In [ ]:
```
# Install the libraries you will need

### TextBlob which is a NLP library built on top of NLTK )..
!pip install textblob

!pip install wordcloud

## 2.2.0 is a most stable version till date , hence installing this version makes sense
!pip install emoji==2.2.0

!pip install regex
```

In [11]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from textblob import TextBlob
from wordcloud import WordCloud , STOPWORDS
import re
import emoji
from collections import Counter
```

In [12]:
```
%%capture

df = pd.read_csv(r'D:\Path/UScomments.csv', error_bad_lines=False)
```

In [13]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 691400 entries, 0 to 691399
Data columns (total 4 columns):
 #   Column        Non-Null Count   Dtype 
---  ------        --------------   ----- 
 0   video_id      691400 non-null  object
 1   comment_text  691375 non-null  object
 2   likes         691400 non-null  object
 3   replies       691400 non-null  object
dtypes: object(4)
memory usage: 21.1+ MB
```

In [14]:
```
## find out missing values in your data
df.isnull().sum()
```

Out[14]:
```
video_id         0
comment_text    25
likes            0
replies          0
dtype: int64
```

In [15]:
```
## drop missing values
df.dropna(inplace=True)
df.isnull().sum()
```

Out[15]:
```
video_id        0
comment_text    0
likes           0
replies         0
dtype: int64
```

In [16]:
```
df.head()
```

Out[16]:

	video_id	comment_text	likes	replies

0	XpVt6Z1Gjjo	Logan Paul it's yo big day !!!!!	4	0
1	XpVt6Z1Gjjo	I've been following you from the start of your...	3	0
2	XpVt6Z1Gjjo	Say hi to Kong and maverick for me	3	0
3	XpVt6Z1Gjjo	MY FAN . attendance	3	0
4	XpVt6Z1Gjjo	trending 😉	3	0

1- Preform Sentiment Analysis on Youtube Comments

In [17]:
```
polarity=[]

for i in df['comment_text']:
    try:
        polarity.append(TextBlob(i).sentiment.polarity)
    except:
        polarity.append(0)
```

- **sentiment.polarity** :

```
                    if polarity < 0          ---------->          -1  Negative
Sentiment
                    if polarity = 0          ---------->           0  Neutral
Sentiment
                    if polarity > 0          ---------->           1  Positive
Sentiment
```

In [18]:
```
%%capture

df['polarity']=polarity

df['pol'] = 'Neutral Sentiment'

df['pol'][df.polarity == 0]='Neutral Sentiment'
df['pol'][df.polarity > 0]= 'Positive Sentiment'
df['pol'][df.polarity < 0]= 'Negative Sentiment'

df.head(20)
```

2- Wordcloud Analysis

A) Comments Positive Sentences

In [19]:
```
P_Comments = df[df['polarity']>0.8]
```

In [20]:
```
P_Comments.head()
```

Out[20]:

	video_id	comment_text	likes	replies	polarity	pol
64	XpVt6Z1Gjjo	yu are the best	1	0	1.000	Positive Sentiment
98	XpVt6Z1Gjjo	*eyyyjooooo Good morning looogannng WHATS POPPP...	2	0	0.875	Positive Sentiment
156	cLdxuaxaQwc	Power is the disease. Care is the cure. Keep...	0	0	1.000	Positive Sentiment

227	WYYvHb03Eog	YAS Can't wait to get it! I just need to sell ...	0	0	1.000	Positive Sentiment
307	sjlHnJvXdQs	This is priceless	0	0	1.000	Positive Sentiment

In [ ]:
```
# We'll delete these words out of the wordcloud
set(STOPWORDS)
```

In [22]:
```
### for wordcloud , we need to frame our 'comment_text' feature into string
Total_P_Comments = ' '.join(P_Comments['comment_text'])
```

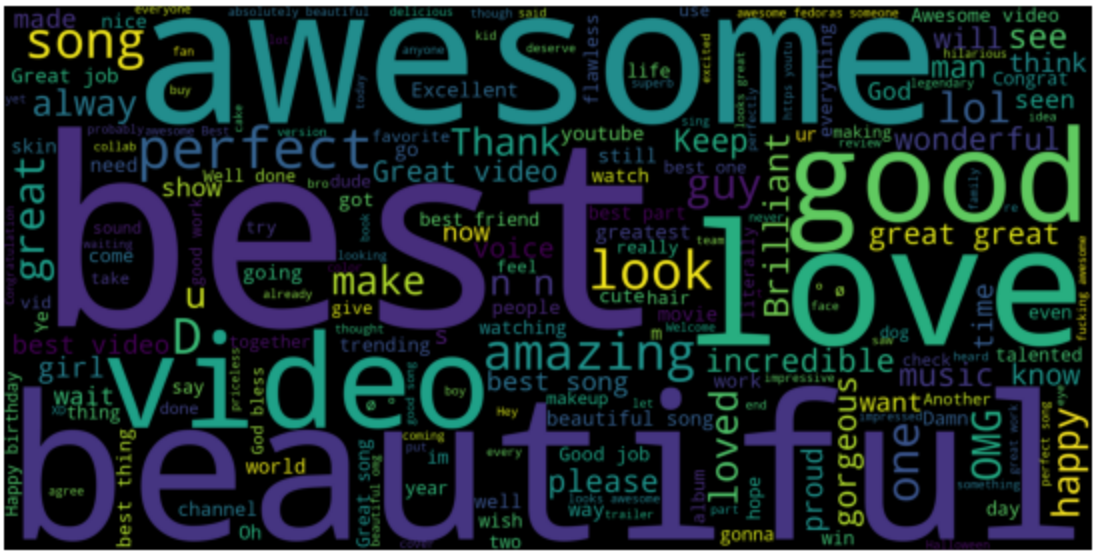
In [23]:
```
len(Total_P_Comments)
```

Out[23]:
```
1355114
```

In [24]:
```
wordcloudp = WordCloud(width= 2000, height = 1000, stopwords=set(STOPWORDS)).generate(To
```

In [25]:
```
plt.figure(figsize=(10,5))
plt.imshow(wordcloudp)
plt.axis('off')
```

Out[25]:
```
(-0.5, 1999.5, 999.5, -0.5)
```



In [ ]:
```

```

B) Comments Negative Sentences

In [26]:
```
N_Comments = df[df['polarity'] < -0.8]
```

In [27]:
```
N_Comments.head()
```

Out[27]:

	video_id	comment_text	likes	replies	polarity	pol
512	8wNr-NQImFg	BEN CARSON IS THE MAN!!!!! THEY HATE HIM CAUSE...	0	0	-1.000	Negative Sentiment
562	8wNr-NQImFg	Well... The brain surgeon Ben Carson just proved...	0	0	-1.000	Negative Sentiment
684	_HTXMhKWqnA	Yay! Another stupidly overpriced iPhone!	0	0	-1.000	Negative Sentiment

815	zgLtEob6X-Q	Say- I gotta case of the swamp ass and it itch...	0	0	-0.875	Negative Sentiment
952	Ayb_2qbZHm4	WHY DID YOU MAKE FURRY FORCE?! SO NASTY!!!	0	0	-1.000	Negative Sentiment

In [28]:
```
### for wordcloud , we need to frame our 'comment_text' feature into string
Total_N_Comments = ' '.join(N_Comments['comment_text'])
```

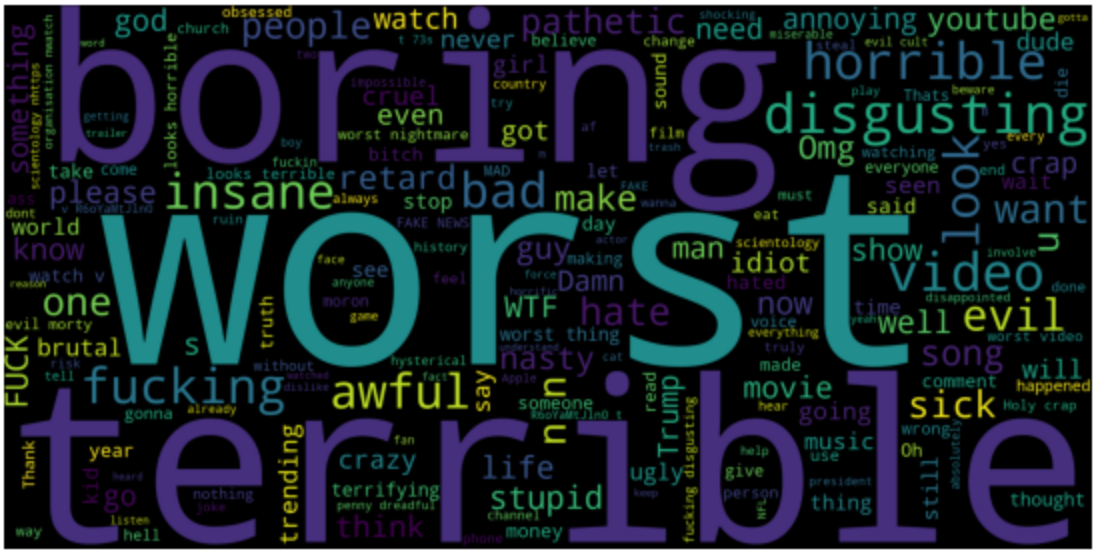
In [29]:
```
len(Total_N_Comments)
```

Out[29]:
```
247614
```

In [30]:
```
wordcloudn = WordCloud(width= 2000, height = 1000, stopwords=set(STOPWORDS)).generate(To
```

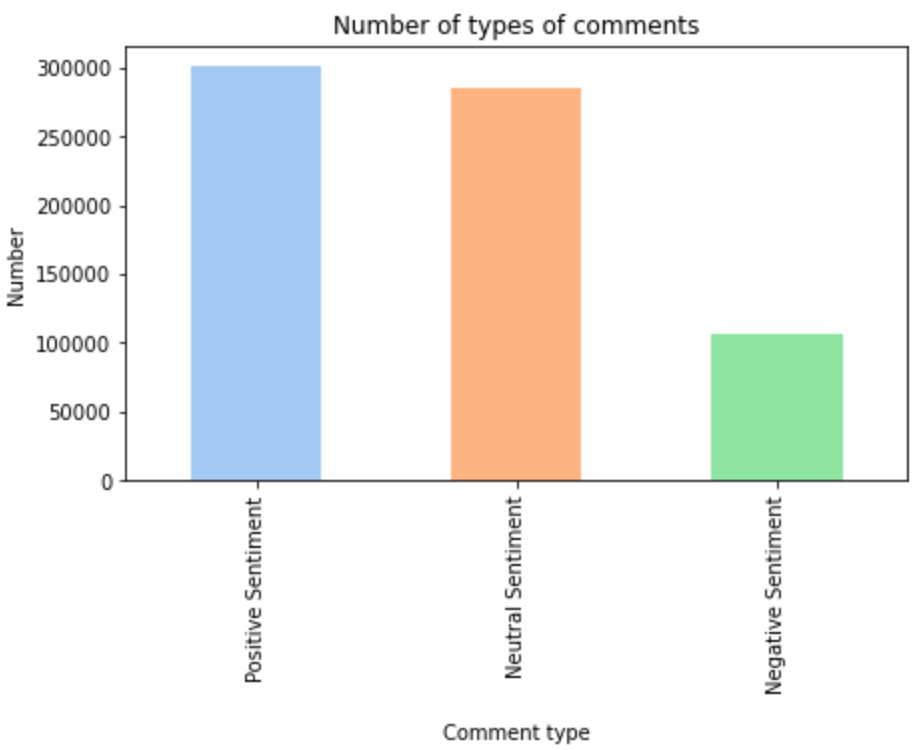
In [31]:
```
plt.figure(figsize=(10,5))
plt.imshow(wordcloudn)
plt.axis('off')
```

Out[31]:
```
(-0.5, 1999.5, 999.5, -0.5)
```



In [32]:
```
color_palette = sns.color_palette("pastel")

df['pol'].value_counts().plot(kind='bar', figsize=(7, 4), color=color_palette)
plt.title('Number of types of comments')
plt.xlabel('Comment type', labelpad=15)
plt.ylabel('Number')
plt.show()
```



C) Tags

In [59]:
```
%%capture

df2 = pd.read_csv(r'D:\Path/USvideos.csv' , error_bad_lines=False)
```

In [34]:
```
df2.head()
```

Out[34]:

	video_id	title	channel_title	category_id	tags	views	likes
0	XpVt6Z1Gjjo	1 YEAR OF VLOGGING -- HOW LOGAN PAUL CHANGED Y...	Logan Paul Vlogs	24	logan paul vlog|logan paul|logan|paul|olympics...	4394029	320053
1	K4wEI5zhHB0	iPhone X — Introducing iPhone X — Apple	Apple	28	Apple|iPhone 10|iPhone Ten|iPhone|Portrait Lig...	7860119	185853
2	cLdxuaxaQwc	My Response	PewDiePie	22	[none]	5845909	576597
3	WYYvHb03Eog	Apple iPhone X first look	The Verge	28	apple iphone x hands on|Apple iPhone X|iPhone ...	2642103	24975
4	sjlHnJvXdQs	iPhone X (parody)	jacksfilms	23	jacksfilms|parody|parodies|iphone|iphone x|iph...	1168130	96666

In [35]:
```
Tags =(' '.join(df2['tags']))
```

In [36]:
```
df2['tags'][0]
```

```
'logan paul vlog|logan paul|logan|paul|olympics|logan paul youtube|vlog|daily|comedy|hol
```

Out[36]:
```
lywood|parrot|maverick|bird|maverick clothes|diamond play button|logan paul diamond play
button|10M subscribers|logan paul 1 year vlogging|1 year vlog|dwarf mamba play button|lo
gan paul history|youtube history|10M|10M plaque|youtube button|diamond button|logang|log
ang 4 life'
```

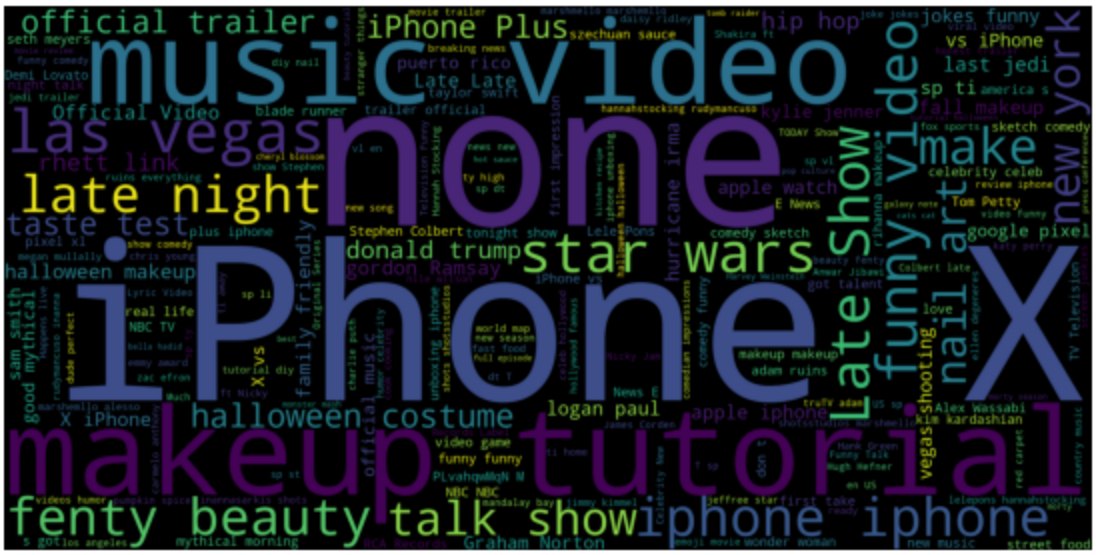
In [37]:
```
# Accept a to z, A to Z and replace everything else with a blank
Tags = re.sub('[^a-z A-Z]',' ',Tags)
```

In [38]:
```
# remove extra spaces
Tags = re.sub(' +',' ',Tags)
```

In [39]:
```
# What are the common words in the field of tags

wordcloud = WordCloud(width= 2000, height = 1000, stopwords=set(STOPWORDS)).generate(Tag
plt.figure(figsize=(10,5))
plt.imshow(wordcloud)
plt.axis('off')
```

Out[39]:
```
(-0.5, 1999.5, 999.5, -0.5)
```

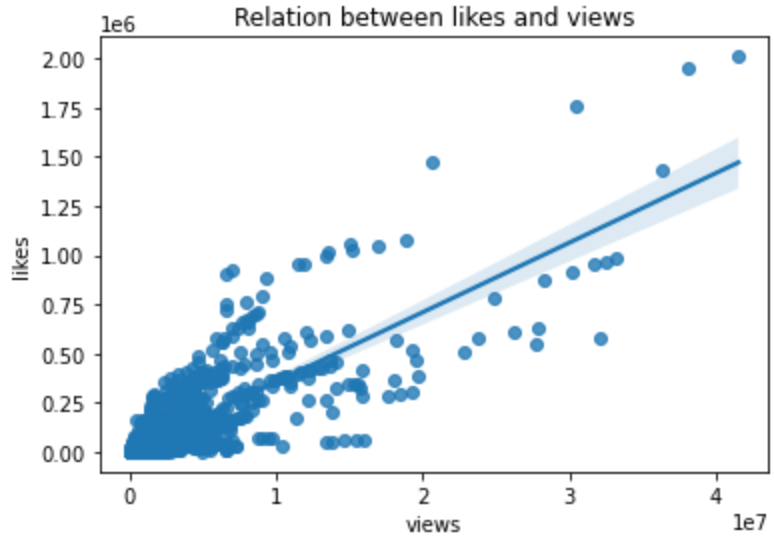


In [ ]:

Relation between views, likes and dislikes

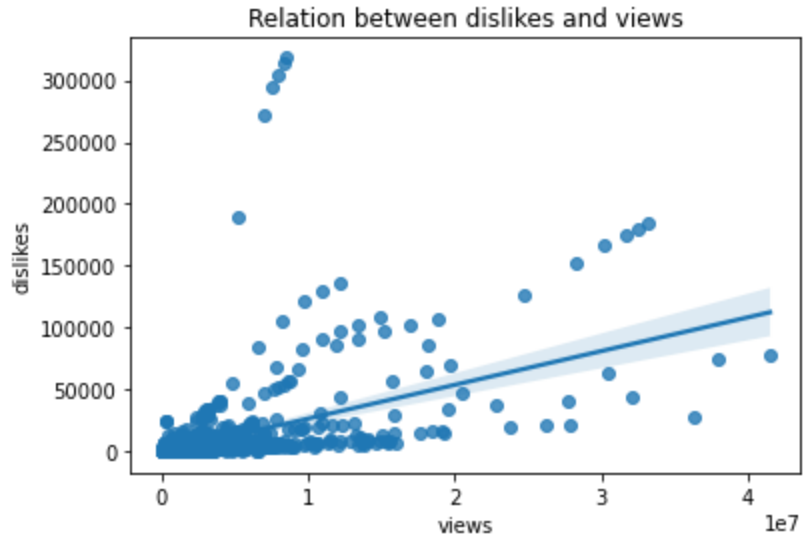
In [40]:
```
sns.regplot(data = df2,x = 'views' , y = 'likes')
plt.title('Relation between likes and views')
```

Out[40]:
```
Text(0.5, 1.0, 'Relation between likes and views')
```



In [41]:
```
sns.regplot(data = df2,x = 'views' , y = 'dislikes')
plt.title('Relation between dislikes and views')
```

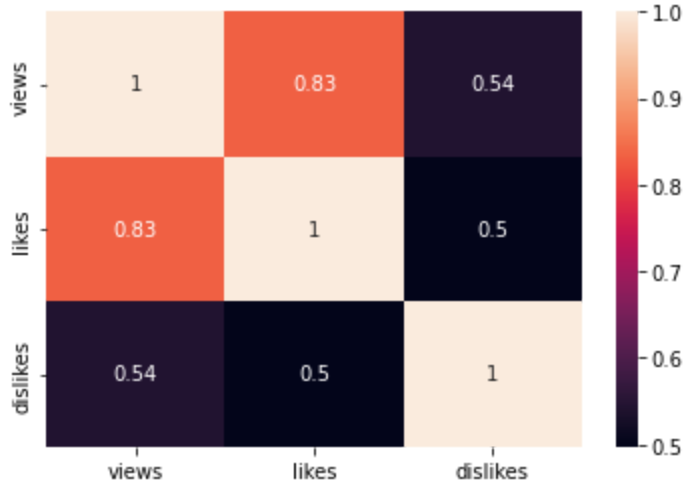
Out[41]:
```
Text(0.5, 1.0, 'Relation between dislikes and views')
```



In [42]:
```
View = df2[['views','likes','dislikes']]
```

In [43]:
```
sns.heatmap(View.corr(),annot=True)
```

Out[43]:
```
<AxesSubplot: >
```



Emoji's Analysis

In [44]:
```
comment = '😮 😮 😮 Awesome 😮 😮 😮'
[char for char in comment if char in emoji.EMOJI_DATA]
```

Out[44]:
```
['😮', '😮', '😮', '😮', '😮', '😮']
```

In [45]:
```
emojis_list = []

for comment in df['comment_text']:
    for emojii in  comment:
        if emojii in emoji.EMOJI_DATA:
            emojis_list.append(emojii)
```

In [46]:
```
len(set(emojis_list))
```

Out[46]:
```
1098
```

In [47]:
```
emojis_list[20:30]
```

Out[47]:
```
['♥', '😂', '♥', '💎', '😖', '😖', '😖', '😖', '😖', '😖']
```

In [48]:
```
All_Emojis = [Counter(emojis_list)]
```

In [49]:
```
Counter(emojis_list).most_common(10)
```

Out[49]:
```
[('😂', 36987),
 ('😍', 33453),
 ('♥', 31119),
 ('🔥', 8694),
 ('😭', 8398),
 ('👏', 5719),
 ('😘', 5545),
 ('👍', 5476),
 ('💔', 5359),
 ('💔', 5147)]
```

In [50]:
```
Counter(emojis_list).most_common(10)[0][0]
```

Out[50]:
```
'😂'
```

In [51]:
```
Top_Emojis = [Counter(emojis_list).most_common(10)[i][0] for i in range(10)]
```

In [52]:
```
Top_Emojis
```

Out[52]:
```
['😂', '😍', '♥', '🔥', '😭', '👏', '😘', '👍', '💔', '💔']
```

In [53]:
```
Emoji_df = pd.DataFrame(All_Emojis).T.reset_index()

Emoji_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1098 entries, 0 to 1097
Data columns (total 2 columns):
 #   Column  Non-Null Count  Dtype 
---  ------  --------------  ----- 
 0   index   1098 non-null   object
 1   0       1098 non-null   int64 
dtypes: int64(1), object(1)
memory usage: 17.3+ KB
```

In [54]:
```
Emoji_df.columns = ['emoji', 'repetition']
```

In [55]:
```
Emoji_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1098 entries, 0 to 1097
Data columns (total 2 columns):
 #   Column      Non-Null Count  Dtype 
---  ------      --------------  ----- 
 0   emoji       1098 non-null   object
 1   repetition  1098 non-null   int64 
dtypes: int64(1), object(1)
memory usage: 17.3+ KB
```

In [56]:
```
Emoji_df
```

Out[56]:

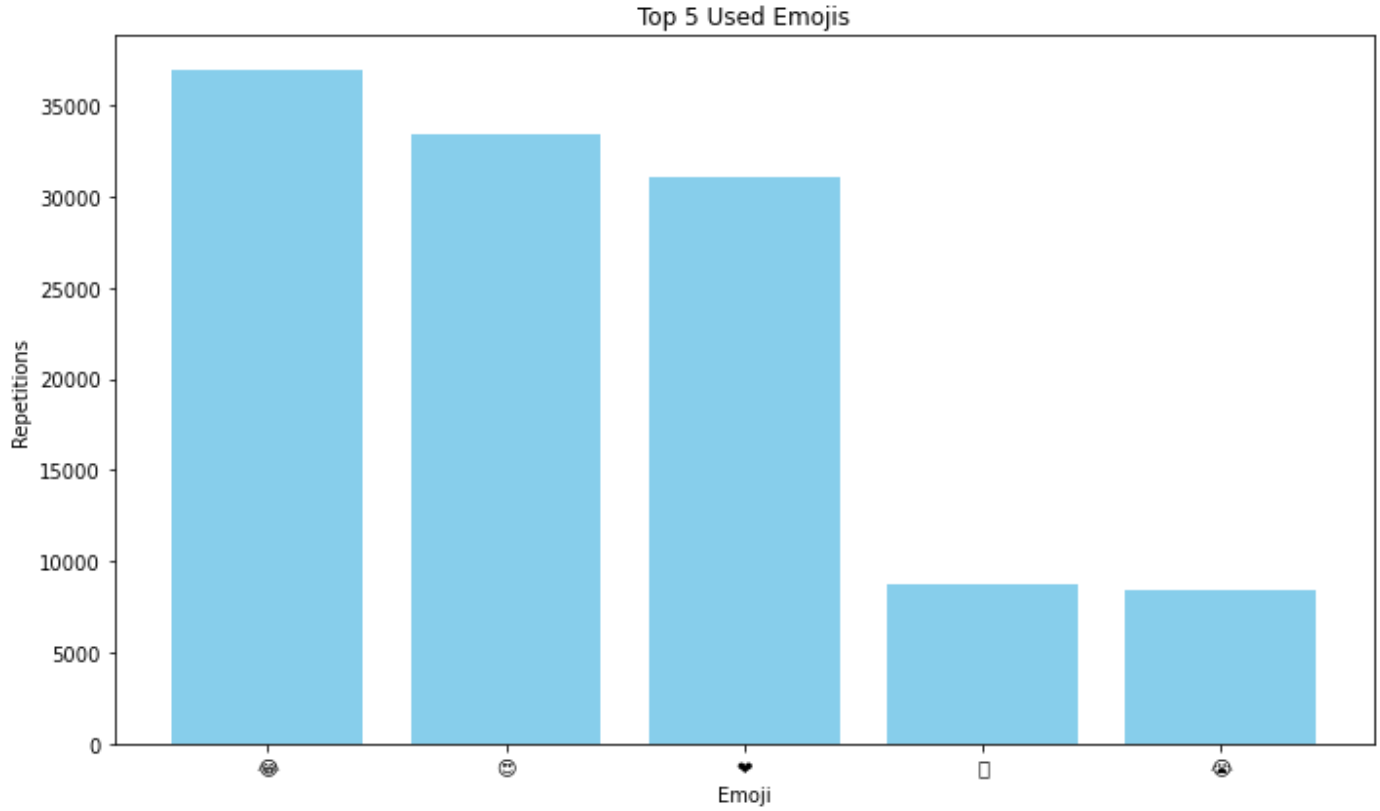
	emoji	repetition
0	‼	211
1	😉	998
2	😭	8398
3	👍	5476
4	🔳	3438
...	...	...
1093	⏺	2
1094	⏹	2
1095	⏯	2
1096	💟	11
1097	😁	1

1098 rows × 2 columns

In [57]:
```
# Sorting DataFrame by repetition counts
sorted_df = Emoji_df.sort_values(by='repetition', ascending=False)

# Selecting top 5 emojis
top_5_emojis = sorted_df.head(5)

# Plotting a bar plot
plt.figure(figsize=(10, 6))
plt.bar(top_5_emojis['emoji'], top_5_emojis['repetition'], color='skyblue')
plt.xlabel('Emoji')
plt.ylabel('Repetitions')
plt.title('Top 5 Used Emojis')
plt.xticks(rotation=0)
plt.tight_layout()
plt.show()
```


Top 5 Used Emojis
Repetitions
35000
30000
25000
20000
15000
10000
5000
0
Emoji