

Lab5

October 26, 2018

1 Laboratorio 5

Tabla de contenido

- Análisis Exploratorio

2 Importaciones

```
In [1]: import pandas as pd
import numpy as np
import tensorflow as tf
from google.colab import files
import matplotlib.pyplot as plt
import re
import io
from nltk.corpus import stopwords
from nltk.tokenize import word_tokenize
from nltk import ngrams
from nltk.sentiment.vader import SentimentIntensityAnalyzer
import heapq
import operator
# Load library
from nltk.corpus import stopwords
import os
# You will have to download the set of stop words the first time
import nltk
nltk.download('stopwords')
stop_words = set(stopwords.words('english'))
nltk.download('vader_lexicon')
```

```
/usr/local/lib/python3.6/dist-packages/nltk/twitter/__init__.py:20: UserWarning: The twython 1.
warnings.warn("The twython library has not been installed. "
```

```
[nltk_data] Downloading package stopwords to /root/nltk_data...
```

```
[nltk_data] Unzipping corpora/stopwords.zip.
```

```
[nltk_data] Downloading package vader_lexicon to /root/nltk_data...
```

```
Out[1]: True
```

2.0.1 Conexión a Google Drive

```
In [0]: !pip install -U -q PyDrive ## you will have install for every colab session
        from pydrive.auth import GoogleAuth
        from pydrive.drive import GoogleDrive
        from google.colab import auth
        from oauth2client.client import GoogleCredentials
        # 1. Authenticate and create the PyDrive client.
        auth.authenticate_user()
        gauth = GoogleAuth()
        gauth.credentials = GoogleCredentials.get_application_default()
        drive = GoogleDrive(gauth)
```

```
In [3]: file_list = drive.ListFile({'q': "'1qHCI8CdRZRUQJ9cHdwL000T4czG5c7r2' in parents and t
        for file1 in file_list:
            print('title: %s, id: %s' % (file1['title'], file1['id']))
```

```
title: Lab5.ipynb, id: 1FAvalsk0JO_z6uDH7QxNrLR5T4ogDDVx
```

```
title: Laboratorio 5. Análisis de sentimientos.pdf, id: 1fUxJYSZGZPLm5Q2UD0182FNlWfoUszPg
```

```
title: GrammarandProductReviews.csv, id: 1fGkPkrk96zg140BcsGjFkOV8yJJpuJ_n
```

3 Descargar el archivo de drive

```
In [0]: GrammarandProductReviews = drive.CreateFile({'id': '1fGkPkrk96zg140BcsGjFkOV8yJJpuJ_n'})
        GrammarandProductReviews.GetContentFile('GrammarandProductReviews.csv')
```

```
In [0]: dataset = pd.read_csv('GrammarandProductReviews.csv')
        # dataset=pd.read_csv('GrammarandProductReviews.csv',sep='\t')
```

3.1 Análisis Exploratorio

Lo primero que tenemos que ver es la fila donde tiene todos los nombres de los atributos para poder ver cuales son titulos de cada columna y poder ver a mas detalle las opciones que hay

```
In [6]: list(dataset)
```

```
Out[6]: ['id',
        'brand',
        'categories',
        'dateAdded',
        'dateUpdated',
        'ean',
        'keys',
        'manufacturer',
        'manufacturerNumber',
```

```

'name',
'reviews.date',
'reviews.dateAdded',
'reviews.dateSeen',
'reviews.didPurchase',
'reviews.doRecommend',
'reviews.id',
'reviews.numHelpful',
'reviews.rating',
'reviews.sourceURLs',
'reviews.text',
'reviews.title',
'reviews.userCity',
'reviews.userProvince',
'reviews.username',
'upc']

```

Columna	Significado	Importancia
review.title	Este es el titulo del review del usuario	Nos va a ayudar a distinguir el sentimiento
reviews.rating	La calificacion que el usuario le dio	Puntuacion
review.reviewtext	Aqui es donde el usuario describe lo que penso de la pelicula	Esto es lo que mas se va a analizar
review.username	El usuario del que dio su opinion del producto	para saber quien es el que esta haciendo el review

Columna	Significado	Importancia
manufacturer	El Productor del Producto	Para ver quien produjo ese producto y analizar el review del productor

Tabla: Columnas Importantes

```
In [7]: dataset['reviews.rating'].describe()
```

```
Out[7]: count      71044.000000
        mean        4.385747
        std         1.067659
        min         1.000000
        25%         4.000000
        50%         5.000000
        75%         5.000000
        max         5.000000
        Name: reviews.rating, dtype: float64
```

```
In [0]: dataset = dataset.rename(columns={'reviews.text':'reviewtext'})
        dataset = dataset.rename(columns={'reviews.title':'reviewtitle'})
```

```
In [9]: dataset['reviewtext'].describe()
```

```
Out[9]: count      71008
        unique     64913
        top        Good
        freq       26
        Name: reviewtext, dtype: object
```

```
In [10]: dataset['reviewtitle'].describe()
```

```
Out[10]: count      70568
         unique     42682
         top        Great movie
         freq       1367
         Name: reviewtitle, dtype: object
```

```
In [11]: dataset['manufacturer'].describe()
```

```
Out[11]: count      70903
         unique      463
         top        Clorox
         freq       8607
         Name: manufacturer, dtype: object
```

3.1.1 Limpieza de Datos

```
In [12]: dataset.reviewtext
```

```
Out[12]: 0      i love this album. it's very good. more to the...
1      Good flavor. This review was collected as part...
2      Good flavor.
3      I read through the reviews on here before look...
4      My husband bought this gel for us. The gel cau...
5      My boyfriend and I bought this to spice things...
6      Bought this earlier today and was excited to c...
7      I bought this product for my husband and I to ...
8      My husband and I bought this for some extra fu...
9      Got as a surprise for my husband there is noth...
10     tried it with my husband and felt no different...
11     Purchased this thinking it would have some sor...
12     Bought this to enhance our time a bit, did abs...
13     I bought this after really liking the his n he...
14     First time purchase of this type of product. M...
15     I bought this and tried this with my wife but ...
16     I bought this product to spice things up with ...
17     I bought this to try to spice things up, but I...
18     I bought this because it had better reviews th...
19     It was my first time using k-y. It didn't do a...
20     I noticed this product on clearance at a store...
21     I used this product a couple of times since i ...
22     Used a few times stays a bit sticky but not to...
23     Loved This review was collected as part of a p...
24     This is a good product. Will give you a great ...
25     I really enjoyed using this product with my hu...
26     Awesome Product for couples. It is a warm feel...
27     Exceptional product, this is smooth, not slimy...
28     I used this for the first time with my boyfrie...
29     Great product! Exactly what it says works very...
...
71014  I have dry eyes and none of the generic stuff ...
71015  This is a great product that provides all day ...
71016  Great product
71017  It's Best saline I've tried.
71018  this product does not burn it does a great job...
71019  Awesome cleaning solutions for contacts This r...
71020  I recommend this for people with dry eye who s...
71021  This is the only contact solution I use. I hav...
71022  One of the best contact solutions I have used
71023  I've had trouble the past few years with my co...
71024  This is the only stuff my daughter will use. I...
71025  This is great for using daily to disinfect you...
71026  Worked wonderful !!
71027  I am always satisfied with this contact soluti...
```

```

71028    I buy this for my daughter who wears contacts...
71029                                           Works great
71030    Very good at keeping contact lenses clean and ...
71031    I bought this brand mainly because it came in ...
71032    I bought 2 of these thinking I would run out o...
71033    This contact solution is wonderful and does an...
71034    I have used this for a while now with great su...
71035    Cleanses contacts to keep them fresh clean for...
71036                                           Great product
71037                                           Great item
71038    Since I've starting wearing my contacts full-t...
71039    I'm dealing with dry eyes and very sensitive t...
71040    Great stuff! Helps keep my contacts moist all ...
71041                                           Right price
71042    I was so pleased when this scarf arrived for m...
71043    Excellent album, makes the holidays better, gi...
Name: reviewtext, Length: 71044, dtype: object

```

```

In [13]: dataset.reviewtext = dataset.reviewtext.str.lower()
dataset.reviewtext.replace(regex=r' -', value=' ')
dataset.reviewtext.replace(regex=r'@', value=' ')
dataset.reviewtext.replace(regex=r'#', value=' ')
dataset.reviewtext.replace(regex=r'$', value=' ')
dataset.reviewtext.replace(regex=r'%', value=' ')
dataset.reviewtext.replace(regex=r'&', value=' ')
dataset.reviewtext.replace(regex=r'\.', value=' ')
dataset.reviewtext.replace(regex=r'\'', value='')
dataset.reviewtext.replace(regex=r'!', value=' ')

```

```

Out[13]: 0      i love this album. it's very good. more to the...
1      good flavor. this review was collected as part...
2      good flavor.
3      i read through the reviews on here before look...
4      my husband bought this gel for us. the gel cau...
5      my boyfriend and i bought this to spice things...
6      bought this earlier today and was excited to c...
7      i bought this product for my husband and i to ...
8      my husband and i bought this for some extra fu...
9      got as a surprise for my husband there is noth...
10     tried it with my husband and felt no different...
11     purchased this thinking it would have some sor...
12     bought this to enhance our time a bit, did abs...
13     i bought this after really liking the his n he...
14     first time purchase of this type of product. m...
15     i bought this and tried this with my wife but ...
16     i bought this product to spice things up with ...
17     i bought this to try to spice things up, but i...
18     i bought this because it had better reviews th...

```

```

19      it was my first time using k-y. it didn't do a...
20      i noticed this product on clearance at a store...
21      i used this product a couple of times since i ...
22      used a few times stays a bit sticky but not to...
23      loved this review was collected as part of a p...
24      this is a good product. will give you a great ...
25      i really enjoyed using this product with my hu...
26      awesome product for couples. it is a warm feel...
27      exceptional product, this is smooth, not slimy...
28      i used this for the first time with my boyfrie...
29      great product  exactly what it says works very...

...

71014    i have dry eyes and none of the generic stuff ...
71015    this is a great product that provides all day ...
71016                                great product
71017                                it's best saline i've tried.
71018    this product does not burn it does a great job...
71019    awesome cleaning solutions for contacts this r...
71020    i recommend this for people with dry eye who s...
71021    this is the only contact solution i use. i hav...
71022            one of the best contact solutions i have used
71023    i've had trouble the past few years with my co...
71024    this is the only stuff my daughter will use. i...
71025    this is great for using daily to disinfect you...
71026                                worked wonderful
71027    i am always satisfied with this contact soluti...
71028    i buy this for my daughter who wears contacts...
71029                                works great
71030    very good at keeping contact lenses clean and ...
71031    i bought this brand mainly because it came in ...
71032    i bought 2 of these thinking i would run out o...
71033    this contact solution is wonderful and does an...
71034    i have used this for a while now with great su...
71035    cleanses contacts to keep them fresh clean for...
71036                                great product
71037                                great item
71038    since i've starting wearing my contacts full-t...
71039    i'm dealing with dry eyes and very sensitive t...
71040    great stuff  helps keep my contacts moist all ...
71041                                right price
71042    i was so pleased when this scarf arrived for m...
71043    excellent album, makes the holidays better, gi...
Name: reviewtext, Length: 71044, dtype: object

```

```

In [14]: dataset.reviewtitle = dataset.reviewtitle.str.lower()
dataset.reviewtitle.replace(regex=r' -', value=' ')
dataset.reviewtitle.replace(regex=r'@', value=' ')
dataset.reviewtitle.replace(regex=r'#', value=' ')

```

```

dataset.reviewtitle.replace(regex=r'$ ', value=' ')
dataset.reviewtitle.replace(regex=r'% ', value=' ')
dataset.reviewtitle.replace(regex=r'& ', value=' ')
dataset.reviewtitle.replace(regex=r'\. ', value=' ')
dataset.reviewtitle.replace(regex=r'\ ', value='')
dataset.reviewtitle.replace(regex=r'!', value=' ')

```

```

Out[14]: 0          just awesome
        1              good
        2              good
        3      disappointed
        4          irritation
        5      not worth it
        6      disappointing
        7      not happy at all
        8      very disappointing
        9          don't buy
       10      pretty dissapoitned
       11          waste of money
       12          waste of money
       13      not happy with this product
       14      disappointed
       15      not what i expected
       16      was so disappointed
       17      very disappointed
       18          pretty nice
       19      first time using
       20          we love it
       21          good times
       22      does the job
       23          loved
       24      great sensation
       25      that little extra something..
       26          great product
       27      why wouldn't you try it
       28          amazing
       29          amazing

        ...
       71014          best yet
       71015      great, all day comfort without drying out
       71016          great product
       71017          best saline
       71018      best thing i ever used
       71019      opti-free for contacts
       71020          works for dry eye
       71021      best contact solution
       71022          solution
       71023          all day moisture

```



```

71024                my daughter loves this.
71025                awesome product
71026                margaret
71027                best contact solution
71028               alcon pure moist
71029                great
71030                opti-free contact lens cleanet
71031                i love the small size bottle
71032                great
71033                wonderful
71034                tried and true
71035                review: excellent
71036                great product
71037                great
71038                worth every penny.
71039                solves the problem
71040                great stuff
71041                my review
71042                wonderful product
71043                makes the holidays better
Name: reviewtitle, Length: 71044, dtype: object

```

In [15]: dataset

```

Out[15]:
      id      brand \
0  AV1301A8GV-KLJ3akUyj  Universal Music
1  AV14LGOR-jtxr-f38QfS    Lundberg
2  AV14LGOR-jtxr-f38QfS    Lundberg
3  AV16khLE-jtxr-f38VFn      K-Y
4  AV16khLE-jtxr-f38VFn      K-Y
5  AV16khLE-jtxr-f38VFn      K-Y
6  AV16khLE-jtxr-f38VFn      K-Y
7  AV16khLE-jtxr-f38VFn      K-Y
8  AV16khLE-jtxr-f38VFn      K-Y
9  AV16khLE-jtxr-f38VFn      K-Y
10 AV16khLE-jtxr-f38VFn      K-Y
11 AV16khLE-jtxr-f38VFn      K-Y
12 AV16khLE-jtxr-f38VFn      K-Y
13 AV16khLE-jtxr-f38VFn      K-Y
14 AV16khLE-jtxr-f38VFn      K-Y
15 AV16khLE-jtxr-f38VFn      K-Y
16 AV16khLE-jtxr-f38VFn      K-Y
17 AV16khLE-jtxr-f38VFn      K-Y
18 AV16khLE-jtxr-f38VFn      K-Y
19 AV16khLE-jtxr-f38VFn      K-Y
20 AV16khLE-jtxr-f38VFn      K-Y
21 AV16khLE-jtxr-f38VFn      K-Y
22 AV16khLE-jtxr-f38VFn      K-Y

```

23	AV16khLE-jtxr-f38VFn	K-Y
24	AV16khLE-jtxr-f38VFn	K-Y
25	AV16khLE-jtxr-f38VFn	K-Y
26	AV16khLE-jtxr-f38VFn	K-Y
27	AV16khLE-jtxr-f38VFn	K-Y
28	AV16khLE-jtxr-f38VFn	K-Y
29	AV16khLE-jtxr-f38VFn	K-Y
...
71014	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71015	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71016	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71017	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71018	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71019	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71020	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71021	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71022	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71023	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71024	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71025	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71026	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71027	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71028	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71029	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71030	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71031	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71032	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71033	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71034	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71035	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71036	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71037	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71038	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71039	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71040	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71041	AVzRGDlw-jtxr-f3yfFH	Opti-Free
71042	AVzvTLfivKc47QAVfPme	Bebe Au Lait
71043	AVzvWCVKglJLPUi8Gzji	UMGD

categories \

0	Movies, Music & Books,Music,R&b,Movies & TV,Mo...
1	Food,Packaged Foods,Snacks,Crackers,Snacks, Co...
2	Food,Packaged Foods,Snacks,Crackers,Snacks, Co...
3	Personal Care,Medicine Cabinet,Lubricant/Sperm...
4	Personal Care,Medicine Cabinet,Lubricant/Sperm...
5	Personal Care,Medicine Cabinet,Lubricant/Sperm...
6	Personal Care,Medicine Cabinet,Lubricant/Sperm...
7	Personal Care,Medicine Cabinet,Lubricant/Sperm...

[illegible]

71039 Personal Care, Eye & Ear Care, Eye Care, Contact ...
 71040 Personal Care, Eye & Ear Care, Eye Care, Contact ...
 71041 Personal Care, Eye & Ear Care, Eye Care, Contact ...
 71042 Baby, Nursing & Feeding, Breastfeeding, Nursing C...
 71043 Movies, Music & Books, Music, Gospel & Christian...

	dateAdded	dateUpdated \
0	2017-07-25T00:52:42Z	2018-02-05T08:36:58Z
1	2017-07-25T05:16:03Z	2018-02-05T11:27:45Z
2	2017-07-25T05:16:03Z	2018-02-05T11:27:45Z
3	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
4	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
5	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
6	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
7	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
8	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
9	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
10	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
11	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
12	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
13	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
14	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
15	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
16	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
17	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
18	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
19	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
20	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
21	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
22	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
23	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
24	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
25	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
26	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
27	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
28	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
29	2017-07-25T16:26:19Z	2018-02-05T11:25:51Z
...
71014	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71015	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71016	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71017	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71018	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71019	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71020	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71021	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71022	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71023	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z

71024	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71025	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71026	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71027	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71028	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71029	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71030	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71031	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71032	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71033	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71034	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71035	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71036	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71037	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71038	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71039	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71040	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71041	2017-06-22T18:37:24Z	2018-02-05T11:28:36Z
71042	2017-06-28T15:23:21Z	2018-02-05T10:19:41Z
71043	2017-06-28T15:35:50Z	2018-02-05T10:21:34Z

	ean \
0	6.02537E+11
1	73416000391
2	73416000391
3	67981934427
4	67981934427
5	67981934427
6	67981934427
7	67981934427
8	67981934427
9	67981934427
10	67981934427
11	67981934427
12	67981934427
13	67981934427
14	67981934427
15	67981934427
16	67981934427
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71042	Bebe au Lait	50032623
71043	Def Jam	51590070

	name \
0	Pink Friday: Roman Reloaded Re-Up (w/dvd)
1	Lundberg Organic Cinnamon Toast Rice Cakes
2	Lundberg Organic Cinnamon Toast Rice Cakes
3	K-Y Love Sensuality Pleasure Gel
4	K-Y Love Sensuality Pleasure Gel
5	K-Y Love Sensuality Pleasure Gel
6	K-Y Love Sensuality Pleasure Gel
7	K-Y Love Sensuality Pleasure Gel
8	K-Y Love Sensuality Pleasure Gel
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28	K-Y Love Sensuality Pleasure Gel

29 K-Y Love Sensuality Pleasure Gel

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...
71014 Opti-Free Puremoist Disinfecting Solution 10fl Oz
71015 Opti-Free Puremoist Disinfecting Solution 10fl Oz
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71041 Opti-Free Puremoist Disinfecting Solution 10fl Oz
71042 Bebe Au Lait174 Premium Muslin Nursing Scarf -...
71043 Justin Bieber - Under The Mistletoe (vinyl)

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0	https://redsky.target.com/groot-domain-api/v1/...
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2	https://www.walmart.com/reviews/product/29775278
3	https://www.walmart.com/reviews/product/43383370
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	reviewtext \
0	i love this album. it's very good. more to the...
1	good flavor. this review was collected as part...
2	good flavor.
3	i read through the reviews on here before look...
4	my husband bought this gel for us. the gel cau...
5	my boyfriend and i bought this to spice things...
6	bought this earlier today and was excited to c...
7	i bought this product for my husband and i to ...
8	my husband and i bought this for some extra fu...
9	got as a surprise for my husband there is noth...
10	tried it with my husband and felt no different...
11	purchased this thinking it would have some sor...
12	bought this to enhance our time a bit, did abs...
13	i bought this after really liking the his n he...
14	first time purchase of this type of product. m...
15	i bought this and tried this with my wife but ...
16	i bought this product to spice things up with ...

17 i bought this to try to spice things up, but i...
 18 i bought this because it had better reviews th...
 19 it was my first time using k-y. it didn't do a...
 20 i noticed this product on clearance at a store...
 21 i used this product a couple of times since i ...
 22 used a few times stays a bit sticky but not to...
 23 loved this review was collected as part of a p...
 24 this is a good product. will give you a great ...
 25 i really enjoyed using this product with my hu...
 26 awesome product for couples. it is a warm feel...
 27 exceptional product, this is smooth, not slimy...
 28 i used this for the first time with my boyfrie...
 29 great product! exactly what it says works very...
 ...
 71014 i have dry eyes and none of the generic stuff ...
 71015 this is a great product that provides all day ...
 71016 great product
 71017 it's best saline i've tried.
 71018 this product does not burn it does a great job...
 71019 awesome cleaning solutions for contacts this r...
 71020 i recommend this for people with dry eye who s...
 71021 this is the only contact solution i use. i hav...
 71022 one of the best contact solutions i have used
 71023 i've had trouble the past few years with my co...
 71024 this is the only stuff my daughter will use. i...
 71025 this is great for using daily to disinfect you...
 71026 worked wonderful !!
 71027 i am always satisfied with this contact soluti...
 71028 i buy this for my daughter who wears contacts...
 71029 works great
 71030 very good at keeping contact lenses clean and ...
 71031 i bought this brand mainly because it came in ...
 71032 i bought 2 of these thinking i would run out o...
 71033 this contact solution is wonderful and does an...
 71034 i have used this for a while now with great su...
 71035 cleanses contacts to keep them fresh clean for...
 71036 great product
 71037 great item
 71038 since i've starting wearing my contacts full-t...
 71039 i'm dealing with dry eyes and very sensitive t...
 71040 great stuff! helps keep my contacts moist all ...
 71041 right price
 71042 i was so pleased when this scarf arrived for m...
 71043 excellent album, makes the holidays better, gi...

	reviewtitle	reviews.userCity	\
0	just awesome	Los Angeles	
1	good	NaN	

2	good	NaN
3	disappointed	NaN
4	irritation	NaN
5	not worth it	NaN
6	disappointing	NaN
7	not happy at all	NaN
8	very disappointing	NaN
9	don't buy	NaN
10	pretty dissapoitned	NaN
11	waste of money	NaN
12	waste of money	NaN
13	not happy with this product	NaN
14	disappointed	NaN
15	not what i expected	NaN
16	was so disappointed!!	NaN
17	very disappointed!	NaN
18	pretty nice	NaN
19	first time using	NaN
20	we love it!	NaN
21	good times	NaN
22	does the job	NaN
23	loved	NaN
24	great sensation	NaN
25	that little extra something..	NaN
26	great product!	NaN
27	why wouldn't you try it	NaN
28	amazing!	NaN
29	amazing	NaN
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71014	best yet	NaN
71015	great, all day comfort without drying out	NaN
71016	great product	NaN
71017	best saline	NaN
71018	best thing i ever used	NaN
71019	opti-free for contacts	NaN
71020	works for dry eye	NaN
71021	best contact solution	NaN
71022	solution	NaN
71023	all day moisture	NaN
71024	my daughter loves this.	NaN
71025	awesome product	NaN
71026	margaret	NaN
71027	best contact solution!	NaN
71028	alcon pure moist	NaN
71029	great	NaN
71030	opti-free contact lens cleanet	NaN
71031	i love the small size bottle	NaN
71032	great!!!!!!	NaN

71033	wonderful	NaN
71034	tried and true	NaN
71035	review: excellent	NaN
71036	great product	NaN
71037	great	NaN
71038	worth every penny.	NaN
71039	solves the problem	NaN
71040	great stuff!	NaN
71041	my review	NaN
71042	wonderful product	NaN
71043	makes the holidays better	NaN

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71020 300650361040,631113253665,300650193108,3006503...
71021 300650361040,631113253665,300650193108,3006503...
71022 300650361040,631113253665,300650193108,3006503...
71023 300650361040,631113253665,300650193108,3006503...
71024 300650361040,631113253665,300650193108,3006503...
71025 300650361040,631113253665,300650193108,3006503...
71026 300650361040,631113253665,300650193108,3006503...
71027 300650361040,631113253665,300650193108,3006503...
71028 300650361040,631113253665,300650193108,3006503...
71029 300650361040,631113253665,300650193108,3006503...
71030 300650361040,631113253665,300650193108,3006503...
71031 300650361040,631113253665,300650193108,3006503...
71032 300650361040,631113253665,300650193108,3006503...
71033 300650361040,631113253665,300650193108,3006503...
71034 300650361040,631113253665,300650193108,3006503...
71035 300650361040,631113253665,300650193108,3006503...
71036 300650361040,631113253665,300650193108,3006503...
71037 300650361040,631113253665,300650193108,3006503...
71038 300650361040,631113253665,300650193108,3006503...
71039 300650361040,631113253665,300650193108,3006503...
71040 300650361040,631113253665,300650193108,3006503...
71041 300650361040,631113253665,300650193108,3006503...
71042 8.78982E+11
71043 602,547,970,220,602,000,000,000,000,000,00...

```

```
[71044 rows x 25 columns]
```

```
In [0]: #lowerYsub('GrammarandProductReviews.csv','GrammarandProductReviews2.csv')
```

3.1.2 Quitar Stopwords

```
In [0]: dataset['reviewtext'] = dataset['reviewtext'].astype(str)
```

```
In [17]: print(stop_words)
```

```
{'a', 'other', 'hadn', 'have', 'off', 'before', 'down', 'not', "weren't", "didn't", "you'll",
```

```
In [18]: dataset['reviewtext']
```

```
Out[18]: 0      i love this album. it's very good. more to the...
1      good flavor. this review was collected as part...
2      good flavor.
3      i read through the reviews on here before look...
4      my husband bought this gel for us. the gel cau...
5      my boyfriend and i bought this to spice things...
6      bought this earlier today and was excited to c...
7      i bought this product for my husband and i to ...
8      my husband and i bought this for some extra fu...
9      got as a surprise for my husband there is noth...
10     tried it with my husband and felt no different...
11     purchased this thinking it would have some sor...
12     bought this to enhance our time a bit, did abs...
13     i bought this after really liking the his n he...
14     first time purchase of this type of product. m...
15     i bought this and tried this with my wife but ...
16     i bought this product to spice things up with ...
17     i bought this to try to spice things up, but i...
18     i bought this because it had better reviews th...
19     it was my first time using k-y. it didn't do a...
20     i noticed this product on clearance at a store...
21     i used this product a couple of times since i ...
22     used a few times stays a bit sticky but not to...
23     loved this review was collected as part of a p...
24     this is a good product. will give you a great ...
25     i really enjoyed using this product with my hu...
26     awesome product for couples. it is a warm feel...
27     exceptional product, this is smooth, not slimy...
28     i used this for the first time with my boyfrie...
29     great product! exactly what it says works very...
...
71014  i have dry eyes and none of the generic stuff ...
71015  this is a great product that provides all day ...
71016  great product
71017  it's best saline i've tried.
71018  this product does not burn it does a great job...
71019  awesome cleaning solutions for contacts this r...
71020  i recommend this for people with dry eye who s...
```

```

71021    this is the only contact solution i use. i hav...
71022         one of the best contact solutions i have used
71023    i've had trouble the past few years with my co...
71024    this is the only stuff my daughter will use. i...
71025    this is great for using daily to disinfect you...
71026                                worked wonderful !!
71027    i am always satisfied with this contact soluti...
71028    i buy this for my daughter who wears contacts...
71029                                works great
71030    very good at keeping contact lenses clean and ...
71031    i bought this brand mainly because it came in ...
71032    i bought 2 of these thinking i would run out o...
71033    this contact solution is wonderful and does an...
71034    i have used this for a while now with great su...
71035    cleanses contacts to keep them fresh clean for...
71036                                great product
71037                                great item
71038    since i've starting wearing my contacts full-t...
71039    i'm dealing with dry eyes and very sensitive t...
71040    great stuff! helps keep my contacts moist all ...
71041                                right price
71042    i was so pleased when this scarf arrived for m...
71043    excellent album, makes the holidays better, gi...
Name: reviewtext, Length: 71044, dtype: object

```

```

In [0]: dataset['reviewtext'] = dataset['reviewtext'].astype(str)
        dataset['reviewtitle'] = dataset['reviewtitle'].astype(str)

```

```

In [0]: dataset['reviewtext'] = dataset['reviewtext'].str.split(' ').apply(lambda x: ' '.join(
        dataset['reviewtitle'] = dataset['reviewtitle'].str.split(' ').apply(lambda x: ' '.join(

```

```

In [21]: print (dataset['reviewtext'])

```

```

0      love album. good. hip hop side current pop sou...
1      good flavor. review collected part promotion.
2                                good flavor.
3      read reviews looking buying one couples lubric...
4      husband bought gel us. gel caused irritation f...
5      boyfriend bought spice things bedroom highly d...
6      bought earlier today excited check out. based ...
7      bought product husband try impressed all. ting...
8      husband bought extra fun. werevboth extremely ...
9      got surprise husband nothing special lube save...
10     tried husband felt different effect change fir...
11     purchased thinking would sort warming effect o...
12     bought enhance time bit, abslutely nothing dis...
13     bought really liking n variety nothing like di...
14     first time purchase type product. maybe expect...
15     bought tried wife enjoy ..we feel anything enh...

```

16 bought product spice things fianc anything! pa...
 17 bought try spice things up, felt nothing. disa...
 18 bought better reviews jelly, feel like work we...
 19 first time using k-y. anything opinion felt li...
 20 noticed product clearance store shop frequentl...
 21 used product couple times since recived free t...
 22 used times stays bit sticky bad, better products
 23 loved review collected part promotion.
 24 good product. give great feeling.
 25 really enjoyed using product husband. 20+ year...
 26 awesome product couples. warm feeling lubrican...
 27 exceptional product, smooth, slimy warming sen...
 28 used first time boyfriend loved much did. get ...
 29 great product! exactly says works well

...

71014 dry eyes none generic stuff works. far, contac...
 71015 great product provides day lens comfort withou...
 71016 great product
 71017 best saline i've tried.
 71018 product burn great job love
 71019 awesome cleaning solutions contacts review col...
 71020 recommend people dry eye still want wear conta...
 71021 contact solution use. dry eyes helps keep cont...
 71022 one best contact solutions used
 71023 i've trouble past years contacts drying mid-da...
 71024 stuff daughter use. allows use cheaper contact...
 71025 great using daily disinfect lenses overnight
 71026 worked wonderful !!
 71027 always satisfied contact solution. i've used y...
 71028 buy daughter wears contacts. loves moist keeps...
 71029 works great
 71030 good keeping contact lenses clean moisturized...
 71031 bought brand mainly came small travel-size bot...
 71032 bought 2 thinking would run one really quick, ...
 71033 contact solution wonderful excellent job clean...
 71034 used great success. sensitive eyes works well me!
 71035 cleanses contacts keep fresh clean eyes. probl...
 71036 great product
 71037 great item
 71038 since i've starting wearing contacts full-time...
 71039 i'm dealing dry eyes sensitive products. eye c...
 71040 great stuff! helps keep contacts moist day!
 71041 right price
 71042 pleased scarf arrived multiple reasons. print ...
 71043 excellent album, makes holidays better, gives ...

Name: reviewtext, Length: 71044, dtype: object

Las palabras que mas se repiten

```
In [0]: palabrasMasComunes = {}
```

```
In [0]: def word_count(str, dictionary):  
    for word in str.split():  
        if word in dictionary:  
            dictionary[word] += 1  
        else:  
            dictionary[word] = 1  
    return dictionary
```

```
In [0]: for row in dataset.reviewtext.values:  
    if type(row) == str:  
        palabrasMasComunes = word_count(row, palabrasMasComunes)
```

3.1.3 Histograma

```
In [0]: def keyInOrder(listName, number):  
    keys = list(sorted(listName, key=listName.__getitem__, reverse=True))  
    keys = keys[:number]  
    firstFew = {x:listName[x] for x in keys}  
    return firstFew
```

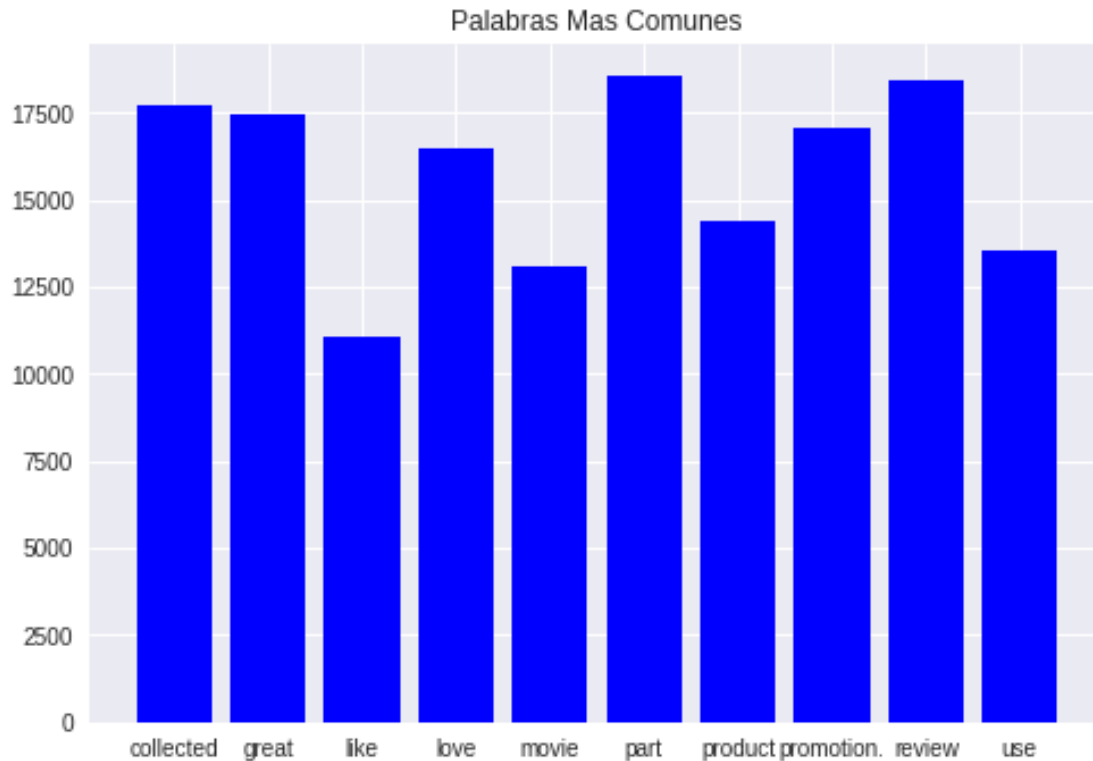
```
In [0]: palabrasOrdenadas = {}
```

```
In [0]: for key, value in sorted(palabrasMasComunes.items(), key=operator.itemgetter(1), reverse=True):  
    palabrasOrdenadas[key] = int(value)
```

```
In [0]: keys = keyInOrder(palabrasOrdenadas, 10)
```

```
In [32]: plt.bar(keys.keys(), keys.values(), color='b')  
    plt.title("Palabras Mas Comunes")
```

```
Out[32]: Text(0.5,1,'Palabras Mas Comunes')
```



3.2 Clasificador de Palabras

```
In [0]: #Funcion que devuelve la clasificacion del review por medio de la cantidad de
#palabras positivas, negativas y neutras.
def clasificador(rev):
    sid = SentimentIntensityAnalyzer()
    pos_list=[]
    neu_list=[]
    neg_list=[]
    for word in rev.split():
        if (sid.polarity_scores(word)['compound']) >= 0.5:
            pos_list.append(word)
        elif (sid.polarity_scores(word)['compound']) <= -0.5:
            neg_list.append(word)
    resultado = "Neutro"

# print ("pos_list: %d <==> %d :neg_list" % (len(pos_list), len(neg_list)))

if len(pos_list)<len(neg_list) and len(pos_list) == 0:
    resultado = "Altamente Negativo"
if len(pos_list)>len(neg_list) and len(neg_list) == 0:
    resultado = "Altamente Positivo"
```



```

    if len(pos_list)<len(neg_list) and len(pos_list) > 0:
        resultado = "Levemente Negativo"
    if len(pos_list)>len(neg_list) and len(neg_list) > 0:
        resultado = "Levemente Positivo"

#     print("resultado: %s" % resultado)

    return (resultado)

In [0]: dataset['resultado'] = 'Neutro'

In [0]: for index, row in dataset.iterrows():
        dataset.loc[index,'resultado'] = clasificador(row['reviewtext'])

In [37]: dataset['resultado']

Out[37]: 0      Altamente Positivo
1              Neutro
2              Neutro
3      Altamente Positivo
4      Altamente Negativo
5      Altamente Positivo
6              Neutro
7              Neutro
8      Altamente Positivo
9              Neutro
10             Neutro
11             Neutro
12             Neutro
13             Neutro
14             Neutro
15             Neutro
16             Neutro
17      Altamente Positivo
18      Altamente Positivo
19              Neutro
20      Levemente Positivo
21      Altamente Positivo
22      Altamente Negativo
23      Altamente Positivo
24      Altamente Positivo
25      Altamente Positivo
26      Altamente Positivo
27      Altamente Positivo
28      Altamente Positivo
29      Altamente Positivo
...
71014      Altamente Positivo
71015      Altamente Positivo

```

```

71016    Altamente Positivo
71017    Altamente Positivo
71018    Altamente Positivo
71019    Altamente Positivo
71020             Neutro
71021             Neutro
71022    Altamente Positivo
71023    Altamente Positivo
71024             Neutro
71025    Altamente Positivo
71026    Altamente Positivo
71027             Neutro
71028    Altamente Positivo
71029    Altamente Positivo
71030             Neutro
71031             Neutro
71032             Neutro
71033    Altamente Positivo
71034    Altamente Positivo
71035             Neutro
71036    Altamente Positivo
71037    Altamente Positivo
71038    Altamente Positivo
71039             Neutro
71040    Altamente Positivo
71041             Neutro
71042    Altamente Positivo
71043    Altamente Positivo
Name: resultado, Length: 71044, dtype: object

```

Los Mejores Productos

```

In [0]: # @params tiene que utilizar un dataset ya prechequiado con los valores que se quiere
def addPointsToDictionary(dictionaryOfPoints, columnName, givenDataset, pointsGiven):
    for index, row in givenDataset.iterrows():
        if row[columnName] in dictionaryOfPoints:
            dictionaryOfPoints[row[columnName]] += pointsGiven
        else:
            dictionaryOfPoints[row[columnName]] = pointsGiven
    return dictionaryOfPoints

In [0]: datasetAltamentePositive = dataset.loc[dataset['resultado'] == "Altamente Positivo"]

In [0]: datasetLevementePositive = dataset.loc[dataset['resultado'] == "Levemente Positivo"]

In [0]: puntajePorProducto = {}

```

Los que tienen levemente positivos tienen 1 punto y los de Altamente positivos son 2

```
In [0]: puntajeLevementePos = 1
        puntajeAltamentePos = 2
```

Primero vamos a buscar el nombre de producto que se encuentra en la columna 'name'

```
In [0]: productoColumna = 'name'
```

Se agregan los puntos de altamente positivo

```
In [0]: puntajePorProducto = addPointsToDictionary(puntajePorProducto, productoColumna, dataset)
```

Se agregan los puntos de levemente positivo

```
In [0]: puntajePorProducto = addPointsToDictionary(puntajePorProducto, productoColumna, dataset)
```

```
In [46]: print (puntajePorProducto)
```

```
{'Pink Friday: Roman Reloaded Re-Up (w/dvd)': 2, 'K-Y Love Sensuality Pleasure Gel': 27, 'J.R.
```

```
In [0]: puntajeProductoOrdenado = {}
```

```
In [0]: for key, value in sorted(puntajePorProducto.items(), key=operator.itemgetter(1), reverse=True):
        puntajeProductoOrdenado[key] = int(value)
```

```
In [49]: # sorted(palabrasMasComunes.items(), key=operator.itemgetter(1), reverse=True)
        print(puntajeProductoOrdenado)
```

```
{'Clorox Disinfecting Wipes Value Pack Scented 150 Ct Total': 11516, 'The Secret Life Of Pets
```

```
In [0]: keys = keyInOrder(puntajeProductoOrdenado, 10)
```

3.3 Los Mejores 10 Productos

```
In [52]: c = 1
        print("Top 10 mejores productos")
        for key, value in keys.items():
            print ("%d: %s: Con %s puntos positivos" % (c, key, value))
            c += 1
```

Top 10 mejores productos

- 1: Clorox Disinfecting Wipes Value Pack Scented 150 Ct Total: Con 11516 puntos positivos
- 2: The Secret Life Of Pets (4k/uhd + Blu-Ray + Digital): Con 8103 puntos positivos
- 3: Tide Original Liquid Laundry Detergent - 100 Oz: Con 3989 puntos positivos
- 4: Godzilla 3d Includes Digital Copy Ultraviolet 3d/2d Blu-Ray/dvd: Con 3905 puntos positivos
- 5: Olay Total Effects Daily Moisturizer, 7-In-1 Anti-Aging, 0.5oz: Con 3836 puntos positivos
- 6: L'or233al Paris Elvive Extraordinary Clay Rebalancing Conditioner - 12.6 Fl Oz: Con 3814 puntos positivos
- 7: The Jungle Book (blu-Ray/dvd + Digital): Con 3755 puntos positivos
- 8: Independence Day Resurgence (4k/uhd + Blu-Ray + Digital): Con 3351 puntos positivos
- 9: L'oreal Paris Revitalift Triple Power Deep-Acting Moisturizer: Con 3197 puntos positivos
- 10: Tide Pods Detergent, Botanical Rain, 61ct: Con 2815 puntos positivos

Lo mismo pero ahora para los peores productos

```
In [0]: datasetAltamenteNegativo = dataset.loc[dataset['resultado'] == "Altamente Negativo"]
In [0]: datasetLevementeNegativo = dataset.loc[dataset['resultado'] == "Levemente Negativo"]
In [0]: puntajePeorProducto = {}
In [0]: puntajePeorProducto = addPointsToDictionary(puntajePeorProducto, productoColumna, datasetLevementeNegativo)
In [0]: puntajePeorProducto = addPointsToDictionary(puntajePeorProducto, productoColumna, datasetAltamenteNegativo)
In [0]: puntajeProductoOrdenado = {}
In [0]: for key, value in sorted(puntajePeorProducto.items(), key=operator.itemgetter(1), reverse=True):
        puntajeProductoOrdenado[key] = int(value)
In [0]: keys = keyInOrder(puntajeProductoOrdenado, 10)
```

3.4 Los Peores 10 productos

```
In [62]: c = 1
        print("Top 10 Peores Productos")
        for key, value in keys.items():
            print ("%d: %s: Con %s puntos negativos" % (c, key, value))
            c += 1
```

Top 10 Peores Productos

```
1: Independence Day Resurgence (4k/uhd + Blu-Ray + Digital): Con 362 puntos negativos
2: Clorox Disinfecting Wipes Value Pack Scented 150 Ct Total: Con 325 puntos negativos
3: Tide Original Liquid Laundry Detergent - 100 Oz: Con 323 puntos negativos
4: Godzilla 3d Includes Digital Copy Ultraviolet 3d/2d Blu-Ray/dvd: Con 267 puntos negativos
5: Nexxus Exxtra Gel Style Creation Sculptor: Con 253 puntos negativos
6: Rubbermaid174 Reveal Spray Mop: Con 231 puntos negativos
7: Sausage Party (4k/uhd + Digital): Con 205 puntos negativos
8: The Resident Evil Collection 5 Discs (blu-Ray): Con 134 puntos negativos
9: Olay Total Effects Daily Moisturizer, 7-In-1 Anti-Aging, 0.5oz: Con 121 puntos negativos
10: Clorox Disinfecting Bathroom Cleaner: Con 95 puntos negativos
```

Consiguiendo los distintos reviews de producto por usuarios

```
In [0]: datasetDistinctUserConProduct = dataset.drop_duplicates(dataset[['reviews.username', 'product_id']])
In [0]: dictionaryUsers = {}
        columnaDeUserName = 'reviews.username'
        # dictionaryOfPoints, columnName, givenDataset, pointsGiven):
        dictionaryUsers = addPointsToDictionary(dictionaryUsers, columnaDeUserName, datasetDistinctUserConProduct)
In [0]: usernameOrdenado = {}
In [0]: for key, value in sorted(dictionaryUsers.items(), key=operator.itemgetter(1), reverse=True):
        usernameOrdenado[key] = int(value)
In [0]: keys = keyInOrder(usernameOrdenado, 10)
```

3.5 Top 10 Usuarios con mayor distintos reviews

```
In [69]: c = 1
         print("Top 10 Usuarios con Distintos Reviews")
         for key, value in keys.items():
             print ("%d: %s: Con %s reviews en diferentes productos" % (c, key, value))
             c += 1
```

Top 10 Usuarios con Distintos Reviews

```
1: An anonymous customer: Con 75 reviews en diferentes productos
2: Mike: Con 29 reviews en diferentes productos
3: Chris: Con 27 reviews en diferentes productos
4: nan: Con 27 reviews en diferentes productos
5: Anonymous: Con 26 reviews en diferentes productos
6: Sandy: Con 23 reviews en diferentes productos
7: John: Con 23 reviews en diferentes productos
8: Lisa: Con 22 reviews en diferentes productos
9: Rick: Con 22 reviews en diferentes productos
10: Mimi: Con 20 reviews en diferentes productos
```

Usuarios con mayor y menor puntaje de positivos o negativos

```
In [0]: userDicitionaryConPositivos = {}
        usersDictionaryConNegativos = {}
```

```
In [0]: # aqui vamos a conseguir todos las veces que el usuario a puesto algo positivo
        userDicitionaryConPositivos = addPointsToDictionary(userDicitionaryConPositivos, columnal
        userDicitionaryConPositivos = addPointsToDictionary(userDicitionaryConPositivos, columnal
        # ya que tenemos los positivos hacemos lo mismo con los negativos
        usersDictionaryConNegativos = addPointsToDictionary(usersDictionaryConNegativos, column
        usersDictionaryConNegativos = addPointsToDictionary(usersDictionaryConNegativos, column
        # ya que tenemos los puntajes por usuario hay que sacar el porcentaje de que tan posit
        userPorcentajeDeReview = {}
        userPorcentajeDeReviewNeg = {}
```

```
In [0]: def userDicitionaryAddPoints(userDictionaryPos, userDictionaryNeg , newDictionary):
        for key, value in userDictionaryPos.items():
            if key in userDictionaryNeg:
                newDictionary[key] = (value / (value + userDictionaryNeg[key])) * 100
        return newDictionary
```

```
In [0]: userPorcentajeDeReview = userDicitionaryAddPoints(userDicitionaryConPositivos, usersDic
        puntajeProductoOrdenado = {}
```

```
In [0]: for key, value in sorted(userPorcentajeDeReview.items(), key=operator.itemgetter(1), r
        puntajeProductoOrdenado[key] = int(value)
```

```
In [0]: keys = keyInOrder(puntajeProductoOrdenado, 10)
```

3.6 Top 10 Usuarios con Mayor % en Reviews Positivos

```
In [95]: c = 1
        print("Top 10 Usuarios con Mayor % en Reviews Positivos")
        for key, value in keys.items():
            print ("%d: %s: Con %s porcentajes de reviews positivos" % (c, key, value))
            c += 1
```

```
Top 10 Usuarios con Mayor % en Reviews Positivos
1: Joshua: Con 100 porcentaje reviews positivos
2: Rebecca: Con 100 porcentaje reviews positivos
3: Samantha: Con 100 porcentaje reviews positivos
4: cassie: Con 100 porcentaje reviews positivos
5: sanchez: Con 100 porcentaje reviews positivos
6: LL24: Con 100 porcentaje reviews positivos
7: vero: Con 100 porcentaje reviews positivos
8: Ashley A: Con 100 porcentaje reviews positivos
9: Jp71: Con 100 porcentaje reviews positivos
10: Jkell: Con 100 porcentaje reviews positivos
```

Usuarios con mayor y menor puntaje de positivos o negativos

```
In [0]: userPorcentajeDeReviewNeg = userDictionatyAddPoints(userPorcentajeDeReviewNeg, usersD
        puntajeProductoOrdenado = {}
        for key, value in sorted(userPorcentajeDeReview.items(), key=operator.itemgetter(1), r
            puntajeProductoOrdenado[key] = int(value)
        keys = keyInOrder(puntajeProductoOrdenado, 10)
```

3.7 Top 10 Usuarios con Mayor % en Reviews Negativos

```
In [99]: c = 1
        print("Top 10 Usuarios con Mayor % en Reviews Negativos")
        for key, value in keys.items():
            print ("%d: %s: Con %s porcentajes de reviews Negativos" % (c, key, value))
            c += 1
```

```
Top 10 Usuarios con Mayor % en Reviews Negativos
1: Joshua: Con 100 porcentajes de reviews Negativos
2: Rebecca: Con 100 porcentajes de reviews Negativos
3: Samantha: Con 100 porcentajes de reviews Negativos
4: cassie: Con 100 porcentajes de reviews Negativos
5: sanchez: Con 100 porcentajes de reviews Negativos
6: LL24: Con 100 porcentajes de reviews Negativos
7: vero: Con 100 porcentajes de reviews Negativos
8: Ashley A: Con 100 porcentajes de reviews Negativos
9: Jp71: Con 100 porcentajes de reviews Negativos
10: Jkell: Con 100 porcentajes de reviews Negativos
```

Productos de mejor calidad (mejor rating)

```
In [0]: datasetProductoRating = dataset[['name', 'reviews.rating']]
        datasetProductoRating5 = datasetProductoRating.loc[datasetProductoRating['reviews.rating'] == 5]
        datasetProductoRating4 = datasetProductoRating.loc[datasetProductoRating['reviews.rating'] == 4]

        dictionaryPoints = {}

In [0]: # def addPointsToDictionary(dictionaryOfPoints, columnName, givenDataset, pointsGiven)
        dictionaryPoints = addPointsToDictionary(dictionaryPoints, 'name', datasetProductoRating5, 5)
        dictionaryPoints = addPointsToDictionary(dictionaryPoints, 'name', datasetProductoRating4, 4)

In [0]: puntajeProductoOrdenado = {}

In [0]: for key, value in sorted(dictionaryPoints.items(), key=operator.itemgetter(1), reverse=True):
        puntajeProductoOrdenado[key] = int(value)

In [0]: keys = keyInOrder(puntajeProductoOrdenado, 10)
```

3.8 Top 10 Productos de Mejor Calidad Segun los Ratings

```
In [123]: c = 1
          print("Top 10 Productos de Mejor Calidad Segun los Ratings")
          for key, value in keys.items():
              print ("%d: %s" % (c, key))
              c += 1
```

Top 10 Productos de Mejor Calidad Segun los Ratings

- 1: Clorox Disinfecting Wipes Value Pack Scented 150 Ct Total
- 2: The Secret Life Of Pets (4k/uhd + Blu-Ray + Digital)
- 3: Godzilla 3d Includes Digital Copy Ultraviolet 3d/2d Blu-Ray/dvd
- 4: Tide Original Liquid Laundry Detergent - 100 Oz
- 5: The Jungle Book (blu-Ray/dvd + Digital)
- 6: Independence Day Resurgence (4k/uhd + Blu-Ray + Digital)
- 7: Clorox Disinfecting Bathroom Cleaner
- 8: L'or233al Paris Elvive Extraordinary Clay Rebalancing Conditioner - 12.6 Fl Oz
- 9: L'oreal Paris Revitalift Triple Power Deep-Acting Moisturizer
- 10: Olay Total Effects Daily Moisturizer, 7-In-1 Anti-Aging, 0.5oz

Peor calidad

```
In [0]: datasetProductoRating = dataset[['name', 'reviews.rating']]
        datasetProductoRating2 = datasetProductoRating.loc[datasetProductoRating['reviews.rating'] == 2]
        datasetProductoRating1 = datasetProductoRating.loc[datasetProductoRating['reviews.rating'] == 1]

        dictionaryPoints = {}
```

```

In [0]: # def addPointsToDictionary(dictionaryOfPoints, columnName, givenDataset, pointsGiven)
        dictionaryPoints = addPointsToDictionary(dictionaryPoints, 'name', datasetProductoRatin
        dictionaryPoints = addPointsToDictionary(dictionaryPoints, 'name', datasetProductoRatin

In [0]: puntajeProductoOrdenado = {}

In [0]: for key, value in sorted(dictionaryPoints.items(), key=operator.itemgetter(1), reverse=
        puntajeProductoOrdenado[key] = int(value)

In [0]: keys = keyInOrder(puntajeProductoOrdenado, 10)

```

3.9 Top 10 Productos de Peor Calidad Segun los Ratings

```

In [129]: c = 1
          print("Top 10 Productos de Peor Calidad Segun los Ratings")
          for key, value in keys.items():
              print ("%d: %s" % (c, key))
              c += 1

```

Top 10 Productos de Peor Calidad Segun los Ratings

- 1: Rubbermaid174 Reveal Spray Mop
- 2: Tide Original Liquid Laundry Detergent - 100 Oz
- 3: Nexxus Exxtra Gel Style Creation Sculptor
- 4: Olay Total Effects Daily Moisturizer, 7-In-1 Anti-Aging, 0.5oz
- 5: Clear Scalp & Hair Therapy Total Care Nourishing Shampoo
- 6: Independence Day Resurgence (4k/uhd + Blu-Ray + Digital)
- 7: Aveeno Baby Continuous Protection Lotion Sunscreen with Broad Spectrum SPF 55, 4oz
- 8: Sausage Party (4k/uhd + Digital)
- 9: L'oreal Paris Revitalift Triple Power Deep-Acting Moisturizer
- 10: Godzilla 3d Includes Digital Copy Ultraviolet 3d/2d Blu-Ray/dvd

4 Para Mejorar a los prodcutos de mala calidad

```

In [150]: Rubbermaid174 = dataset[['reviews.rating', 'reviewtext']].loc[dataset['name'] == 'Rub
        Rubbermaid174BadReviews = Rubbermaid174.loc[Rubbermaid174['reviews.rating'] < 3]
        Rubbermaid174BadReviews

```

```

Out[150]:
   reviews.rating  reviewtext
55764           1  bought mop yesterday needed something could qu...
55765           1  bought first one broke year base near swivel b...
55766           1  got two one home one rental home. stop working...
55767           1  enjoyed simplicity product whole 3 weeks worke...
55768           1  bought mop used once. great first time used it...
55769           1  second mop honest think much product first one...
55770           1  bought mop months ago , worked great weeks ago...
55771           1  bought mop several years ago. loved much decid...
55772           1  first saw mop excited unfortunately trigger st...

```


55773 1 mop less year use often. broke mop head joins ...
 55774 1 purchased reveal mop. pump stopped working sec...
 55775 1 tried spray. someone else try still work.
 55776 1 bought reveal mop 2 years ago. head broken sha...
 55777 1 one use, sprayer work. kept try see could fix ...
 55778 1 offer replacement parts this...the cleaner lea...
 55779 1 second mop. love convenience able mix solution...
 55780 1 purchased reveal mop approximately 1 week ago...
 55781 1 liked uses sprayer broke. spray anymore can't ...
 55782 1 last 2 months. used 5-6 times sprayer quit wor...
 55783 1 terrible product spray nossle stopped working ...
 55784 1 mop worked weeks 1 2 times week three months p...
 55785 1 even 1 month old. sprayer spray. price, need m...
 55786 1 bought 2 months ago sprayer work got ton use
 55787 1 bought month ago, used maybe 10 times trigger ...
 55788 1 6 months use, longer sprays. problem appears t...
 55789 1 used months sprayer stopped working. also star...
 55790 1 disappointed. every time use liquid leaks back...
 55791 1 terrible. bottle collapses spraying causing sp...
 55792 1 purchased spray mop dispenser mechanism locked...
 55793 1 bought mop target today handel broke off. firs...

 56736 2 disappointed. 2nd reveal broke. year 2 broke h...
 56737 2 second mop, first one slipped hand broke handl...
 56738 2 bought product now, least 3 times. broke one w...
 56739 2 love concept product, works well. washable pad...
 56740 2 usually love rubbermaid products. swiffer wet ...
 56741 2 wish read reviews sprayer awful. much hand str...
 56742 2 bought mop first came last summer 7 months han...
 56743 2 recommended product friends right bought it. w...
 56744 2 bought one. thought great. within months spray...
 56745 2 bought first came out. use time really like it...
 56746 2 love fact use cleaning solution however, produ...
 56747 2 excited first bought mop alternative swiffer b...
 56748 2 sturdiest. sprayer broke, bottle leaked caused...
 56749 2 bought mop last july. 6 months sprayer worked ...
 56750 2 purchased two reveal mops triggers worked 5 us...
 56751 2 loved mop 2 months purchase sprayer handle sta...
 56752 2 bought reveal mop used weeks. first trigger ca...
 56753 2 bought mop two extra pads. stopped spraying. b...
 56754 2 gone 3 mops 2 years. keep replacing 1, love co...
 56755 2 mop head carry enough washing solution sprayin...
 56756 2 4-5th mop within last 2 years, keep replacing ...
 56757 2 love mop third one now. frustrated handle brok...
 56758 2 bought new style old one's handle broke terrib...
 56759 2 come instructions can't make spray come even e...
 56760 2 bought little ago used long. sprayer work know...
 56761 2 purchased 2 mops. loved ergonomic design cushi...

```

56762          2  really loved product whole head broke repairab...
56763          2  loved product three months old trigger mechan...
56764          2  bought mop month ago. disappointed morning wen...
56765          2  first seen mop(reveal)i thought okay another m...

```

```
[1002 rows x 2 columns]
```

```

In [151]: Tide_Original = dataset[['reviews.rating', 'reviewtext']].loc[dataset['name'] == 'Tide']
Tide_Original = Tide_Original.loc[Tide_Original['reviews.rating'] < 3]
Tide_Original

```

```

Out[151]:      reviews.rating      reviewtext
47667          1  asthma again, somebody gets bright idea make s...
47668          1  tried new tide acti lift, extremely disappoint...
47669          1  i've using tide 40 years. always get tide free...
47670          1  detergent good job cleaning, clothes left acid...
47671          1  used tide original scented powder years..it's ...
47672          1  used tide years, get new washer, started using...
47673          1  loyal tide user acti lift added product severa...
47674          1  happened original scent smell changed much goi...
47675          1  switched back liquid. pods get caught shoulder...
47676          1  long time tide user unsure problem detergent r...
47677          1  also loved convenience pods getting blue spots...
47678          1  pods leave shirt annoying residue. pods melt c...
47679          1  even know say...i ruined least one item clot...
47680          1  pods need individual packaging. one busted bag...
47681          1  genius decided move handle attached box lid o...
47682          1  use tide house. kids, teens, racing...it's thi...
47683          1  using tide pods 8 months love concept-- i've n...
47684          1  reading reviews im glad wasnt ruined 200.00 wo...
47685          1  thinking getting easy one product tide pod...y...
47686          1  purchased pods can't figure use them. every ti...
47687          1  pods never fully dissolve even hot water. goo ...
47688          1  purchased bag tide pods today change normal ti...
47689          1  front loading washer gone 2 pkgs. tide pods th...
47690          1  stain clothes, clean thoroughly, expensive. pr...
47691          1  purchase ocean mist pods disappointed. pods st...
47692          1  three comforters blue stains pods. used pods w...
47693          1  wife bought tide pods thinking would easy quic...
47694          1  blue spots everywhere! today's laundry load co...
47695          1  pretty happy pods love easy convenient are, ho...
47696          1  like new tide 2x. matter little use, soap rema...
...          ...          ...
48387          2  recently wrote review change scent tide liquid...
48388          2  using pods hd washer year however recently not...
48389          2  several times plastic wrapper melt wash cycle ...
48390          2  used tide pods month loved first, clothes alwa...
48391          2  intrigued tide came detergent pod cases. probl...

```

48392	2	refused buy tide pods two instances dissolved ...
48393	2	exclusive user tide 15 years detergent suds re...
48394	2	really excited try tide pods. thought would ea...
48395	2	happy tide pods recently started noticing blue...
48396	2	top-load washing machine. purchased one 55 tid...
48397	2	think ruin brand new sheets. washed tide pod c...
48398	2	love tide i've clothes ruined pod completely d...
48399	2	treat sometimes purchase liquid tide sometimes...
48400	2	one pod work well average load, disappointed, ...
48401	2	convenient prefer laundry detergent odor free ...
48402	2	clothes came 'great' brand new clothes worn on...
48403	2	cleaning 4 stars. scent--i kept asking put eno...
48404	2	load lights emptied dryer folding everything f...
48405	2	yes small convenient personally like left slim...
48406	2	liked product felt per-fumy, opened washing ma...
48407	2	ariel actilift better tide actilift tide stinks
48408	2	clean clothes well one pod. used two next load...
48409	2	love tide great cloths years. got tired boys w...
48410	2	tried sample loved it., bought products also n...
48411	2	used tide pods sophomore college also used fre...
48412	2	started using tide pods 3 months ago never pro...
48413	2	front loading machine clean every use. found p...
48414	2	tried pods liked said, first time going use ge...
48415	2	capsule dissolve. ends stuck clothes melted me...
48416	2	started using tide pods 3 months ago never pro...

[750 rows x 2 columns]

Segun lo que las personas estan diciendo conforme a los 10 productos con peor calidad **Rubbermaid174**: * Se rompe facil * Mucho defecto, no funciona despues de un poco tiempo * Algunos dicen que no limpia

Tide Original: * Se manacha la ropa * Algunos tienen problema en entender como se usa

En estos casos, el **Rubbermaid** hay que hacerle prueba antes de darlo a los clientes. tambien se puede encontrar una forma de dar garantia si se romple en el primer mes. **Tide Original** puede haber una explicacion como se utiliza y buscar que tipo de ropa puede manchar