0.00	143
371	0.00	0.00	0.00	34
372	0.00	0.00	0.00	70
373	0.00	0.00	0.00	190
374	0.00	0.00	0.00	49
375	0.00	0.00	0.00	325
376	0.00	0.00	0.00	148
377	0.00	0.00	0.00	119
378	0.00	0.00	0.00	59
379	0.00	0.00	0.00	169
380	0.00	0.00	0.00	255
381	0.00	0.00	0.00	50
382	0.00	0.00	0.00	9
383	0.00	0.00	0.00	100
384	0.00	0.00	0.00	55
385	0.00	0.00	0.00	28
386	0.00	0.00	0.00	210
387	0.00	0.00	0.00	131
388	0.00	0.00	0.00	144
389	0.00	0.00	0.00	62
390	0.00	0.00	0.00	154
391	0.00	0.00	0.00	185
392	0.00	0.00	0.00	134
393	0.00	0.00	0.00	68
394	0.00	0.00	0.00	162
395	0.00	0.00	0.00	62
396	0.00	0.00	0.00	149
397	0.00	0.00	0.00	18
398	0.00	0.00	0.00	203
399	0.00	0.00	0.00	134
400	0.00	0.00	0.00	100
401	0.00	0.00	0.00	162
402	0.00	0.00	0.00	108
403	0.00	0.00	0.00	79
404	0.00	0.00	0.00	80
405	0.00	0.00	0.00	17
406	0.00	0.00	0.00	219
407	0.00	0.00	0.00	92
408	0.00	0.00	0.00	301
409	0.00	0.00	0.00	129
410	0.00	0.00	0.00	86
411	0.00	0.00	0.00	13
412	0.00	0.00	0.00	10
413	0.00	0.00	0.00	67
414	0.00	0.00	0.00	89
415	0.00	0.00	0.00	128
416	0.00	0.00	0.00	245
417	0.00	0.00	0.00	83
418	0.00	0.00	0.00	186
419	0.00	0.00	0.00	83
420	0.00	0.00	0.00	117
421	0.00	0.00	0.00	158
422	0.00	0.00	0.00	78
423	0.00	0.00	0.00	75
424	0.00	0.00	0.00	213
425	0.00	0.00	0.00	11
426	0.00	0.00	0.00	45
427	0.00	0.00	0.00	77
428	0.00	0.00	0.00	115
429	0.00	0.00	0.00	64
430	0.00	0.00	0.00	284

431	0.00	0.00	0.00	192
432	0.00	0.00	0.00	48
433	0.00	0.00	0.00	59
434	0.00	0.00	0.00	239
435	0.00	0.00	0.00	49
436	0.00	0.00	0.00	195
437	0.00	0.00	0.00	160
438	0.00	0.00	0.00	189
439	0.00	0.00	0.00	171
440	0.00	0.00	0.00	222
441	0.00	0.00	0.00	75
442	0.00	0.00	0.00	112
443	0.00	0.00	0.00	62
444	0.00	0.00	0.00	94
445	0.00	0.00	0.00	94
446	0.00	0.00	0.00	59
447	0.00	0.00	0.00	3
448	0.00	0.00	0.00	17
449	0.00	0.00	0.00	83
450	0.00	0.00	0.00	13
451	0.00	0.00	0.00	99
452	0.00	0.00	0.00	55
453	0.00	0.00	0.00	9
454	0.00	0.00	0.00	196
455	0.00	0.00	0.00	179
456	0.00	0.00	0.00	28
457	0.00	0.00	0.00	53
458	0.00	0.00	0.00	103
459	0.00	0.00	0.00	11
460	0.00	0.00	0.00	52
461	0.00	0.00	0.00	70
462	0.00	0.00	0.00	69
463	0.00	0.00	0.00	59
464	0.00	0.00	0.00	57
465	0.00	0.00	0.00	180
466	0.00	0.00	0.00	62
467	0.00	0.00	0.00	166
468	0.00	0.00	0.00	93
469	0.00	0.00	0.00	174
470	0.00	0.00	0.00	70
471	0.00	0.00	0.00	54
472	0.00	0.00	0.00	13
473	0.00	0.00	0.00	169
474	0.00	0.00	0.00	131
475	0.00	0.00	0.00	69
476	0.00	0.00	0.00	61
477	0.00	0.00	0.00	181
478	0.00	0.00	0.00	93
479	0.00	0.00	0.00	56
480	0.00	0.00	0.00	126
481	0.00	0.00	0.00	67
482	0.00	0.00	0.00	42
483	0.00	0.00	0.00	117
484	0.00	0.00	0.00	39
485	0.00	0.00	0.00	62
486	0.00	0.00	0.00	92
487	0.00	0.00	0.00	48
488	0.00	0.00	0.00	11
489	0.00	0.00	0.00	60
490	0.00	0.00	0.00	108
491	0.00	0.00	0.00	64
492	0.00	0.00	0.00	113
493	0.00	0.00	0.00	8
494	0.00	0.00	0.00	43
495	0.00	0.00	0.00	15
496	0.00	0.00	0.00	149
497	0.00	0.00	0.00	62
498	0.00	0.00	0.00	17
499	0.00	0.00	0.00	26
micro avg	0.72	0.00	0.00	197099
macro avg	0.00	0.00	0.00	197099
weighted avg	0.01	0.00	0.00	197099
samples avg	0.00	0.00	0.00	197099

Time taken to run this cell : 0:11:17.182635

```
100%|██████████| 7/7 [1:12:24<00:00, 640.79s/it]
```

Conclusion

In [ ]:

```
# Please compare all your models using Prettytable library
from prettytable import PrettyTable

x = PrettyTable()
x.field_names = ["Model","parameter" ,"precision","recall","F1Score"]
x.add_row(["Logistic regression","1000","0.5589","0.4055","0.4700"])
x.add_row(["Linear-SVM","",".630--.369","0.4371","0.5364"])
```