Segundo avanze del PIA

Equipo 2

Grupo 012, martes y jueves de 18:30 a 20:00 hrs

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BASE DE DATOS: Trip Advisor Hotel Reviews

La base de datos de Trip Advisor Hotel Reviews contiene mas de 20,000 reviews o reseñas de diferentes hoteles ademas de calificaciones dadas por los huspedes.

LIBRERIAS

In [68]:
```
import numpy as np
import re
import pandas as pd
import missingno as msno
import seaborn as sns
import nltk
from nltk import word_tokenize,sent_tokenize
import nltk as nlp
import warnings
warnings.filterwarnings("ignore")
import plotly.graph_objects as go
#import plotly.express as px
import matplotlib.pyplot as plt
import spacy
import tensorflow as tf
from wordcloud import WordCloud, STOPWORDS
import ktrain
from ktrain import text

from collections import Counter
```

Se planea usar estas librerrias ya que son las que satisfacen las necesidades de busqueda de palabras y almacenamiento de ellas,ademas de ayudarnos para la visualizacion de datos en forma de graficos. por lo tanto dichas librerias son las que se estaran manejando.

Base de datos

Aqui se despliega la base de datos que seleccionamos https://www.kaggle.com/andrewmvd/trip-advisor-hotel-reviews (https://www.kaggle.com/andrewmvd/trip-advisor-hotel-reviews)

In [32]:
```
df = pd.read_csv('tripadvisor_hotel_reviews.csv');
```

Out[32]:

	Review	Rating
0	nice hotel expensive parking got good deal sta...	4
1	ok nothing special charge diamond member hilto...	2
2	nice rooms not 4* experience hotel monaco seat...	3
3	unique, great stay, wonderful time hotel monac...	5
4	great stay great stay, went seahawk game aweso...	5

In [33]:
```

```

Out[33]: (20491, 2)

In [56]:
```

```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 20491 entries, 0 to 20490
Data columns (total 3 columns):
 #   Column     Non-Null Count  Dtype 
---  ------     --------------  ----- 
 0   Review     20491 non-null  object
 1   Rating     20491 non-null  int64 
 2   Sentiment  20491 non-null  int64 
dtypes: int64(2), object(1)
memory usage: 480.4+ KB
```

In [57]:
```

```

Out[57]: Index(['Review', 'Rating', 'Sentiment'], dtype='object')

In [58]:
```

```

Out[58]:

	Review	Rating	Sentiment
0	False	False	False
1	False	False	False
2	False	False	False
3	False	False	False
4	False	False	False
...	...	...	...
20486	False	False	False
20487	False	False	False
20488	False	False	False
20489	False	False	False
20490	False	False	False

20491 rows × 3 columns

In [59]:

Out[59]:
```
Review       0
Rating       0
Sentiment    0
dtype: int64
```

Primera parte del PIA

Como la base de datos solo cuenta con dos columnas, estas dos solo son necesarias, no es necesario el eliminar ni modificar las columnas ya que seran utiles para los siguientes pasos.

In [61]:
```
baseD = df
```

In [62]:

Out[62]: 4.0

In [63]:

Out[63]: 1.5203624326830831

In [64]:

Out[64]: 1.2330297776952035

In [69]:
```
review_list=[]

for review in df.Review:
    review=re.sub("[^a-zA-z]"," ",review)
    review=review.lower()
    review=nltk.word_tokenize(review)
    lemma=nlp.WordNetLemmatizer()
    review=[lemma.lemmatize(word) for word in review]
    review=" ".join(review)
```

Sentiment Visualisation

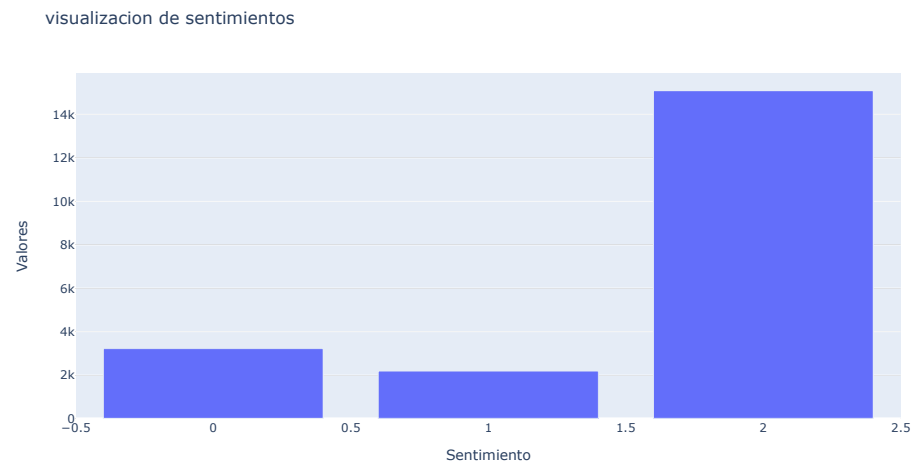
In [35]:
```
pos = [4, 5]
neg = [1, 2]
neu = [3]

def sentiment(rating):
  if rating in pos:
    return 2
  elif rating in neg:
    return 0
  else:
```

In [36]:
```
df['Sentiment'] = df['Rating'].apply(sentiment)
```

Out[36]:

	Review	Rating	Sentiment
0	nice hotel expensive parking got good deal sta...	4	2
1	ok nothing special charge diamond member hilto...	2	0
2	nice rooms not 4* experience hotel monaco seat...	3	1
3	unique, great stay, wonderful time hotel monac...	5	2
4	great stay great stay, went seahawk game aweso...	5	2

In [70]:
```
fig = go.Figure([go.Bar(x=df.Sentiment.value_counts().index, y=df.Sentiment.value_counts().tolist())])
fig.update_layout(
    title="visualizacion de sentimientos",
    xaxis_title="Sentimiento",
    yaxis_title="Valores")
```



2 - Positivo(4, 5)
1 - Neutral (3)
0 - Negativo (1, 2)

palabras usadas en general

In [38]:
```
nlp = spacy.load('en_core_web_sm')

def normalize(msg):

    doc = nlp(msg)
    res = []

    for token in doc:
        if(token.is_stop or token.is_punct or token.is_space):
            pass
        else:
            res.append(token.lemma_.lower())
```

In [39]:
```
df['Review'] = df['Review'].apply(normalize)
```

Out[39]:

	Review	Rating	Sentiment
0	[nice, hotel, expensive, parking, get, good, d...	4	2
1	[ok, special, charge, diamond, member, hilton,...	2	0
2	[nice, room, 4, experience, hotel, monaco, sea...	3	1
3	[unique, great, stay, wonderful, time, hotel, ...	5	2
4	[great, stay, great, stay, go, seahawk, game, ...	5	2

In [40]:
```
words_collection = Counter([item for sublist in df['Review'] for item in sublist])
freq_word_df = pd.DataFrame(words_collection.most_common(15))
freq_word_df.columns = ['frequently_used_word','count']
```

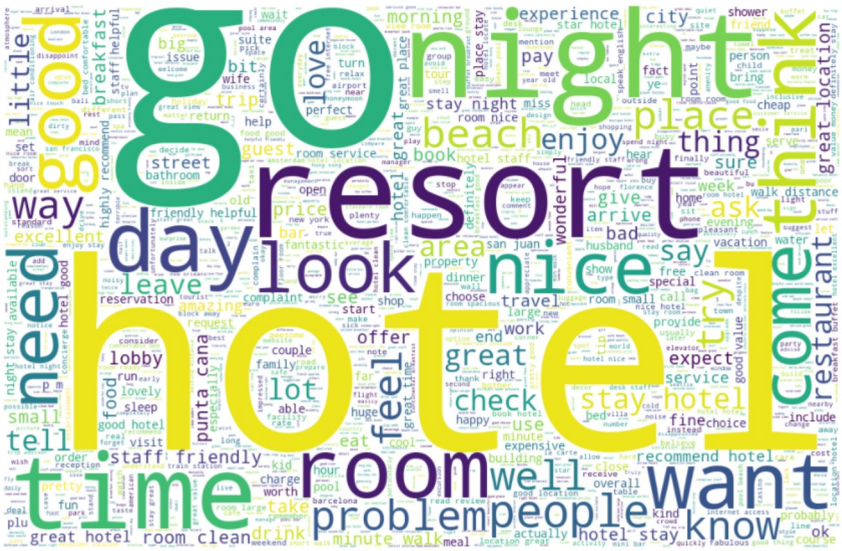
Out[40]:

	frequently_used_word	count
0	hotel	52580
1	room	46618
2	stay	27472
3	good	21480
4	great	21290
5	staff	16367
6	night	13917
7	day	12945
8	nice	12847
9	time	11891
10	location	11240
11	service	10691
12	clean	10636
13	beach	10147
14	restaurant	9957

GENERAL

In [41]:
```
word_list = [item for sublist in df['Review'] for item in sublist]
word_string = " ".join(word_list)

wordcloud = WordCloud(stopwords=STOPWORDS,
                      background_color='white',
                      max_words=60000,
                      width=1000,
                      height=650
```

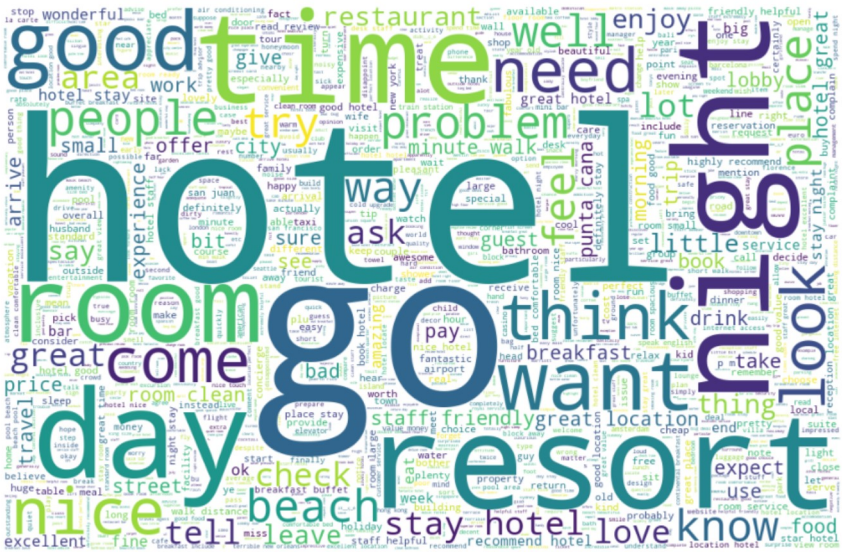
In [42]:
```
plt.figure(figsize=(20,10))
plt.imshow(wordcloud)
plt.axis('off')
```



Positiva

In [44]:
```
word_list_pos = [item for sublist in pos_df['Review'] for item in sublist]
word_string_pos = " ".join(word_list)

wordcloud = WordCloud(stopwords=STOPWORDS,
                      background_color='white',
                      max_words=40000,
                      width=1000,
                      height=650
```

In [45]:
```
plt.figure(figsize=(20,10))
plt.imshow(wordcloud)
plt.axis('off')
```



Neutral

In [46]:
```
neu_df = df[df['Sentiment'] == 1]
words_collection = Counter([item for sublist in neu_df['Review'] for item in sublist])
freq_word_df = pd.DataFrame(words_collection.most_common(15))
freq_word_df.columns = ['frequently_used_word','count']
```

Out[46]:

	frequently_used_word	count
0	room	5957
1	hotel	5495
2	good	2833
3	stay	2665
4	nice	1821
5	great	1775
6	night	1729
7	staff	1493
8	day	1489
9	location	1430
10	time	1372
11	beach	1338
12	clean	1312
13	like	1266
14	resort	1217

In [47]:
```
word_list_neu = [item for sublist in neu_df['Review'] for item in sublist]
word_string_neu = " ".join(word_list)

wordcloud = WordCloud(stopwords=STOPWORDS,
                      background_color='white',
                      max_words=6000,
                      width=1000,
                      height=650
```

In [48]:
```
plt.figure(figsize=(20,10))
plt.imshow(wordcloud)
plt.axis('off')
```

Negativa

In [49]:
```
neg_df = df[df['Sentiment'] == 0]
words_collection = Counter([item for sublist in neg_df['Review'] for item in sublist])
freq_word_df = pd.DataFrame(words_collection.most_common(15))
freq_word_df.columns = ['frequently_used_word','count']
```

Out[49]:

	frequently_used_word	count
0	room	9842
1	hotel	8395
2	stay	4430
3	day	2745
4	night	2690
5	good	2592
6	staff	2278
7	service	2197
8	time	2154
9	go	1951
10	get	1906
11	like	1827
12	resort	1800
13	tell	1747
14	food	1737

In [50]:
```
word_list_neg = [item for sublist in neg_df['Review'] for item in sublist]
word_string_neg = " ".join(word_list)

wordcloud = WordCloud(stopwords=STOPWORDS,
                      background_color='white',
                      max_words=10000,
                      width=1000,
                      height=650
```

In [51]:
```
plt.figure(figsize=(20,10))
plt.imshow(wordcloud)
plt.axis('off')
```