Task 4:- Analyze and visualize sentiment patterns in social media data to understand public opinion and attitudes towards specific topics or brands.

In [1]:
```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
```

In [13]:
```
df=pd.read_excel("C:\\Users\\Simarjeet kaur\\OneDrive\\Documents\\Try.xlsx")
df
```

Out[13]:

	2401	Borderlands	Positive	im getting on borderlands and i will murder you all ,
0	2401	Borderlands	Positive	I am coming to the borders and I will kill you...
1	2401	Borderlands	Positive	im getting on borderlands and i will kill you ...
2	2401	Borderlands	Positive	im coming on borderlands and i will murder you...
3	2401	Borderlands	Positive	im getting on borderlands 2 and i will murder ...
4	2401	Borderlands	Positive	im getting into borderlands and i can murder y...
...	...	...	...	...
74676	9200	Nvidia	Positive	Just realized that the Windows partition of my...
74677	9200	Nvidia	Positive	Just realized that my Mac window partition is ...
74678	9200	Nvidia	Positive	Just realized the windows partition of my Mac ...
74679	9200	Nvidia	Positive	Just realized between the windows partition of...
74680	9200	Nvidia	Positive	Just like the windows partition of my Mac is l...

74681 rows × 4 columns

In [14]:
```
df.loc[-1] = df.columns
df.index = df.index + 1
df = df.sort_index()
df.columns = range(df.shape[1])
print(df)
```

```
          0            1         2  \
0      2401  Borderlands  Positive
1      2401  Borderlands  Positive
2      2401  Borderlands  Positive
3      2401  Borderlands  Positive
4      2401  Borderlands  Positive
...     ...          ...       ...
74677  9200       Nvidia  Positive
74678  9200       Nvidia  Positive
74679  9200       Nvidia  Positive
74680  9200       Nvidia  Positive
74681  9200       Nvidia  Positive

                                                       3
0      im getting on borderlands and i will murder yo...
1      I am coming to the borders and I will kill you...
2      im getting on borderlands and i will kill you ...
3      im coming on borderlands and i will murder you...
4      im getting on borderlands 2 and i will murder ...
...                                                  ...
74677  Just realized that the Windows partition of my...
74678  Just realized that my Mac window partition is ...
74679  Just realized the windows partition of my Mac ...
74680  Just realized between the windows partition of...
74681  Just like the windows partition of my Mac is l...

[74682 rows x 4 columns]
```

In [15]:
```
df
```

Out[15]:

	0	1	2	3
0	2401	Borderlands	Positive	im getting on borderlands and i will murder yo...
1	2401	Borderlands	Positive	I am coming to the borders and I will kill you...
2	2401	Borderlands	Positive	im getting on borderlands and i will kill you ...
3	2401	Borderlands	Positive	im coming on borderlands and i will murder you...
4	2401	Borderlands	Positive	im getting on borderlands 2 and i will murder ...
...	...	...	...	...
74677	9200	Nvidia	Positive	Just realized that the Windows partition of my...
74678	9200	Nvidia	Positive	Just realized that my Mac window partition is ...
74679	9200	Nvidia	Positive	Just realized the windows partition of my Mac ...
74680	9200	Nvidia	Positive	Just realized between the windows partition of...
74681	9200	Nvidia	Positive	Just like the windows partition of my Mac is l...

74682 rows × 4 columns

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

Out[16]:

	0
count	74682.000000
mean	6432.586165
std	3740.427870
min	1.000000
25%	3195.000000
50%	6422.000000
75%	9601.000000
max	13200.000000

In [17]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 74682 entries, 0 to 74681
Data columns (total 4 columns):
 #   Column  Non-Null Count  Dtype 
---  ------  --------------  ----- 
 0   0       74682 non-null  int64 
 1   1       74682 non-null  object
 2   2       74682 non-null  object
 3   3       73996 non-null  object
dtypes: int64(1), object(3)
memory usage: 2.8+ MB
```

In [18]:
```
df[1].unique()  #Entities
```

Out[18]:
```
array(['Borderlands', 'CallOfDutyBlackopsColdWar', 'Amazon', 'Overwatch',
       'Xbox(Xseries)', 'NBA2K', 'Dota2', 'PlayStation5(PS5)',
       'WorldOfCraft', 'CS-GO', 'Google', 'AssassinsCreed', 'ApexLegends',
       'LeagueOfLegends', 'Fortnite', 'Microsoft', 'Hearthstone',
       'Battlefield', 'PlayerUnknownsBattlegrounds(PUBG)', 'Verizon',
       'HomeDepot', 'FIFA', 'RedDeadRedemption(RDR)', 'CallOfDuty',
       'TomClancysRainbowSix', 'Facebook', 'GrandTheftAuto(GTA)',
       'MaddenNFL', 'johnson&johnson', 'Cyberpunk2077',
       'TomClancysGhostRecon', 'Nvidia'], dtype=object)
```

In [19]:
```
df[2].unique()   #Sentiments
```

Out[19]:
```
array(['Positive', 'Neutral', 'Negative', 'Irrelevant'], dtype=object)
```

In [28]:
```
df[3].unique()    #Tweets
```

Out[28]:
```
array(['im getting on borderlands and i will murder you all ,',
       'I am coming to the borders and I will kill you all,',
       'im getting on borderlands and i will kill you all,', ...,
       'Just realized the windows partition of my Mac is now 6 years behind on Nvi
dia drivers and I have no idea how he didnâ€™t notice',
       'Just realized between the windows partition of my Mac is like being 6 year
s behind on Nvidia drivers and cars I have no fucking idea how I ever didn â€™ t n
otice',
       'Just like the windows partition of my Mac is like 6 years behind on its dr
ivers So you have no idea how I didnâ€™t notice'],
      dtype=object)
```

In [27]:
```
df[0].unique() #ID
```

Out[27]:
```
array([2401, 2402, 2403, ..., 9198, 9199, 9200], dtype=int64)
```

In [30]:
```
col_names=["Id","Entities","Sentiments","Tweets"]
df.columns=col_names
```

In [31]:
```
df
```

Out[31]:

	Id	Entities	Sentiments	Tweets
0	2401	Borderlands	Positive	im getting on borderlands and i will murder yo...
1	2401	Borderlands	Positive	I am coming to the borders and I will kill you...
2	2401	Borderlands	Positive	im getting on borderlands and i will kill you ...
3	2401	Borderlands	Positive	im coming on borderlands and i will murder you...
4	2401	Borderlands	Positive	im getting on borderlands 2 and i will murder ...
...	...	...	...	...
74677	9200	Nvidia	Positive	Just realized that the Windows partition of my...
74678	9200	Nvidia	Positive	Just realized that my Mac window partition is ...
74679	9200	Nvidia	Positive	Just realized the windows partition of my Mac ...
74680	9200	Nvidia	Positive	Just realized between the windows partition of...
74681	9200	Nvidia	Positive	Just like the windows partition of my Mac is l...

74682 rows × 4 columns

In [32]:
```
df.isnull().sum()
```

Out[32]:
```
Id              0
Entities        0
Sentiments      0
Tweets        686
dtype: int64
```

In [34]:
```
df.drop_duplicates(inplace=True)
df.isnull().sum()
```

Out[34]:
```
Id              0
Entities        0
Sentiments      0
Tweets        326
dtype: int64
```

In [37]:
```
df.reset_index(drop=True,inplace=True)
df.isnull().sum()
```

Out[37]:
```
Id              0
Entities        0
Sentiments      0
Tweets        326
dtype: int64
```

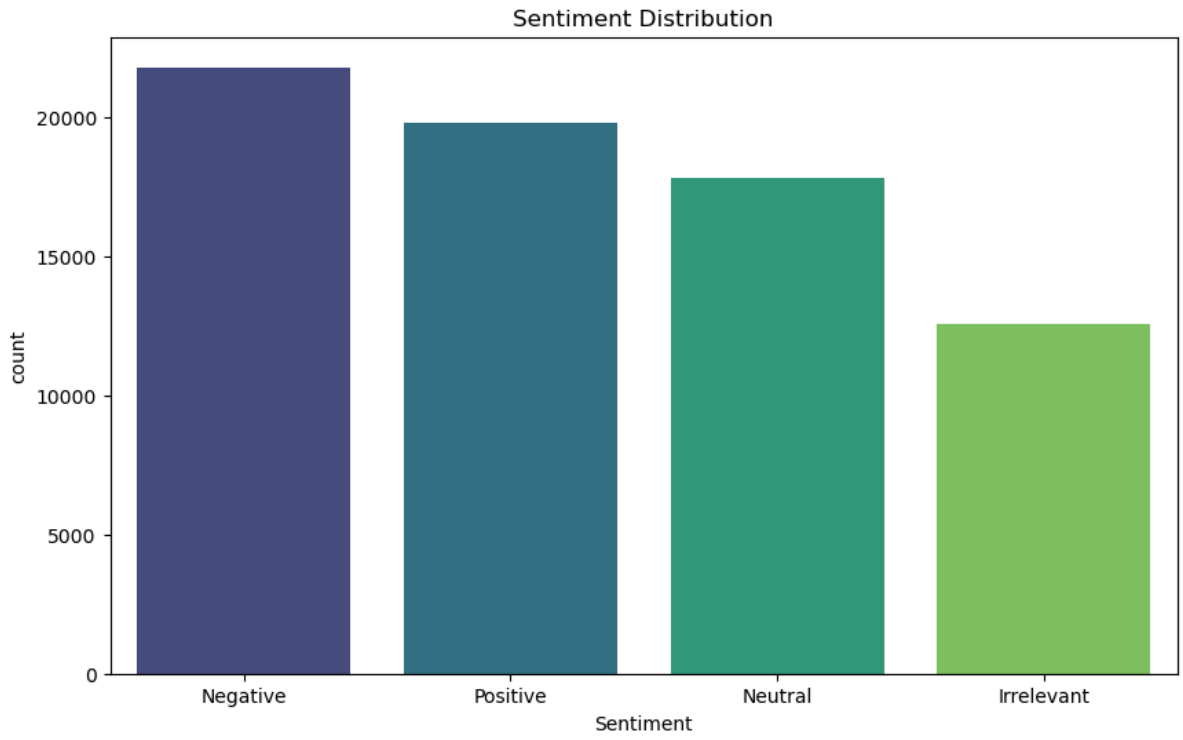
In [55]:
```
sentiments_counts=df["Sentiments"].value_counts()
sentiments_counts
```

Out[55]:
```
Negative      21787
Positive      19811
Neutral       17799
Irrelevant    12584
Name: Sentiments, dtype: int64
```

Bar Plot for Sentiment Distribution

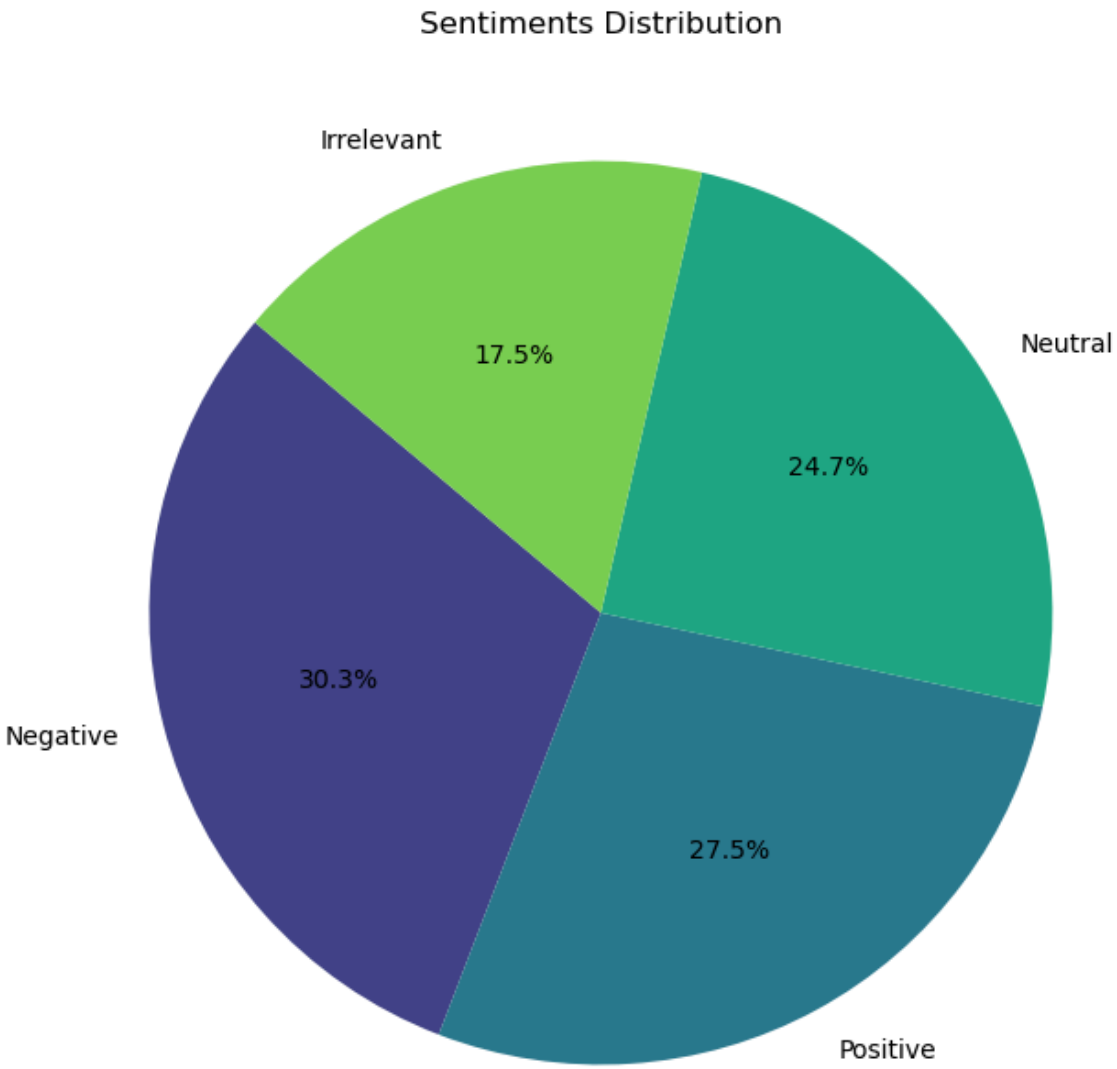
In [54]:
```
plt.figure(figsize=(10,6))

sns.countplot(data=df, x="Sentiments", order=df["Sentiments"].value_counts().index,
plt.title("Sentiment Distribution")
plt.xlabel("Sentiment")
plt.show()
```



Pie Chart for Sentiment Distribution

In [68]:
```
plt.figure(figsize=(8,8))
plt.pie(sentiments_counts, labels=sentiments_counts.index, autopct="%1.1f%%", start
plt.title("Sentiments Distribution")
plt.show()
```



Analyzing Sentiments by Entities

In [71]:
```
entity_sentiment_counts=df.groupby(["Entities","Sentiments"]).size().unstack().fill
entity_sentiment_counts
```

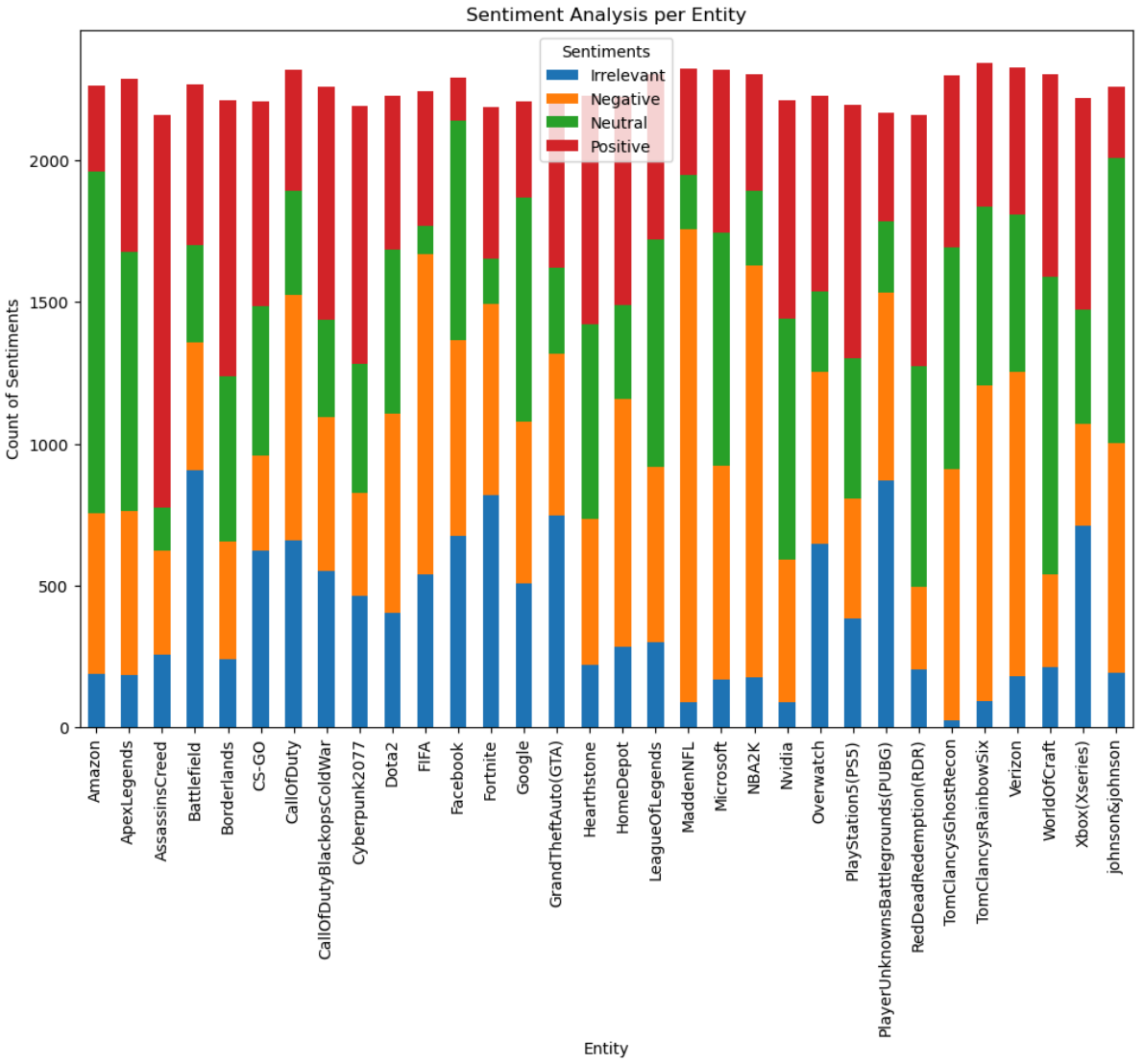
Out[71]:

Sentiments / Entities	Irrelevant	Negative	Neutral	Positive
Amazon	187	566	1207	304
ApexLegends	185	579	915	610
AssassinsCreed	256	366	153	1385
Battlefield	908	449	345	565
Borderlands	238	415	584	974
CS-GO	622	337	525	723
CallOfDuty	660	866	368	428
CallOfDutyBlackopsColdWar	549	546	344	822
Cyberpunk2077	462	363	458	910
Dota2	402	706	579	542
FIFA	538	1130	100	477
Facebook	674	692	773	154
Fortnite	818	676	161	532
Google	508	571	792	339
GrandTheftAuto(GTA)	746	573	303	592
Hearthstone	218	515	687	807
HomeDepot	285	875	331	735
LeagueOfLegends	298	620	802	583
MaddenNFL	86	1671	193	373
Microsoft	169	752	823	575
NBA2K	175	1455	265	411
Nvidia	86	505	851	769
Overwatch	648	607	284	690
PlayStation5(PS5)	382	425	495	894
PlayerUnknownsBattlegrounds(PUBG)	871	664	252	380
RedDeadRedemption(RDR)	204	291	779	888
TomClancysGhostRecon	23	889	781	608
TomClancysRainbowSix	92	1113	634	505
Verizon	179	1074	555	520
WorldOfCraft	210	329	1049	716
Xbox(Xseries)	712	357	406	747
johnson&johnson	193	810	1005	253

In [81]:

```
entity_sentiment_counts.plot(kind="bar",stacked=True,figsize=(12,8))
plt.title("Sentiment Analysis per Entity")
plt.xlabel("Entity")
plt.ylabel("Count of Sentiments")
```

```
plt.legend(title="Sentiments")
plt.show()
```



In [95]:
```
entity_sentiment_counts=df.groupby(["Entities","Sentiments"]).size().unstack().fill
entity_sentiment_counts.sort_values(by="Positive")
```

Out[95]:

Sentiments / Entities	Irrelevant	Negative	Neutral	Positive
Facebook	674	692	773	154
johnson&johnson	193	810	1005	253
Amazon	187	566	1207	304
Google	508	571	792	339
MaddenNFL	86	1671	193	373
PlayerUnknownsBattlegrounds(PUBG)	871	664	252	380
NBA2K	175	1455	265	411
CallOfDuty	660	866	368	428
FIFA	538	1130	100	477
TomClancysRainbowSix	92	1113	634	505
Verizon	179	1074	555	520
Fortnite	818	676	161	532
Dota2	402	706	579	542
Battlefield	908	449	345	565
Microsoft	169	752	823	575
LeagueOfLegends	298	620	802	583
GrandTheftAuto(GTA)	746	573	303	592
TomClancysGhostRecon	23	889	781	608
ApexLegends	185	579	915	610
Overwatch	648	607	284	690
WorldOfCraft	210	329	1049	716
CS-GO	622	337	525	723
HomeDepot	285	875	331	735
Xbox(Xseries)	712	357	406	747
Nvidia	86	505	851	769
Hearthstone	218	515	687	807
CallOfDutyBlackopsColdWar	549	546	344	822
RedDeadRedemption(RDR)	204	291	779	888
PlayStation5(PS5)	382	425	495	894
Cyberpunk2077	462	363	458	910
Borderlands	238	415	584	974
AssassinsCreed	256	366	153	1385

Suggestions

Brands with positive sentiment should maintain their current strategies as they are effective.

Brands facing negativity should seek ways to enhance user experiences and resolve issues.

For brands with irrelevant comments, run focused campaigns to engage users on relevant topics.

This helps redirect conversations toward meaningful discussions.

Entities should Encourage users to share their opinions, especially when negative feedback arises. This helps brands understand sentiments and make necessary adjustments.

In [97]:
```
import jovian
```

In [98]:
```
jovian.commit(project="Task 4")
```

Out[98]:
```
[jovian] Creating a new project "simarjeetk927/Task 4"
[jovian] Committed successfully! https://jovian.com/simarjeetk927/task-4
'https://jovian.com/simarjeetk927/task-4'
```

In [ ]: