```
# Importing Libraries
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
column_names = ['ID', 'entity', 'sentiment', 'comment']
df = pd.read_csv(r'C:\Internship Program(Prodigy Infotech)\Task4\twitter_training.csv', header=0, names=column_names)
```

```
df.head()
```

	ID	entity	sentiment	comment
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...

```
df.shape
```

```
(74681, 4)
```

```
# Count of unique entities
entity_count = df['entity'].value_counts()
print(entity_count)
```

```
entity
TomClancysRainbowSix                2400
MaddenNFL                           2400
Microsoft                           2400
LeagueOfLegends                     2394
CallOfDuty                          2394
Verizon                             2382
CallOfDutyBlackopsColdWar           2376
ApexLegends                         2376
Facebook                            2370
WorldOfCraft                        2364
Dota2                               2364
NBA2K                               2352
TomClancysGhostRecon                2346
Battlefield                         2346
FIFA                                2340
Xbox(Xseries)                       2334
Overwatch                           2334
johnson&johnson                     2328
Amazon                              2316
PlayStation5(PS5)                   2310
HomeDepot                           2310
Cyberpunk2077                       2304
CS-GO                               2304
GrandTheftAuto(GTA)                 2304
Hearthstone                         2298
Nvidia                              2298
Google                              2298
Borderlands                         2285
PlayerUnknownsBattlegrounds(PUBG)   2274
Fortnite                            2274
RedDeadRedemption(RDR)              2262
AssassinsCreed                      2244
Name: count, dtype: int64
```

```
df.info
```

```
<bound method DataFrame.info of          ID       entity sentiment  \
0      2401  Borderlands  Positive
1      2401  Borderlands  Positive
2      2401  Borderlands  Positive
3      2401  Borderlands  Positive
4      2401  Borderlands  Positive
...     ...          ...       ...
74676  9200       Nvidia  Positive
74677  9200       Nvidia  Positive
74678  9200       Nvidia  Positive
74679  9200       Nvidia  Positive
74680  9200       Nvidia  Positive

                                                 comment
```

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

[74681 rows x 4 columns]>
```

```
duplicates = df.duplicated()
duplicated_rows = df[duplicates]
duplicated_rows.count()
```

```
ID           2700
entity       2700
sentiment    2700
comment      2340
dtype: int64
```

```
# Dropping Duplicates
df.drop_duplicates(inplace=True)
```

```
df.isnull().sum()
```

```
ID             0
entity         0
sentiment      0
comment      326
dtype: int64
```

```
# Dropping missing value [ Using Dropna]
df = df.dropna()
```

```
df.isnull().sum()
```

```
ID           0
entity       0
sentiment    0
comment      0
dtype: int64
```

```
# Number of Unique Values
df.nunique()
```

```
ID           12447
entity          32
sentiment        4
comment      69490
dtype: int64
```

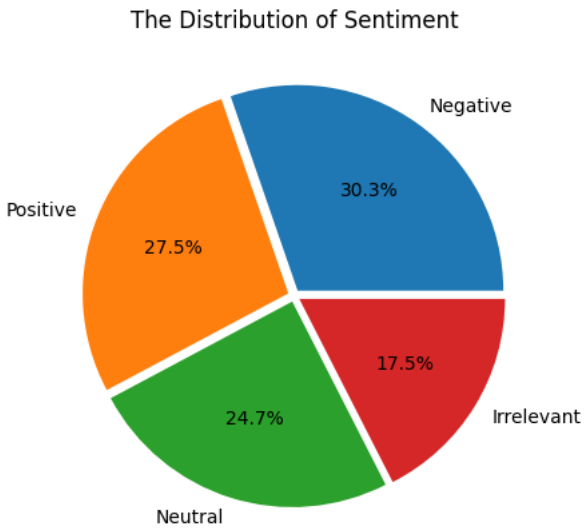
```
for i in range(5):
    print(f"{i+1}: {df['comment'][i]}   ->   {df['sentiment'][i]}")
```

```
1: I am coming to the borders and I will kill you all,   ->   Positive
2: im getting on borderlands and i will kill you all,   ->   Positive
3: im coming on borderlands and i will murder you all,   ->   Positive
4: im getting on borderlands 2 and i will murder you me all,   ->   Positive
5: im getting into borderlands and i can murder you all,   ->   Positive
```

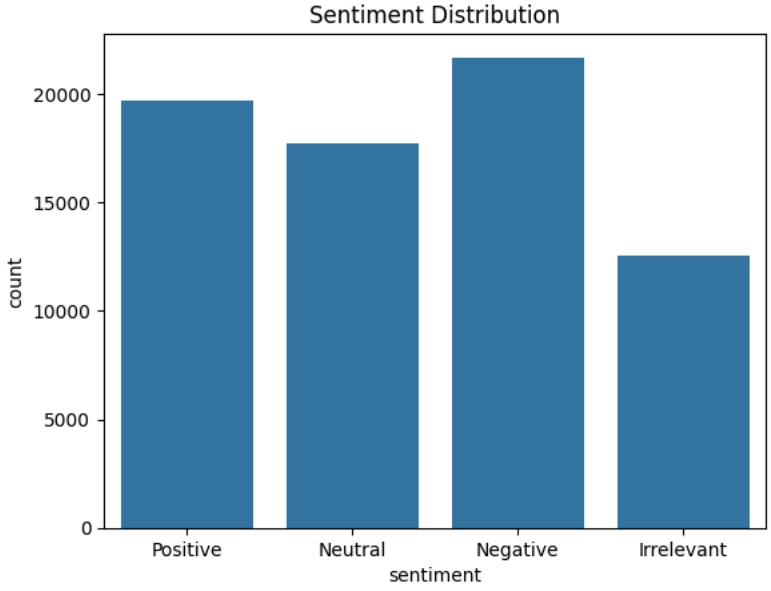
```
#SENTIMENT ANALYSIS
df['sentiment'].value_counts()
```

```
sentiment
Negative      21698
Positive      19712
Neutral       17708
Irrelevant    12537
Name: count, dtype: int64
```

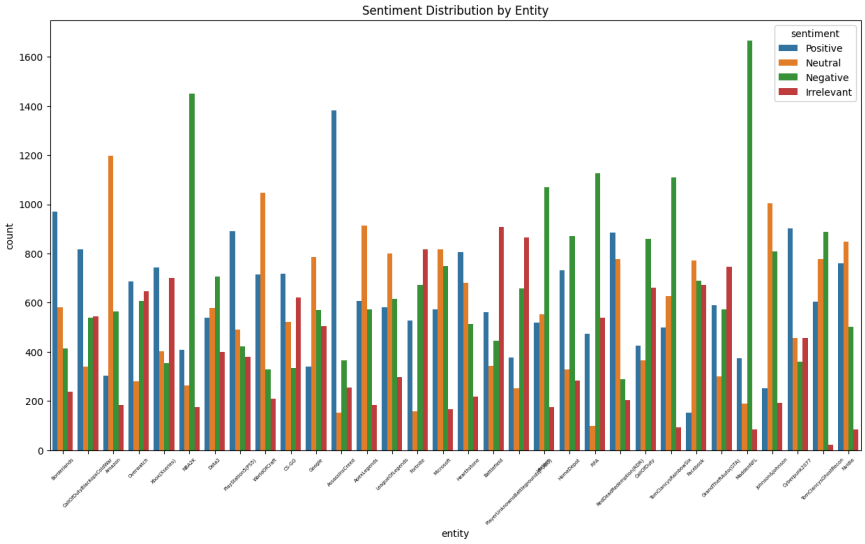
```
plt.figure(figsize=(10,5))
plt.pie(x=df['sentiment'].value_counts().values,
        labels=df['sentiment'].value_counts().index,
        autopct='%.1f%%', explode=[0.03, 0.03,0.03,0.03])
plt.title('The Distribution of Sentiment')
plt.show()
```



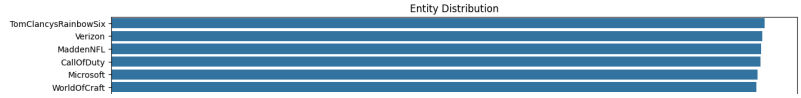

```
sns.countplot(x='sentiment', data=df)
plt.title('Sentiment Distribution')
plt.show()
```




```
plt.figure(figsize=(15, 8))
sns.countplot(x='entity', hue='sentiment', data=df)
plt.title('Sentiment Distribution by Entity')
plt.xticks(rotation=45, fontsize=5)
plt.show()
```




```
plt.figure(figsize=(15,9))
sns.barplot(x=df['entity'].value_counts().values,y=df['entity'].value_counts().index)
plt.xlabel('Type')
plt.ylabel('Count')
plt.title('Entity Distribution')
plt.show()
```




```
average_sentiment_by_entity = df.groupby('entity')['sentiment'].value_counts(normalize=True).unstack()
average_sentiment_by_entity.plot(kind='bar', stacked=True, figsize=(12, 6))
plt.title('Average Sentiment by Entity')
plt.xticks(rotation=45, fontsize=6)
plt.show()
```